

EB-2019-0261
Distribution Revenue Requirement
&
Rate Application



February 10, 2020



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GLOSSARY

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- 2 **“4GIR”** - 4th Generation Incentive Regulation
- 3 **“AC”** - Audit Committee
- 4 **“ACA”** - Asset Condition Assessment
- 5 **“AFUDC”** - Allowance for Funds Used During Construction
- 6 **“ACGF”** - Average Customer Growth Factor
- 7 **“ADMS”** - Advanced Distribution Management System
- 8 **“AESP”** - Association of Energy Services Professionals
- 9 **“AFT”** - Affordability Fund Trust
- 10 **“AGM”** - Annual General Meeting
- 11 **“AI”** - Artificial Intelligence
- 12 **“ALAs”** - Alternate Locate Agreements
- 13 **“Alectra”** - Alectra Utilities Inc.
- 14 **“AMC”** - Asset Management Council
- 15 **“AMI”** - Advanced Metering Infrastructure
- 16 **“AMP”** - Asset Management Plans
- 17 **“AMRP”** - Asset Management Risk Procedure
- 18 **“APB”** - Activity and Program Based Benchmarking
- 19 **“APH”** - Accounting Procedures Handbook
- 20 **“API”** - Application Programming Interface
- 21 **“Approved Settlement Agreement”** - Hydro Ottawa 2016-2020 Custom Incentive Rate-Setting
- 22 Approved Settlement Proposal, EB-2015-0004 (December 7, 2015)

- 1 **“APS”** - Agreement of Purchase and Sale
- 2 **“APS”** - Achievable Potential Study
- 3 **“ARC”** - Affiliate Relationships Code for Electricity Transmitters and Distributors
- 4 **“ASTM”** - American Society for Testing and Materials
- 5 **“AWE”** - Average Weekly Earnings
- 6 **“BAS”** - Building Automation System
- 7 **“BCUC”** - British Columbia Utilities Commission
- 8 **“BES”** - Battery Energy Storage
- 9 **“BLS”** - Bureau of Labor Statistics
- 10 **“BOMA”** - Building Owners and Managers Association
- 11 **“BPA”** - Business Process Automation
- 12 **“bps”** - Basis Points
- 13 **“BMO”** - Bank of Montreal
- 14 **“B&V”** - Black & Veatch Management Consulting, LCC
- 15 **“C&I Rate Design”** - Commercial and Industrial Rate Design
- 16 **“CA Study”** - Cost Allocation Study
- 17 **“CAGR”** - Compound Annual Growth Rate
- 18 **“CAIDI”** - Customer Average Interruption Duration Index
- 19 **“CAPEX”** - Capital Expenditures
- 20 **“CBR”** - Capacity Based Recovery
- 21 **“CC&B”** - Customer Care & Billing
- 22 **“CCA”** - Capital Cost Allowance

- 1 **“CCAP”** - Climate Change Action Plan
- 2 **“CCAP-WG”** - Climate Change Action Plan Working Group
- 3 **“CCEI”** - Customer Centric Engagement Index
- 4 **“CCO”** - Chief Customer Officer
- 5 **“CCRA”** - Connection and Cost Recovery Agreement
- 6 **“CDM”** - Conservation and Demand Management
- 7 **“CDM Code”** - Conservation and Demand Management Code for Electricity Distributors
- 8 **“CDP”** - Community Design Plans
- 9 **“CEA”** - Canadian Electricity Association
- 10 **“CEATI”** - Centre for Energy Advancement through Technological Innovation
- 11 **“CEDO”** - Chief Electricity Distribution Officer
- 12 **“CEO”** - Chief Executive Officer
- 13 **“CEPR”** - Customer Experience Performance rating
- 14 **“CFF”** - Conservation First Framework
- 15 **“CFO”** - Chief Financial Officer
- 16 **“CGAPP”** - Canadian Generally Accepted Accounting Principles
- 17 **“CHEO”** - Children’s Hospital of Eastern Ontario
- 18 **“CGU”** - Cash Generating Unit
- 19 **“CHLP”** - Chaudiere Hydro L.P.
- 20 **“CHLP North”** - Chaudiere Hydro L.P. North
- 21 **“CHP”** - Combined Heat and Power
- 22 **“CHPP”** - Chaudiere Hydro Pension Plan

- 1 **“CHRO”** - Chief Human Resource Officer
- 2 **“CIA”** - Connection Impact Assessment
- 3 **“CIAC”** - Contributions in Aid of Construction
- 4 **“CIR”** - Custom Incentive Rate-Setting
- 5 **“CIS”** - Customer Information System
- 6 **“CITO”** - Chief Information and Technology Officer
- 7 **“City”** - City of Ottawa
- 8 **“Clearspring”** - Clearspring Energy Advisors
- 9 **“CLD”** - Coalition of Large Distributors
- 10 **“CMS”** - Content Management System
- 11 **“CO₂e”** - Carbon Dioxide Equivalent
- 12 **“Corporation”** - Hydro Ottawa Holding Inc.
- 13 **“COS”** - Conditions of Service
- 14 **“COS”** - Cost of Service
- 15 **“COSWG”** - Conditions of Service Working Group
- 16 **“COTS”** - Commercial off the Shelf
- 17 **“CP&G”** - Corporate Planning & Governance
- 18 **“CPEF”** - Custom Price Escalation Factor
- 19 **“CPP”** - Canadian Pension Plan
- 20 **“CPS”** - Current Power Service
- 21 **“CRM”** - Customer Relationship Management
- 22 **“CRVA”** - Climate Risk and Vulnerability Assessment

- 1 **“CSA”** - Canadian Standards Association
- 2 **“CSI”** - Customer Service and Information
- 3 **“CSR”** - Customer Service Representative
- 4 **“CSRM”** - Customer-Specific Reliability Measures
- 5 **“Custom IR”** - Custom Incentive Rate-Setting
- 6 **“CVPM”** - Customer Value Performance Metrics
- 7 **“CVR”** - Conservation Voltage Reduction
- 8 **“CVOR”** - Commercial Vehicle Operator’s Registration
- 9 **“CWIP”** - Construction-Work-in-Progress
- 10 **“CWPI”** - Chaudiere Water Power Inc.
- 11 **“DA”** - Distribution Automation
- 12 **“Dashboard”** - Electricity Utility Performance Dashboard
- 13 **“DB”** - Dun & Bradstreet Database
- 14 **“DBRS”** - Dominion Bond Rating Service Inc.
- 15 **“DBRT”** - Design, Build, Run, Transfer
- 16 **“DC”** - Direct Current
- 17 **“DCFC”** - Direct Current Fast Charging
- 18 **“DCSR”** - Debt-Coverage Service Ratio
- 19 **“DDI”** - Due Diligence Inspections
- 20 **“DER”** - Distributed Energy Resource
- 21 **“DERM”** - Distributed Energy Resource Management
- 22 **“DGA”** - Dissolved Gas Analysis

- 1 **“DMS”** - Distribution Management System
- 2 **“DS”** - Distribution Station
- 3 **“DSC”** - Distribution System Code
- 4 **“DSP”** - Distribution System Plan
- 5 **“DSO”** - Distribution System Operator
- 6 **“DVA”** - Deferral and Variance Account
- 7 **“EA_MS”** - EnergyAxis Management System
- 8 **“EAM”** - Efficiency Adjustment Mechanism
- 9 **“East Campus”** - Eastern Operations and Administrative Office Building
- 10 **“EC”** - Eastern Campus
- 11 **“EC-1”** - Eastern Campus Administrative Office Building
- 12 **“EC-2”** - Eastern Campus Operations Centre
- 13 **“EC-3”** - Eastern Campus Paper Insulated Lead Covered Cable Storage Facility
- 14 **“ECA”** - Electrical Contractors Association
- 15 **“ECCC”** - Environment and Climate Change Canada
- 16 **“ECL”** - Expected Credit Losses
- 17 **“ECP”** - Enterprise Communications Platform
- 18 **“EDA”** - Electricity Distributors Association
- 19 **“EDC”** - Electric Distribution Company
- 20 **“EDR”** - Electricity Distribution Rate
- 21 **“EDDVAR”** - Electricity Distributors’ Deferral and Variance Account Review
- 22 **“EEI”** - Edison Electric Institute

- 1 **“EF”** - Enhanced Fujita
- 2 **“EFA”** - Emergency Financial Assistance
- 3 **“EFT”** - Electronic Funds Transfer
- 4 **“Elenchus”** - Elenchus Research Associates
- 5 **“EMT”** - Executive Management Team
- 6 **“ENDM”** - Ministry of Energy, Northern Development and Mines
- 7 **“Energy Ottawa”** - Energy Ottawa Inc.
- 8 **“Envari”** - Enviri Holding Inc.
- 9 **“EOI”** - Energy Ottawa Inc.
- 10 **“ERF”** - Energy Resource Facility
- 11 **“ERM”** - Enterprise Risk Management
- 12 **“ERMS”** - Enterprise Risk Management System
- 13 **“ERP”** - Enterprise Resource Planning
- 14 **“ESA”** - Electrical Safety Authority
- 15 **“ESB”** - Enterprise Service Bus
- 16 **“ESM”** - Earnings Sharing Mechanism
- 17 **“ETR”** - Estimated Time of Restoration
- 18 **“EUF”** - End-Use Forecasting
- 19 **“EUI”** - Energy Use Intensity
- 20 **“EV”** - Electric Vehicle
- 21 **“EWRB”** - Energy and Water Reporting and Benchmarking
- 22 **“FAN”** - Field Area Network

- 1 **“FAWG”** - Financial Assistance Working Group
- 2 **“FCI”** - Fault Circuit Indicator
- 3 **“FCR”** - First Contact Resolution
- 4 **“FDD”** - Final Domestic Demand
- 5 **“FEMI”** - Feeders Experiencing Multiple Interruptions
- 6 **“FERC”** - Federal Energy Regulatory Commission
- 7 **“FHP”** - Fair Hydro Plan
- 8 **“FIT”** - Feed in Tariff
- 9 **“FLISR”** - Fault Location, Isolation and Service Restoration
- 10 **“FortisBC”** - FortisBC Inc.
- 11 **“FR/AR”** - Flame Resistant/Arc Rated
- 12 **“FRP”** - Facilities Renewal Program
- 13 **“FSA”** - Forward Sortation Area GA
- 14 **“FTE”** - Full-Time Equivalent
- 15 **“FTTH”** - Fiber-To-The-Home
- 16 **“FVLCD”** - Fair Value Less Costs of Disposal
- 17 **“FVTPL”** - Fair Value Through Profit and Loss
- 18 **“GA”** - Global Adjustment
- 19 **“GAAP”** - Generally Accepted Accounting Principles
- 20 **“GEA”** - Green Energy Act
- 21 **“GDP-IPI”** - Implicit Price Index for Gross Domestic Product
- 22 **“GHG”** - Greenhouse Gas

- 1 **“GIS”** - Geographic Information System
- 2 **“GMRC”** - Governance and Management Resources Committee
- 3 **“GOHBA”** - Greater Ottawa Home Builder Association
- 4 **“GPS”** - Global Positioning System
- 5 **“GREAT DR”** - Grid Edge Active Transactional Demand Response
- 6 **“GTAP”** - Grid Transformation Action Plan
- 7 **“GWh”** - Gigawatt-Hour
- 8 **“HACS”** - Hot Aisle Containment System
- 9 **“Handbook”** - Handbook for Utility Rate Applications
- 10 **“HAP”** - Home Assistance Program
- 11 **“HCI”** - Hydroelectric Contract Initiative
- 12 **“HCM”** - Human Capital Management
- 13 **“HERs”** - Home Energy Reports
- 14 **“HES”** - Head End Software
- 15 **“HESOP”** - Hydroelectric Standard Offer Program
- 16 **“HLR”** - Hourly labour rate
- 17 **“HOEP”** - Hourly Ontario Energy Price
- 18 **“Holding Company”** - Hydro Ottawa Holding Inc.
- 19 **“HONI”** - Hydro One Networks Inc.
- 20 **“HR”** - High Rise
- 21 **“HR”** - Human Resources
- 22 **“HST”** - Harmonized Sales Tax

- 1 **“HVDS”** - High Voltage Distribution Station
- 2 **“Hydro Ottawa”** - Hydro Ottawa Limited
- 3 **“IAS”** - International Accounting Standard
- 4 **“IaaS”** - Infrastructure-as-a-Service
- 5 **“IASB”** - International Accounting Standards Board
- 6 **“IBEW”** - International Brotherhood of Electrical Workers
- 7 **“ICC”** - Incident Command Centre
- 8 **“ICD”** - Institute of Corporate Directors
- 9 **“ICI”** - Industrial Conservation Initiative
- 10 **“ICSRs”** - Information Classification & Scheme and Retention Schedule
- 11 **“IDAMS”** - International Distribution Asset Management Study
- 12 **“IDBC”** - International Distribution Benchmark Consortium
- 13 **“IDF”** - Intensity-Duration-Frequency
- 14 **“IEEE”** - Institute of Electrical and Electronics Engineers
- 15 **“IESNA”** - Illuminating Engineering Society of North America
- 16 **“IESO”** - Independent Electricity System Operator
- 17 **“IFMA”** - International Facility Management Association
- 18 **“IFRIC”** - International Financial Reporting Interpretations Committee
- 19 **“IFRS”** - International Financial Reporting Standards
- 20 **“IPCC”** - Intergovernmental Panel on Climate Change
- 21 **“IM”** - Information Management
- 22 **“Innovative”** - Innovative Research Group

- 1 **“IoT”** - Internet of Things
- 2 **“IR”** - Infra-Red
- 3 **“IRC”** - Investment Review Committee
- 4 **“IRM”** - Incentive Regulation Mechanism
- 5 **“IRRP”** - Integrated Regional Resource Plan
- 6 **“ISO”** - International Organization for Standardization
- 7 **“IT”** - Information Technology
- 8 **“ITA”** - Income Tax Act
- 9 **“ITIC”** - Information Technology Industry Council
- 10 **“ITOMS”** - International Transmission Operations and Maintenance Study
- 11 **“IVR”** - Interactive Voice Response
- 12 **“JDE”** - J.D. Edwards
- 13 **“JHSC”** - Joint Health and Safety Committee
- 14 **“KAM”** - Key Account Management
- 15 **“KPI”** - Key Performance Indicators
- 16 **“kV”** - Kilovolt
- 17 **“kW”** - Kilowatt
- 18 **“kWh”** - Kilowatt-hours
- 19 **“LAC”** - Locate Alliance Consortium
- 20 **“LAN”** - Local Area Network
- 21 **“LAP”** - Local Achievable Study
- 22 **“LC”** - Large Commercial

- 1 **“LDC”** - Local Distribution Company
- 2 **“LEAP”** - Low-Income Energy Assistance Program
- 3 **“LEED”** - Leadership in Energy and Environmental Design
- 4 **“LLR”** - Landlord Reversion
- 5 **“LMI”** - Labour Market Intelligence
- 6 **“LoS”** - Loss of Supply
- 7 **“LPSS”** - Lodestar Profiling and Settlement Software
- 8 **“LR”** - Low Rise
- 9 **“LRAM”** - Lost Revenue Adjustment Mechanism
- 10 **“LRAMVA”** - Lost Revenue Adjustment Mechanism Variance Account
- 11 **“LRT”** - Light Rail Transit
- 12 **“LTC”** - Leave to Construct
- 13 **“LTEP”** - Long-Term Energy Plan
- 14 **“LTLT”** - Long Term Load Transfer
- 15 **“LTR”** - Limited Time Rating
- 16 **“LV”** - Low Voltage
- 17 **“MAL”** - IESO Prescriptive Measures and Assumptions List
- 18 **“MED”** - Major Event Day
- 19 **“MD&A”** - Management Discussion and Analysis
- 20 **“MDM/R”** - Meter Data Management/Repository
- 21 **“MDS”** - Meter Data Services
- 22 **“MECP”** - Ministry of the Environment, Conservation and Parks

- 1 **“Mercer”** - Mercer Canada
- 2 **“MHL”** - MyHydroLink
- 3 **“MicroFIT”** - Micro Feed in Tariff
- 4 **“MIFRS”** - Modified International Financial Reporting Standards
- 5 **“MILP”** - Mixed Integer Linear Programming
- 6 **“MIMO”** - Move-in/Move-out
- 7 **“MOE”** - Ministry of Energy
- 8 **“MOL”** - Ministry of Labour
- 9 **“MOM”** - Message Oriented Middleware
- 10 **“MPAC”** - Municipal Property Assessment Corporation
- 11 **“MPSA”** - Master Purchasing Service Agreement
- 12 **“MTS”** - Municipal Transformer Station
- 13 **“MURB”** - Multi-Unit Residential Building
- 14 **“MUSH”** - Municipalities, Universities, Schools and Hospitals
- 15 **“MW”** - Megawatt
- 16 **“MWM”** - Mobile Workforce Management
- 17 **“MWh”** - Megawatt-hour
- 18 **“MyAccount”** - Hydro Ottawa’s web-based customer service portal
- 19 **“NAICS”** - North American Industry Classification System
- 20 **“NAMAG”** - North Atlantic Mutual Assistance Group
- 21 **“NC”** - Nominating Committee
- 22 **“NEER”** - New Experimental Experience Rating

1 **“New Facilities”** - Hydro Ottawa’s new South Operations and Warehouse facility, Eastern
2 Operations and Administrative Campus facility, and related land

3 **“NIST”** - National Institute of Standards and Technology

4 **“NOC”** - National Occupational Classification

5 **“NPS”** - Net Promoter Score

6 **“NRC”** - National Research Council

7 **“NRCan”** - Natural Resources Canada

8 **“NYISO”** - New York Independent System Operator

9 **“OCI”** - Other Comprehensive Income

10 **“OCM”** - Operational Migration Committee

11 **“O&M”** - Operations and Maintenance

12 **“ODGA”** - Online Dissolved Gas Analysis

13 **“ODS”** - Operational Data Store

14 **“OEA”** - Ontario Energy Association

15 **“OEB”** - Ontario Energy Board

16 **“OESP”** - Ontario Electricity Support Program

17 **“OH”** - Overhead

18 **“OH&S”** - Occupational Health, Safety and Environment

19 **“OHSAS”** - Occupational Health and Safety Assessment Series

20 **“OHSE”** - Occupational Health, Safety and Environment

21 **“OM&A”** - Operations, Maintenance and Administration

22 **“OMERS”** - Ontario Municipal Employees Retirement System

- 1 **“OMS”** - Outage Management System
- 2 **“OOTB”** - Out-of-the-Box
- 3 **“OPA”** - Ontario Power Authority
- 4 **“OPEB”** - Other Post-Employment Benefits
- 5 **“OPS”** - Operations
- 6 **“ORCGA”** - Ontario Regional Common Ground Alliance
- 7 **“ORTAC”** - Ontario Resource and Transmission Assessment Criteria
- 8 **“OT”** - Operational Technology
- 9 **“PBR”** - Performance Based Regulation
- 10 **“PCBs”** - Polychlorinated Biphenyls
- 11 **“PCI”** - Price Cap Index
- 12 **“PCT”** - Power Cable Technician
- 13 **“PEG”** - Pacific Economics Group
- 14 **“PHEV”** - Plug-in Hybrid Electric Vehicle
- 15 **“PIEVC”** - Public Infrastructure Engineering Vulnerability Committee
- 16 **“PILC”** - Paper Insulated Lead Cable
- 17 **“PILS”** - Payments in Lieu of Taxes
- 18 **“PLM”** - Power Line Maintainer
- 19 **“PLS”** - Pole Line Systems
- 20 **“PLT”** - Power Line Technician
- 21 **“PMBOK”** - Project Management Body of Knowledge
- 22 **“PMI”** - Project Management Institute

- 1 **“PMO”** - Program Management Office
- 2 **“PPA”** - Power Purchase Agreement
- 3 **“PP&E”** - Property, Plant and Equipment
- 4 **“PPP”** - Purchasing Power Parity
- 5 **“PSE”** - Power System Engineering, Inc.
- 6 **“PSPC”** - Public Services and Procurement Canada
- 7 **“PSUI-CDM”** - Process and Systems Upgrade Initiative
- 8 **“RASCI”** - Responsible, Accountable, Supporting, Consulted, and Informed
- 9 **“RAP”** - Redesign Action Plan
- 10 **“RARA”** - Regulatory Asset Refund Account
- 11 **“RBD”** - Radial Boom Derrick
- 12 **“RCP”** - Representative Concentration Pathway
- 13 **“RCVA”** - Retail Cost Variance Account
- 14 **“REG”** - Renewable Energy Generation
- 15 **“Régie”** - Régie de l'énergie
- 16 **“RESOP”** - Renewable Energy Standard Offer Program
- 17 **“RFI”** - Request for Information
- 18 **“RFP”** - Request for Proposal
- 19 **“RFPQ”** - Request for Pre-Qualification
- 20 **“RFQ”** - Request for Qualifications / Request for Quotations
- 21 **“RFSA”** - Request for Supply Arrangements
- 22 **“RFSO”** - Request for Standing Offers

- 1 **“RIP”** - Regional Infrastructure Plan
- 2 **“RLRA”** - Regulatory Liability Refund Account
- 3 **“ROE”** - Return on Equity
- 4 **“ROW”** - Right-of-Way
- 5 **“RPA”** - Robotic Process Automation
- 6 **“RPP”** - Regulated Price Plan
- 7 **“RRF”** - Renewed Regulatory Framework for Electricity Distributors
- 8 **“RRR”** - Reporting and Record Keeping Requirements
- 9 **“RRRP”** - Rural or Remote Electricity Rate Protection
- 10 **“RRWF”** - Revenue Requirement Work Form
- 11 **“RSCs”** - Retail Service Charges
- 12 **“RSI”** - Risk Sciences International
- 13 **“RMS”** - Root Mean Square
- 14 **“RSVA”** - Retail Settlement Variance Account
- 15 **“RTU”** - Remote Terminal Unit
- 16 **“RTSR”** - Retail Transmission Service Rate
- 17 **“SaaS”** - Software-as-a-Service
- 18 **“SAIDI”** - System Average Interruption Duration Index
- 19 **“SAIFI”** - System Average Interruption Frequency Index
- 20 **“SAMP”** - Strategic Asset Management Plan
- 21 **“SARFI”** - System Average Root Mean Square Variation Frequency Index
- 22 **“SAN”** - Storage Area Network

- 1 **“SC”** - South Campus
- 2 **“SC”** - Service Charge
- 3 **“SC-1”** - Southern Campus Administration & Operations Building
- 4 **“SCADA”** - Supervisory Control and Data Acquisition
- 5 **“SHEU”** - Survey of Household Energy
- 6 **“SCIEU”** - Survey of Commercial and Institutional Energy Use
- 7 **“SD”** - Standard Deviation
- 8 **“SDHI”** - Short Duration-High Intensity
- 9 **“SE”** - Standard Error
- 10 **“SESC”** - Smart Energy Steering Committee
- 11 **“SF6”** - Sulfur Hexafluoride
- 12 **“Scorecard”** - Electricity Distributor Scorecard
- 13 **“SIA”** - System Impact Assessment
- 14 **“SIOC”** - Strategic Initiatives Oversight Committee
- 15 **“SIP”** - Session Initiation Protocol
- 16 **“S/L”** - Street Lights
- 17 **“SLA”** - Service Level Agreement
- 18 **“SMC”** - Smart Metering Charge
- 19 **“SME”** - Smart Metering Entity
- 20 **“SOA”** - System of Accounts
- 21 **“South Campus”** - Southern Operations & Warehouse
- 22 **“S&P”** - Standard & Poor’s

- 1 **“SPIA”** - Sperry-Piltz Ice Accumulation
- 2 **“SQR”** - Service Quality Requirement
- 3 **“SR&ED”** - Scientific Research and Experimental Development
- 4 **“SSC”** - Specific Service Charge
- 5 **“SSO”** - Single Sign-On
- 6 **“SSS Charge”** - Standard Supply Service Administrative Charge
- 7 **“Stantec”** - Stantec Consulting Ltd.
- 8 **“SUB”** - Substations
- 9 **“TDA”** - Training Delivery Agent
- 10 **“TFP”** - Total Factor Productivity
- 11 **“THESL”** - Toronto Hydro Electric System Limited
- 12 **“TIM”** - Testing, Inspection & Maintenance
- 13 **“TOC”** - Transformer Ownership Credit
- 14 **“TOD”** - Transit Oriented Developments
- 15 **“TOU”** - Time of Use
- 16 **“TS”** - Transmission Station
- 17 **“TWA”** - Triangulated Weighted Average
- 18 **“UCC”** - Undepreciated Capital Cost
- 19 **“UG”** - Underground
- 20 **“UI/UX”** - User Interface/User Experience
- 21 **“ULS”** - Underground Line System
- 22 **“UMS”** - UMS Group

- 1 **“UP”** - UtilityPULSE
- 2 **“USL”** - Unmetered Scattered Load
- 3 **“USofA”** - Uniform System of Accounts
- 4 **“UTRs”** - Uniform Transmission Rates
- 5 **“UWO”** - University of Western Ontario
- 6 **“verTerra”** - verTerra Corp.
- 7 **“VIU”** - Value in Use
- 8 **“VOC”** - Voice of the Customer
- 9 **“Vol. R”** - Volumetric Rate
- 10 **“WACC”** - Weighted Average Cost of Capital
- 11 **“WCA”** - Working Capital Allowance
- 12 **“WAHSP”** - Weighted Average Hourly Spot Price
- 13 **“WMS”** - Wholesale Market Service
- 14 **“WSIB”** - Workplace Safety and Insurance Board
- 15 **“XFMR”** - Transformer
- 16 **“XLPE”** - Cross Linked Polyethylene
- 17 **“Yearbook”** - Electricity Distributor Yearbook
- 18 **“YMPE”** - Yearly Maximum Pensionable Earnings

2019 Cost of Service Checklist

Hydro Ottawa Limited

EB-2019-0261

Filing Requirement
Page # Reference

Date: ORIGINAL

		Yes/No/N/A	Evidence Reference, Notes
GENERAL REQUIREMENTS			
Ch 1, Pg. 2	Certification by a senior officer that the evidence filed is accurate, consistent and complete	Yes	Attachment 1-1-4(B)
Ch 1, Pg. 3	Confidential Information - Practice Direction has been followed	N/A	
Ch 2, Pg. 1	Statement identifying all deviations from Filing Requirements	N/A	
2	Chapter 2 appendices in live Microsoft Excel format; PDF and Excel copy of current tariff sheet	Yes	Hydro Ottawa confirms that the Chapter 2 appendices are provided in live Microsoft Excel format, and that PDF and Excel copies of the tariff sheets are included
3	If applicable, late applications filed after the commencement of the rate year for which the application is intended to set rates is converted to the following rate year.	N/A	
3	Aligning rate year with fiscal year - request for proposed alignment	N/A	
5	Text searchable and bookmarked PDF documents	Yes	Confirmed
5	Links within Excel models not broken and models names so that they can be identified (e.g. RRWF instead of Attachment A)	Yes	Confirmed
5	Materiality threshold; additional details beyond the threshold if necessary	Yes	Exhibit 1-1-5
16	Proposal for disposition of any balances in existing DVAs for renewable generation and smart grid development, if applicable	N/A	
6	State accounting standard(s) used in historical, bridge and test years. Provide a summary of changes to its accounting policies made since the applicant's last cost of service filing. Identify all material changes or confirm no material changes in the adoption of IFRS. Appendix 2-Y	Yes	Exhibit 1-1-4; Exhibit 1-1-5
RESS Guideline	Two hardcopies of application sent to OEB the same day as electronic filing (p10 of RESS Guideline)	Yes	
EXHIBIT 1 - ADMINISTRATIVE DOCUMENTS			
<i>Table of Contents</i>			
6	Table of Contents listing major sections and subsections of the application. Electronic version of application appropriately bookmarked to provide direct access to each section	Yes	Exhibit 1-1-1
<i>Executive Summary</i>			
6	Summary identifying key elements of the proposals and the Business Plan underpinning application, as guided by the Rate Handbook including plain language information about its goals	Yes	Exhibit 1-1-8; Exhibit 1-1-9
<i>Administration</i>			
6	Brief but complete summary of the application that will be posted as a stand-alone document on the OEB's website for review by the general public and be made available to customers of the applicant	Yes	Exhibit 1-1-7
6 & 7	Primary contact information (name, address, phone, fax, email)	Yes	Exhibit 1-1-4
7	Identification of legal (or other) representation	Yes	Exhibit 1-1-4
7	Applicant's internet address for viewing of application and any social media accounts used by the applicant to communicate with customers	Yes	Exhibit 1-1-4
7	Statement identifying customers materially affected by the application including any change to any rate or charge and specific statement of what individual customer or customer groups would be affected by the proposed change	Yes	Exhibit 1-1-4; Exhibit 1-1-5
7	Statement identifying where notice should be published and why	Yes	Exhibit 1-1-4
7	Bill impacts - distribution only impacts for 750 kWh residential and 2000 kWh GS<50 (sub-total A of Tariff Schedule and Bill Impact Spreadsheet Model) to be used for notice; proposed bill impacts based on alternative consumption profiles and customer groups as appropriate given consumption patterns of a distributors customers	Yes	Exhibit 1-1-4
7	Form of hearing requested and why	Yes	Exhibit 1-1-4
7	Requested effective date	Yes	Exhibit 1-1-4
7	Statement identifying and describing any changes to methodologies used vs previous applications	Yes	Exhibit 1-1-4
8	Identification of OEB directions from any previous OEB Decisions and/or Orders. The applicant must clearly indicate how these are being addressed in the current application (e.g., filing of a study as directed in a previous decision)	Yes	Exhibit 1-1-4
8	Reference to Conditions of Service - LDC does not need to file Conditions of Service, but must provide reference to website and confirm version is current; identify if there are changes to Conditions of Service (a) since last CoS application or (b) as a result of the current application. Confirmation that there are no rates and charges linked in the Conditions of Service that are not in the distributor's Tariff of Rates and Charges must be provided	Yes	Exhibit 1-1-4
8	Description of the corporate and utility organizational structure, showing the main units and executive and senior management positions within the utility. Include a corporate entities relationship chart, showing the extent to which the parent company is represented on the utility company's Board of Directors and a description of the reporting relationships between utility and parent company management. Also include any planned changes in corporate or operational structure, including any changes in legal organization and control	Yes	Exhibit 1-1-4; Exhibit 1-4-1
8	List of approvals requested (and relevant section of legislation), including accounting orders - a PDF copy of Appendix 2-A should be provided in this section	Yes	Exhibit 1-1-4
Addendum, Pages 2-4	Status update on implementation of new accounting guidance (related to Accounts 1588 and 1589 - Feb 21, 2019), a review of historical balances, results of the review, and any adjustments made to account balances; for any adjustments made - include the reason, how it was quantified and the journal entries to adjust the balances	Yes	Exhibit 1-1-4; Exhibit 9-1-1
<i>Distribution System Overview</i>			
8	Description of Service Area (including map, communities served)	Yes	Exhibit 1-1-6; Attachment 1-1-6(A)
8 & 9	Description of whether the distributor is a host distributor and/or embedded distributor. Identification of embedded and/or host distributors; if partially embedded provide %load from host distributor. If the distributor is a host, the applicant should identify whether there is a separate Embedded Distributor customer class or if any embedded distributors are included in other customer classes such as GS > 50 kW	Yes	Exhibit 1-1-6
9	Statement as to whether or not the distributor has had any transmission or high voltage assets deemed by the OEB as distribution assets and whether or not there are any such assets the distributor is seeking approval for in this application	Yes	Exhibit 1-1-6
<i>Application Summary</i>			
At a minimum, the items below must be provided. Applicants must also identify all proposed changes that will have a material impact on customers.			
9	Revenue Requirement - service RR, increase/decrease (\$ and %) from change from previously approved and main drivers	Yes	Exhibit 1-1-5
9	Budgeting and Accounting Assumptions - economic overview and identification of accounting standard used for test year and brief explanation of impacts arising from any change in standards	Yes	Exhibit 1-1-5
9	Load Forecast Summary - load and customer growth, % change in kWh/kW and customer numbers, description of forecasting method(s) used for customer/connection and consumption/demand	Yes	Exhibit 1-1-5
9 & 10	Rate Base and DSP - major drivers of DSP, rate base for test year, change in rate base from last approved (\$ and %), capital expenditures requested for the test year, change in capital expenditures from last approved (\$ and %), summary of costs requested for renewable energy connections/expansions, smart grid, and regional planning initiatives, any O.Reg 339/09 planned recovery	Yes	Exhibit 1-1-5

10	OM&A Expense - OM&A for test year and change from last approved (\$ and %), summary of drivers, inflation assumed, total compensation for test year and change from last approved (\$ and %).	Yes	Exhibit 1-1-5
10	Cost of Capital - summary table showing proposed capital structure and cost of capital parameters used in WACC. Statement regarding use of OEB's cost of capital parameters; summary of any deviations	Yes	Exhibit 1-1-5
10	Cost Allocation & Rate Design - summary of any deviations from OEB methodologies, significant changes proposed to revenue-to-cost ratios and fixed/variable splits and summary of proposed mitigation plans	Yes	Exhibit 1-1-5
10	Deferral and Variance Accounts - total disposition (RPP and non-RPP), disposition period, new accounts requested	Yes	Exhibit 1-1-5
10	Bill Impacts - total impacts (\$ and %) for all classes for typical customers	Yes	Exhibit 1-1-5
Customer Engagement			
10	Discussion on how customers were informed of the proposals being considered for inclusion in the application and the value of those proposals to customers i.e. costs, benefits, and the impact on rates	Yes	Exhibit 1-2-2
10	Discussion of any feedback provided by customers and how the feedback shaped the final application	Yes	Exhibit 1-1-7; Exhibit 1-1-8; Exhibit 1-1-9; Exhibit 1-2-2; Exhibit 2-4-3
11	Reference to any other communication sent to customers about the application i.e. bill inserts, town hall meetings or other forms of out reach and the feedback received from customers through these engagement activities	Yes	Exhibit 1-2-2
11	Complete Appendix 2-AC Customer Engagement Activities Summary - explicit identification of the outcomes of customer engagement in terms of the impacts on the distributor's plans, and how that information has shaped the application	Yes	Attachment 1-2-1(A)
11	All responses to matters raised in letters of comment filed with the OEB	N/A	
11	Impact of customer engagement activities on the development of the capital plan are to be filed as part of the capital plan requirements in Chapter 5	Yes	Exhibit 2-4-3
Performance Measurement			
12	Discussion of performance for each of the distributor's scorecard measures over the last five years; drivers for its performance, plans for continuous improvement, identify performance improvement targets, forecast of efficiency assessment using the PEG forecasting model for the test year, discussion on how the results obtained from the PEG model has informed the business plan and application	Yes	Exhibit 1-1-11; Exhibit 1-1-12; Attachment 1-1-12 (C), (D), (E)
Financial Information			
12	Non-consolidated Audited Financial Statements for 2 most recent years (i.e. 3 years of historical actuals)	Yes	Exhibit 1-3-1; Attachment 1-3-1(A), (B)
12	Detailed reconciliation of AFS with regulatory financial results filed in the application, with identification of any deviations that are being proposed	Yes	Exhibit 1-3-2
13	Annual Report and MD&A for most recent year of distributor and parent company, if applicable	Yes	Exhibit 1-3-3; Attachment 1-3-3(A), (B), (C)
13	Rating Agency Reports, if available; Prospectuses, etc. for recent and planned public issuances	Yes	Exhibit 1-3-4; Exhibit 1-3-5
13	Any change in tax status	N/A	No change in tax status
13	Existing accounting orders and departures from the accounting orders and USoA	Yes	Exhibit 1-3-6
13	Accounting Standards used for financial statements and when adopted	Yes	Exhibit 1-3-7; Exhibit 1-3-10
13	Confirmation that accounting treatment of any non-utility business has segregated activities from rate regulated activities	Yes	Exhibit 1-3-8; Exhibit 1-3-9
Distributor Consolidation			
13	If a distributor has acquired or amalgamated with another distributor, identify any incentives that formed part of the acquisition or amalgamation transaction if the incentive represents costs that are being proposed to remain or enter rate base and/or revenue requirement. A distributor must specify whether any commitments made to shareholders are to be funded through rates	N/A	
13	Description of actual savings as a result of consolidation compared to what was in the approved consolidation application and explanation of how savings are sustainable and the efficacy of any rate plan approved as part of the MAADs application	N/A	
13	Identify approved ACM or ICM from a previous Price Cap IR application it proposes be incorporated into rate base.	N/A	
EXHIBIT 2 - RATE BASE			
Overview			
14	Completed Fixed Asset Continuity Schedule (Appendix 2-BA) - in Application and Excel format	Yes	Exhibit 2-2-1; Attachment 2-2-1(A), (B), (C), (D), (E), (F), (G), (H), (I), (J)
14	Opening and closing balances, average of opening and closing balances for gross assets and accumulated depreciation (discussion of methodology if applicant uses an alternative method); working capital allowance (historical actuals, bridge and test year forecast)	Yes	Exhibit 2-1-1
14 & 15	Continuity statements (year end balance, including interest during construction and overheads). Explanation for any restatement (e.g. due to change in accounting standards) Year over year variance analysis; explanation where variance greater than materiality threshold Hist. OEB-Approved vs Hist. Actual Hist. Act. vs. preceding Hist. Act. Hist. Act. vs. Bridge Bridge vs. Test	Yes	Exhibit 2-1-1
15	Opening and closing balances of gross assets and accumulated depreciation must correspond to fixed asset continuity statements. If not, an explanation must be provided (e.g. CWIP, ARO). Reconciliation must be between net book value balances reported on Appendix 2-BA and balances included in rate base calculation	Yes	Exhibit 2-1-1
Gross Assets - PP&E and Accumulated Depreciation			
15	Breakdown by function and by major plant account; description of major plant items for test year	Yes	Exhibit 2-2-1
15 & 16	Summary of approved and actual costs for any ICM(s) and/ or ACM approved in previous IRM applications	N/A	
16	Continuity statements must reconcile to calculated depreciation expenses and presented by asset account	Yes	Attachment 2-2-1(A), (B), (C), (D), (E), (F), (G), (H), (I), (J); Attachment 4-3-1(B), (C), (D), (E), (F), (G), (H), (I), (J), (K)
16	All asset disposals clearly identified in the Chapter 2 Appendices for all historical, bridge and test years and if any amounts related to gains or losses on disposals have been included in Account 1575 IFRS - CGAAP Transitional PP&E Amount	Yes	Attachment 2-2-1(A), (B), (C), (D), (E), (F), (G), (H), (I), (J)
Allowance for Working Capital			
16	Working Capital - 7.5% allowance or Lead/Lag Study or Previous OEB Direction	Yes	Exhibit 2-3-1
16	Lead/Lag Study - leads and lags measured in days, dollar-weighted	N/A	
16 & 17	Cost of Power must be determined by split between RPP and non-RPP Class A and Class B customers based on actual data, use most current RPP (TOU) price, use current UTR. Calculation must fully consider all other impacts resulting from the Ontario Fair Hydro Plan Act, 2017. Distributors must complete Appendix 2-Z - Commodity Expense.	Yes	Exhibit 2-3-1
17	In consideration of the impact of the Fair Hydro Plan, actual data must be split between Class A and Class B customers (RPP and non-RPP).	N/A	Applicable components of Fair Hydro Plan have been repealed
17	Non-RPP Class B consumption data must be further split between customers eligible for the Global Adjustment (GA) modifier vs. non-eligible. The GA modifier must be applied to eligible customers and a weighted average commodity price must be determined by the split between RPP, eligible non-RPP and non-eligible non-RPP customers.	Yes	Exhibit 2-3-1
17	For customer classes that include Class A customers, distributor must incorporate Class A GA cost by completing the relevant section in Appendix 2-Z	Yes	Exhibit 2-3-1
17	If a distributor expects test year consumption data to vary significantly, a distributor may provide a forecast of the expected split between Class A and Class B and the expected split between RPP, non-RPP eligible for modifier and non-RPP non eligible for modifier consumption data and provide brief explanation of the forecast	N/A	
Capital Expenditures			
17	DSP filed as a stand-alone document; a discrete element within Exhibit 2	Yes	Exhibit 2-4-3
18	Complete Appendix 2-AB - four historical years must be actuals, forecasts for the bridge and test years; at a minimum, for historical years, applicants must provide actual totals for each DSP category. If no previous plan has been filed, applicants are only required to enter their planned total capital budget in the "plan" column for each historical year and for the bridge year including the OEB-approved amount for the last rebasing year	Yes	Attachment 2-4-3(B)

19	Distributor that has an approved ACM or ICM from a previous Price Cap IR application must file a schedule of the ACM/ICM capital asset amounts (ie PP&E and associated accumulated depreciation) it proposes be incorporated into rate base. Distributor must provide a comparison of actual capital spending with the OEB-approved amount and provide explanation for variances.	N/A	Hydro Ottawa does not have an approved ACM or ICM from a previous Price Cap IR application
Policy Options for the Funding of Capital			
18	Distributor may propose ACM capital project coming into service during Price Cap IR (a discrete project documented in DSP). Provide cost and materiality calculations to demonstrate ACM qualification	N/A	Hydro Ottawa is not applying for an ACM in this application
18	Distributor must establish need for and prudence of these projects based on DSP information; identification that distributor is proposing ACM treatment for these future projects, preliminary cost information	N/A	Hydro Ottawa is not applying for an ACM in this application
18	Complete Capital Module Applicable to ACM and ICM	N/A	Hydro Ottawa is not applying for an ACM or ICM in this application
Addition of Previously Approved ACM and ICM Project Assets to Rate Base			
19	Distributor with previously approved ACM(s) and/or ICM(s) - schedule of ACM/ICM amounts proposed to be incorporated into rate base. The distributors must compare actual capital spending with OEB-approved amount and provide an explanation for variances	N/A	Hydro Ottawa does not have an approved ACM or ICM from a previous Price Cap IR application
19 & 20	Balances in Account 1508 sub-accounts, reconciliation with proposed rate base amounts; recalculated revenue requirement should be compared with rate rider revenue	N/A	Hydro Ottawa does not have an approved ACM or ICM from a previous Price Cap IR application
Capitalization Policy and Capitalization			
20	Changes to capitalization policy since its last rebasing application as a result of the OEB's letter dated July 17, 2012 or for any other reasons, the applicant must identify the changes and the causes of the changes.	Yes	Exhibit 2-4-4
20	Appendix 2-D complete; identification of burden rates and burden rates prior to changes, if any	Yes	Attachment 2-4-5(A)
Costs of Eligible Investments for the Connection of Qualifying Generation Facilities			
21 & 22	Generation Facilities - If applicable, proposal to divide the costs of eligible investments between the distributor's ratepayers and all Ontario ratepayers per O.Reg. 330/09. Request for rate protection exceeds the materiality threshold in section 2.0.8 of the Filing Requirements - Appendices 2-FA through 2-FC identifying all eligible investments for recovery	N/A	
Service Quality and Reliability Performance			
22	5 historical years of ESQRs, explanation for any under-performance vs standard and actions taken	Yes	Exhibit 2-4-6
22	5 historical years of SAIDI and SAIFI - for all interruptions, all interruptions excluding loss of supply, and all interruptions excluding major events. The applicant should also provide a summary of major events that occurred since last rebasing. For each interruption set out in section 2.1.4.2.5 of the RRR, for the last 5 years, a distributor must report on the following data: name of the Cause of Interruption, number of interruptions that occurred as a result of the Cause of Interruption, Number of Customer Interruptions that occurred as a result of the Cause of Interruption, and the Number of customer-hours of Interruptions that occurred as a result of the Cause of Interruption	Yes	Exhibit 2-4-6
22	Explanation for any under-performance vs 5 year average and actions taken	Yes	Exhibit 2-4-6
22	Distributors may propose SAIDI and SAIFI benchmarks different than 5 year average; provide rationale	N/A	No new benchmarks proposed
22	Completed Appendix 2-G	Yes	Attachment 2-4-6(A)
Ch 5 p6	Where applicable, explanation for section headings other than Chapter 5 headings; cross reference table	Yes	Exhibit 2-4-3 (Appendix A)
Ch 5 p7-8	Distribution System Plan Overview - key elements, sources of cost savings, period covered, vintage of information on investment drivers, changes to asset management process since last DSP filing, dependencies	Yes	Exhibit 2-4-3 (s. 1.1; s. 1.2)
Ch 5 p8-9	Coordinated Planning with 3rd parties - description of consultations - deliverables of the Regional Planning Process, or status of deliverables - IESO letter in relation to REG investments (Ch 5 p9) and Dx response letter	Yes	Exhibit 2-4-3 (s. 1.9; s. 1.10)
Ch 5 p9-11	Performance Measurement - identify and define methods and measures used to monitor DSP performance - summary of performance and trends over historical period. Must include SAIFI and SAIDI for all interruptions and all interruptions excluding loss of supply - explain how information has affected DSP	Yes	Exhibit 2-4-3 (s. 4.1)
Ch 5 p11	Realized efficiencies due to smart meters - documented capital and operating efficiencies realized as a result of the deployment and operationalization of smart meters and related technologies. Both qualitative and quantitative descriptions should be provided	Yes	Exhibit 2-4-3 (s. 4.5)
Ch5 p12	Asset Management Process Overview - description of AM objectives/corporate goals and how Dx ranks objectives for prioritizing investments	Yes	Exhibit 2-4-3 (s. 5.1)
Ch5 p12	Inputs/Outputs of the AM process and information flow for investments; flowchart recommended	Yes	Exhibit 2-4-3 (s. 5)
Ch 5 p13	Overview of Assets Managed - description of service area (including evolution of features in forecast period affecting DSP), - description of system configuration - service profile and condition by asset type (tables and/or figures) - date data compiled - assessment of degree the capacity of system assets is utilized	Yes	Exhibit 2-4-3 (s. 2.1; s. 6.1)
Ch 5 p13-14	Asset Lifecycle Optimization - description of asset lifecycle optimization policies and practices, including asset replacement and refurbishment, maintenance planning criteria and assumptions - description of asset life cycle risk management policies and practices, assessment methods and approaches to mitigation	Yes	Exhibit 2-4-3 (s. 6.2)
Ch 5 p14-15	System Capability Assessment for REG - REG applications > 10 kW, number and MW of REG connections for forecast period, capacity of Dx to connect REG, connection constraints	Yes	Exhibit 2-4-3 (s. 7.3)
Ch 5 p15	Capital Expenditure Plan Summary for significant projects and activities to be undertaken - capability to connect new load or Gx customers, total annual capex over forecast period by investment category, description of how AMP and Capex planning have affected capital expenditures for each category - list, description and total capital cost of material capital expenditures sorted by category (table recommended) - information related to Regional Planning Process (Needs Assessment Report, Regional Planning Status Letter, Regional Infrastructure Plan - as appropriate) - description of customer engagement - Dx expectations of system development over next 5 years - list, description and total capital cost of projects planned in response to customer preferences, to take advantage of technology based opportunities, to study innovative processes (table recommended)	Yes	Exhibit 2-4-3 (s. 8.1; s. 5.4; s. 4.1; s. 1.10.2; s. 8.1.6)
Ch 5 p16-17	Capital Expenditure Planning Process Overview - description of capex planning objectives/criteria/assumptions, relationship with AM objectives, policy on consideration of non-distribution alternatives, processes used to identify projects in each investment category, customer feedback and impact on plan, method and criteria used to priorities REG investments	Yes	Exhibit 2-4-3 (s. 5.2)
Ch 5 p17	Rate-Funded Activities to Defer Distribution Infrastructure -CDM programs that target distributor-specific peak demand reductions to address a local constraint of the distribution system -demand response programs to reduce peak demand in order to defer capital investment -programs to improve the efficiency of the distribution system and reduce distribution losses -energy storage programs whose primary purpose is to defer specific capital spending for the distribution system	Yes	Exhibit 2-4-3 (s. 8.1.4)
Ch 5 p18-19	Capital Expenditure Summary by Investment Category - completed Table 2 of Ch 5 for historical and forecast period, explanation of markedly different variances plan vs actual, explanation of markedly different variances year over year Table 2 of Ch 5 is provided in Excel format in Appendix 2-AB (must provide actual totals for historical years, as a minimum) - Must also complete Chapter 2 Appendix 2-AA, along with explanations of variances by project or category, the proposed accounting treatments, a statement should be provided that there are no expenditures for non-distribution activities in the applicant's budget	Yes	Exhibit 2-4-3 (s. 8.2; s. 8.3; s. 8.4; s. 8.5)
Ch 5 p19	Justifying Capital Expenditures -filings must enable OEB to assess whether and how a distributor's DSP delivers value to customers, including by controlling costs in relation to its proposed investments through appropriate optimization, prioritization, and pacing of capital-related expenditures -distributors should also keep pace with technological changes and integrate cost-effective innovative projects and traditional planning needs such as load growth, asset condition and reliability	Yes	Exhibit 2-4-3 (s. 8.1)
Ch5 p19-20	Overall Plan - comparative expenditures by category over historical period, forecast impact of system investment on O&M, drivers of investments by category, information related to Dx system capability assessment	Yes	Exhibit 2-4-3 (s. 8.2; s. 8.3; s. 8.4; s. 8.5)

Ch 5 p20-27	Material Investments - For each project that meets materiality threshold set in Ch 2 p5 - general information - total capital, customer attachments, dates, risks, variances, REG investments - evaluation criteria - may include: efficiency, customer value, reliability, etc. - category specific requirements for each project - system access, system renewal, system service, general plant (as applicable)	Yes	Exhibit 2-4-3 (s. 8.2; s. 8.3; s. 8.4; s. 8.5)
EXHIBIT 3 - OPERATING REVENUE			
<i>Load and Revenue Forecasts</i>			
22	Explanation of causes, assumptions and adjustments for volume forecast. Economic assumptions and data sources for customer and load forecasts	Yes	Attachment 3-1-1(C)
22	Explanation of weather normalization methodology	Yes	Attachment 3-1-1(C)
22	Quantification of any impacts arising from the persistence of historical CDM programs as well as the forecasted impacts arising from new programs in the bridge and test years through the current 6-year CDM framework by customer class	Yes	Attachment 3-1-1(C)
23	Completed Appendix 2-IB; the customer and load forecast for the test year must be entered on RRWF, Tab 10	Yes	Attachment 3-1-1(A)
23 & 24	Multivariate Regression Model - rationale for choice, regression statistics, explanation of weather normalization methodology, sources of data for endogenous and exogenous variables, any binary variables used to either account for individual data points or to account for seasonal or cyclical trends or for discontinuities in the historical data, explanation of any specific adjustments made; data used in load forecast must be provided in Excel format, including derivation of constructed variables	Yes	Attachment 3-1-1(D)
24	NAC Model - rationale for choice, data supporting NAC variables, description of accounting for CDM including licence conditions, discussion of weather normalization considerations	Yes	Attachment 3-1-1(A)
24 & 25	CDM Adjustment - account for CDM in load forecast. Consider impact of persistence of historical CDM and impact of new programs. Adjustments may be required for IESO reported results which are full year impacts	Yes	Exhibit 3-1-1; Attachment 3-1-1(A)
25	CDM savings for LRAMVA balance and adjustment to load forecast; data by customer class and for both kWh and, as applicable, kW. Provide rationale for level of CDM reductions in 2019 load forecast	Yes	Exhibit 3-1-1
Addendum, Page 5	Completed Appendix 2-I Requirements - for 2019 and 2020 activity, only CDM projects subject to a contractual agreement entered between the distributor and a customer by April 30, 2019 under a former CFF program should be included in the proposed CDM manual adjustment to the load forecast for 2019 and 2020; relevant documentation provided to support manual adjustment, including corresponding CFF program, project timelines and project savings	Yes	Attachment 3-1-1(B)
<i>Accuracy of Load Forecast and Variance Analyses</i>			
25	Completed Appendix 2-IB	Yes	Attachment 3-1-1(A)
25	For customer/connection counts - identification as to whether customer/connection count is shown in year end or average format, year-over-year variances in changes of customer/connection counts with explanation of major changes, explanations of bridge and test year forecasts by rate class, for last rebasing variance analysis between last OEB-approved and actuals with explanations for material differences	Yes	Exhibit 3-1-2; Attachment 3-1-1(A)
25 & 26	For consumption and demand - explanation to support how kWh are converted to kW for applicable demand-billed classes, year-over-year variances in kWh and kW by rate class and for system consumption overall (kWh) with explanations for material changes in the definition of or major changes over time (should be done for both historical actuals against each other and historical weather-normalized actuals over time), explanations of the bridge and test year forecasts by rate class, variance analysis between the last OEB-approved and the actual and weather-normalized actual results	Yes	Attachment 3-1-1(C)
26	With respect to average consumption, for each rate class, distributors are to provide weather-actual and weather-normalized average annual consumption or demand per customer as applicable for the rate class for last OEB approved and historical, weather normalized average annual consumption or demand per customer for the bridge and test years, explanation of the net change in average consumption from last OEB-approved and actuals from historical, bridge and test years based on year-over-year variances and any apparent trends in data	Yes	Attachment 3-1-1(A)
<i>Other Revenue</i>			
26 & 27	Completed Appendix 2-H	Yes	Attachment 3-2-1(A)
27	Variance analysis - year over year, historical, bridge and test	Yes	Exhibit 3-2-1
27	Any new proposed specific service charges, or proposed changes to rates or application of existing specific service charges	Yes	Exhibit 8-7-1
27	Revenue from affiliate transactions, shared services, corporate cost allocation. For each affiliate transaction, identification of the service, the nature of the service provided to affiliate entities, accounts used to record the revenue and associated costs (Appendix 2-N)	Yes	Exhibit 3-2-1; Exhibit 4-2-1; Attachment 3-2-1(B)
28	Distributors must identify any discrete customer groups that may be materially impacted by changes to other rates and charges	N/A	
EXHIBIT 4 - OPERATING COSTS			
<i>Overview</i>			
28 & 29	Brief explanation of test year OM&A levels, cost drivers, significant changes, trends, inflation rate assumed, business environment changes	Yes	Exhibit 4-1-1; Exhibit 4-1-4
<i>Summary and Cost Driver Tables</i>			
29	Summary of recoverable OM&A expenses; Appendix 2-JA	Yes	Attachment 4-1-3(A)
29	Recoverable OM&A cost drivers; Appendix 2-JB	Yes	Attachment 4-1-4(A)
29	OM&A programs table; Appendix 2_JC	Yes	Attachment 4-1-3(B)
29	Recoverable OM&A Cost per customer and per FTE; Appendix 2-L	Yes	Attachment 4-1-3(C)
29	Identification of change in OM&A in test year in relation to change in capitalized overhead.	Yes	Exhibit 4-1-3
29	OM&A variance analysis for test year with respect to bridge and historical years; Appendix 2-D	Yes	Attachment 4-1-3(D)
<i>Program Delivery Costs with Variance Analysis</i>			
29 & 30	Completed Appendix 2-JC OM&A Programs Table - completed by program or major functions; include variance analysis limited to variances that are outliers, between test year and last OEB approved and most recent actuals, including an explanation for each significant change whether the change was within or outside the applicant's control and explanation of why	Yes	Attachment 4-1-3(B)
30	For each significant change within the applicant's control describe business decision that was made to manage the cost increase/decrease and the alternatives	Yes	Exhibit 4-1-4
<i>Workforce Planning and Employee Compensation</i>			
30	Employee Compensation - completed Appendix 2-K	Yes	Attachment 4-1-5(C)
30	Description of previous and proposed workforce plans, including compensation strategy	Yes	Exhibit 4-1-5; Attachment 4-1-5(A), (B), (D)
30	Discussion of the outcomes of previous plans and how those outcomes have impacted their proposed plans including an explanation of the reasons for all material changes to headcount and compensation. Explanation for all years includes: - year over year variances - basis for performance pay, eligible employee groups, goals, measures, and review process for pay-for-performance plans, - relevant studies (e.g. compensation benchmarking)	Yes	Exhibit 4-1-5; Attachment 4-1-5(A), (B), (C), (D), (G). Note: there were no material variances
30 & 31	Details of employee benefit programs including pensions for last OEB approved, historical, bridge and test; must agree with tax section	Yes	Attachment 4-1-5(A)
31	Most recent actuarial report on employee benefits, pension and OPEBs	Yes	Attachment 4-1-5(E)
31	Accounting method for pension and OPEBs; if cash method, sufficient supporting rationale. If proposing to change the basis in which pension and OPEB costs included in OM&A, quantification of impact of transition	Yes	Exhibit 4-1-5(A); Exhibit 9-1-3
<i>Shared Services and Corporate Cost Allocation</i>			
31	Identification of all shared services among affiliates and parent company; identification of the extent to which the applicant is a "virtual utility"	Yes	Exhibit 4-2-1
31 & 32	Allocation methodology for corporate and shared services, list of costs and allocators, including any third party review	Yes	Exhibit 4-2-1
32	Completed Appendix 2-N for service provided or received for historical, bridge and test; including reconciliation with revenue included in Other Revenue	Yes	Attachment 3-2-1(B); Exhibit 3-2-1
32	Shared Service and Corporate Cost Variance analysis - test year vs last OEB approved and most recent actual	Yes	Exhibit 4-2-1
32	Identification of any Board of Director costs for affiliates included in LDC costs	N/A	
<i>Non-Affiliate Services, One-Time Costs, Regulatory Costs</i>			
32	Purchased Non-Affiliated Services - file a copy of procurement policy (signing authority, tendering process, non-affiliate service purchase compliance)	Yes	Exhibit 4-2-2; Attachment 4-2-2(A), (B), (C)

32	For material transactions that are not in compliance with procurement policy, or that were undertaken pursuant to exceptions contemplated within the policy, an explanation as to why as well as a summary of the nature and cost of the product, and a description of the specific methodology used for selecting the vendor	Yes	Exhibit 4-2-2; Attachment 4-2-2(A)
32 & 33	Identification of one-time costs in historical, bridge, test; explanation of cost recovery in test (or future years). If no recovery of one-time costs is being proposed in the test year and subsequent IRM term, an explanation must be provided	Yes	Exhibit 4-2-3
33	Regulatory costs - breakdown of actual and forecast, supporting information related to CoS application (e.g. legal fees, consultant fees), proposed recovery (i.e. amortized?) Completed Appendix 2-M	Yes	Attachment 4-2-4(A)
LEAP, Charitable and Political Donations			
33	LEAP - the greater of 0.12% of forecasted service revenue requirement or \$2,000 should be included in OM&A and recovered from all rate classes	Yes	Exhibit 4-1-4; Exhibit 4-2-5; Exhibit 4-2-6
33	Detailed information for all contributions that are claimed for recovery	N/A	
33	Charitable Donations - the applicant must confirm that no political contributions have been included for recovery	Yes	Exhibit 4-2-6; Exhibit 4-2-7
Depreciation, Amortization and Depletion			
34	Explanations for any useful lives of an asset that are proposed that are not within the ranges contained in the Kinectrics Report	N/A	No new asset lives proposed outside Kinectrics' ranges
34	Depreciation, Amortization and Depletion details by asset group for historical, bridge and test years. Include asset amount and rate of depreciation/amortization. Must complete Appendix 2-C which must agree to accumulated depreciation in Appendix 2-BA under rate base	Yes	Exhibit 4-3-1; Attachment 4-3-1(B), (C), (D), (E), (F), (G), (H), (I), (J), (K); Differences are described in Exhibit 4-3-1
34	Identification of any Asset Retirement Obligations and associated depreciation, accretion expense	Yes	Exhibit 4-3-1
34	Identification of historical depreciation practice and proposal for test year. Variances from half year rule must be documented and supporting rationale provided	Yes	Exhibit 4-3-1
34 & 35	Copy of depreciation/amortization policy, or equivalent written description; summary of changes to depreciation/amortization policy since last CoS	Yes	Exhibit 2-4-4; Exhibit 4-3-1
35	Explanation of any deviations from the practice of depreciating significant parts or components of PP&E separately	N/A	No deviations
35	For any depreciation expense policy or asset service lives changes since its last rebasing application: - identification of the changes and detailed explanation for the causes of the changes, including any changes subsequent to those made by January 1, 2013 - use of Kinectrics study or another study to justify changes in useful life - list detailing all asset service lives tied to USoA, detail differences in TUL from Kinectrics and explain differences outside of minimum and maximum TUL range from Kinectrics; Appendix 2-BB	Yes	Exhibit 4-3-1
PILs and Property Taxes			
36	Completed version of the PILs model (PDF and Excel); derivation of adjustments for historical, bridge, test years	Yes	Exhibit 4-4-1; Attachment 4-4-1(D), (E), (F), (G), (H)
36	Supporting schedules and calculations identifying reconciling items	Yes	Exhibit 4-4-1; Attachment 4-4-1(I), (J)
36	Most recent federal and provincial tax returns	Yes	Attachment 4-4-1(A), (B), (C)
36	Financial Statements included with tax returns if different from those filed with application	N/A	Not different from Financial Statements
36	Calculation of Tax Credits; redact where required (filing of unredacted versions is not required)	Yes	Exhibit 4-4-1
36	Supporting schedules, calculations and explanations for other additions and deductions	Yes	Exhibit 4-4-1; Attachment 4-4-1(I), (J)
36	Completion of the integrity checks in the PILs Model	Yes	Exhibit 4-4-1
36	Explanation of how taxes other than income taxes or PILS (e.g. property taxes) are derived	Yes	Exhibit 4-4-1
Non-recoverable and Disallowed Expenses			
36	Exclude from regulatory tax calculation any non-recoverable or disallowed expenses	Yes	Exhibit 4-1-4; Exhibit 4-2-6
Conservation and Demand Management			
<p>LRAMVA - disposition of balance. Distributors must provide version 4 of LRAMVA Work Form in a working Excel file when making LRAMVA requests for remaining amounts related to CFF activity. An application for lost revenues should include: Participation and Cost reports in Excel format, made available by the IESO.</p> <p>An application for lost revenues should also provide the following:</p> <ul style="list-style-type: none"> - statement identifying the year(s) of new lost revenues and prior year savings persistence claimed in the LRAMVA disposition - statement confirming LRAMVA based on verified savings results supported by the distributors final CDM Report and Persistence Savings Report (both filed in Excel format) and a statement indicating use of most recent input assumptions when calculating lost revenue - summary table with principal and carrying charges by rate class and resulting rate riders - statement providing the disposition period; rationale provided for disposing the balance in the LRAMVA if one or more classes do not generate significant rate riders - statement confirming LRAMVA reference amounts, rationale for the distributors circumstances if LRAMVA threshold not used - rationale confirming how rate class allocations for actual CDM savings were determined by class and program (Tab 3-A of LRAMVA Work Form) - statement confirming whether additional documentation was provided in support of projects that were not included in distributors final CDM Annual Report (Tab 8 of LRAMVA Work Form as applicable) - for a distributor's streetlighting project(s) which may have been completed in collaboration with local municipalities, the following must be provided: Explanation of the methodology to calculate streetlighting savings; Confirmation whether the streetlighting savings were calculated in accordance with OEB-approved load profiles for streetlighting projects; Confirmation whether the streetlighting project(s) received funding from the IESO and the appropriate net-to-gross assumption used to calculate streetlighting savings 			
Addendum, Pages 6-9	For the recovery of lost revenues related to demand savings from street light upgrades, distributors should provide the following information: o Explanation of the forecast demand savings from street lights, including assumptions built into the load forecast from the last CoS application o Confirmation that the street light upgrades represent incremental savings attributable to participation in the IESO program, and that any savings not attributable to the IESO program have been removed (for example, other upgrades under normal asset management plans) o Confirmation that the associated energy savings from the applicable IESO program have been removed from the LRAMVA workform so as not to double count savings (for example, if requesting lost revenue recovery for the demand savings from a street light upgrade program, the associated energy savings from the Retrofit program have been subtracted from the Retrofit total) o Confirmation that the distributor has received reports from the participating municipality that validate the number and type of bulbs replaced or retrofitted through the IESO program o A table, in live excel format, that shows the monthly breakdown of billed demand over the period of the street light upgrade project, and the detailed calculations of the change in billed demand due to the street light upgrade project (including data on number of bulbs, type of bulb replaced or retrofitted, average demand per bulb).	Yes	Exhibit 4-5-1; Exhibit 4-5-2
EXHIBIT 5 - COST OF CAPITAL AND CAPITAL STRUCTURE			
Capital Structure			
40	Statement that LDC adopts OEB's guidelines for cost of capital and confirms that updates will be done. Alternatively - utility specific cost of capital with supporting evidence	Yes	Exhibit 5-1-1
40	Completed Appendix 2-OA for last OEB approved and test year	Yes	Attachment 5-1-1(A)
40	Completed Appendix 2-OB for historical, bridge and test years	Yes	Attachment 5-1-1(B)
40	Explanation for any changes in capital structure	N/A	No changes
Cost of Capital (Return on Equity and Cost of Debt)			
40	Calculation of cost for each capital component	Yes	Exhibit 5-1-1
40	Profit or loss on redemption of debt	N/A	
40	Copies of promissory notes or other debt arrangements with affiliates	Yes	Attachments 5-1-1(B), (C), (D), (E), (F), (G), (H), (I), (J), (K), (L)
40	Explanation of debt rate for each existing debt instrument	Yes	Exhibit 5-1-1

40	Forecast of new debt in bridge and test year - details including estimate of rate	Yes	Attachment 5-1-1(B)
40	If proposing any rate that is different from the OEB guidelines, a justification of the proposed rate(s), including key assumptions	Yes	Exhibit 5-1-1
41	Notional Debt - difference between actual debt thickness and deemed debt thickness attracts the weighted average cost of actual long-term debt rate (unless 100% equity financed)	N/A	
Not-for-Profit Corporations			
41	Not for Profit Corporations - evidence that excess revenue is used to build up operating and capital reserves	N/A	
41	Detailed calculation for test year revenue requirement based on its Reserve Requirement	N/A	
41	The proposed reserves and rationale for the need to establish each reserve, the time period of building up the reserves, and the procedure and policy of each reserve	N/A	
42	Description of the governance of the not-for-profit corporation	N/A	
42	If there are approved reserves from previous OEB decisions provide the following: -the limits of any capital and/or operating reserves as approved by the OEB, and identifying the decisions establishing these reserve accounts and their limits -the current balances of any established capital and/or operating reserves	N/A	
EXHIBIT 6 - REVENUE DEFICIENCY/SUFFICIENCY			
42	Calculation of delivery-related Revenue Deficiency/Sufficiency (excluding cost of power and associated costs): net utility income, rate base, actual return on rate base, indicated rate of return, requested rate of return, deficiency/sufficiency, gross deficiency/sufficiency. Deficiency/sufficiency must also be net of other costs (e.g. LV costs, RSVAs, smart meter or MIST meter expenditures/revenues and other DVA balances).	Yes	Exhibit 6-1-1
42 & 43	Summary of drivers for test year deficiency/sufficiency, how much each driver contributes; references in application evidence mapped to drivers	Yes	Exhibit 6-1-1
43	Impacts of any changes in methodologies to deficiency/sufficiency	N/A	No change in methodology
Revenue Requirement Work Form			
43	RRWF - in PDF and Excel. Revenue requirement, def/sufficiency, data entered in RRWF must correspond with other exhibits	Yes	Exhibit 6-1-1
43	If the enhanced RRWF cannot reflect a distributor's proposed rates accurately, the distributor must file its rate generator model	N/A	
43	Completed Appendices 2-JA, 2-JB, and 2-JC	Yes	Attachment 4-1-3(A), (B); Attachment 4-1-4(A)
EXHIBIT 7 - COST ALLOCATION			
Cost Allocation Study Requirements			
44	Completed cost allocation study using the OEB-approved methodology or a comparable model must be filed reflecting future loads and costs and be supported by appropriate explanations and live Excel spreadsheets. Sheets 11 and 12 of the RRWF must also be completed. Live Excel version of 2017 cost allocation model will be filed (updated load profiles or scaled version of HONI CAIF). Model must be consistent with test year load forecast, changes to customer classes and load profiles.	Yes	Exhibit 6-1-1(A), (B), (C), (D), (E); Exhibit 7-1-1; Attachment 7-1-1(A), (B)
44	Explanation provided if a distributor is unable to update its load profiles and confirm that it intends to put plans in place to update its load profiles the next time a cost allocation model is filed	Yes	Exhibit 7-1-1
45	Description of weighting factors, and rationale for use of default values (if applicable)	Yes	Exhibit 7-1-1; Attachment 7-1-1(B)
45	Hard copy of sheets I-6, I-8, O-1 and O-2 (first page)	Yes	Attachment 7-1-1(A)
45 & 46	Host Distributor only - evidence of consultation with embedded Dx - statement regarding embedded Dx support for approach to allocation of costs - if embedded Dx is separate class - class in cost allocation study and RRWF, Sheet 11 - if new embedded Dx class - rationale and supporting evidence (cost of serving, load served, asset ownership information, distribution charges); include in cost allocation study and RRWF, Sheet 11 - if embedded Dx billed as GS customer - , include with the GS class in cost allocation model and Appendix 2-P. Provide cost of serving, load served, asset ownership information, distribution charges, appropriateness of rate class. File Appendix 2-Q.	N/A	
46	Unmetered Loads (including Street Lighting) - Confirmation of communication with unmetered load customers when proposing changes to the level of the rates and charges or the introduction of new rates and charges	N/A	
46 & 47	microFIT - if the applicant believes that it has unique circumstances which would justify a certain rate, appropriate documentation must be provided	Yes	Exhibit 8-7-1
47	Standby Rates - if seeking approval on final basis, provide evidence that affected customers have been advised. If seeking changes to standby charges, provide rationale and evidence that affected customer have been advised.	N/A	
47	New customer class or eliminated customer class - rationale and restatement of revenue requirement from previous CoS	N/A	
Class Revenue Requirements			
48	To support a proposal to rebalance rates, the distributor must provide information on the revenue by class that would apply if all rates were changed by a uniform percentage. Ratios must be compared with the ratios that will result from the rates being proposed by the distributor.	Yes	Exhibit 6-1-1; Attachments 6-1-1(A), (B), (C), (D), (E); Exhibit 7-1-1; Attachment 7-1-1(A); Exhibit 8-1-1
Revenue to Cost Ratios			
48	If R:C ratios outside deadband based on model - distributors must include cost allocation proposal to bring them within the OEB-approved ranges. In making any such adjustments, distributors should address potential mitigation measures if the impact of the adjustments on the rates of any particular class or classes is significant.	Yes	Exhibit 7-1-1; Attachment 7-1-1(A)
49	If Cost Allocation Model other than OEB model used - exclude LV, exclude DVA such as smart meters	N/A	
EXHIBIT 8 - RATE DESIGN			
50	Monthly fixed charges - 2 decimal places; variable charges - 4 decimal places	Yes	Exhibit 8-1-1
Fixed Variable Proportion			
50	The following is to be provided in relation to the fixed/variable proportion of proposed rates: -Current F/V with supporting info -Proposed F/V proportion with explanation for any changes (billing determinants from proposed load forecast) -Comparison between current and proposed monthly fixed charges with the floor and ceiling as in cost allocation study Analysis must be net of rate adders, funding adders, and rate riders	Yes	Exhibit 8-1-1
Rate Design Policy			
50 & 51	LDCs must propose changes to residential rates consistent with policy to transition to fully fixed monthly distribution service charge.	Yes	Exhibit 8-2-1
51	Proposal follows approach set out in Tab 12 of RRWF	Yes	Exhibit 8-2-1
51	If applicable, distributor with seasonal residential class must propose identical rate design treatment for such a class	N/A	
RTSRs			
51	Retail Transmission Service Rate Work Form - PDF and Excel	Yes	Attachment 8-3-1(A)
51	RTSR information must be consistent with working capital allowance calculation	Yes	Exhibit 2-3-1; Exhibit 8-3-1
Retail Service Charges			
51 & 52	If proposing changes to Retail Service Charges or introduction of new rates and charges - evidence of consultation and notice	N/A	
Regulatory Charges			
52	Wholesale Market Service Rate - reflect current approved rate in application or justify otherwise	Yes	Exhibit 8-5-1
Specific Service Charges			
52 & 53	Specific Service Charge description/purpose/reason for new and revised SSC; calculations to support charges	Yes	Exhibit 8-7-1; Attachment 8-7-1(A)
53	Identification in the Application Summary all proposed changes that will have a material impact on customers, including charges that may affect a discrete group.	Yes	Exhibit 8-7-1; Attachment 8-7-1(A)
53	Identification of any rates and charges in Conditions of Service that do not appear on tariff sheet. Explain nature of costs, provide schedule outlining revenues or capital contributions 2012-2015, bridge and test years. Whether these charges should be included on tariff sheet	Yes	Exhibit 3-2-1; Exhibit 8-7-1
53	Ensure revenue from SSCs corresponds with Operating Revenue evidence	Yes	Exhibit 3-2-1; Exhibit 8-7-1
Wireline Pole Attachment Charge			
53	LDC without a distributor-specific charge will charge the province-wide pole attachment charge of \$28.09 from September 1, 2018 to December 31, 2018. This charge will increase to \$43.63 effective January 1, 2019.	Yes	Exhibit 3-2-1; Exhibit 8-7-1

54	Record the excess incremental revenue as of September 1, 2018 until the effective date of its rebased rates in a new variance account related to pole attachment charge	N/A	
Addendum, Page 9	If an LDC chooses to apply for a custom charge, it must file a completed version of the OEB's Wireline Pole Attachment Work Form, and include the following information as part of their application: statement confirming the proposed distributor-specific wireline pole attachment charge; statement discussing the main cost drivers, including rationale; a table summarizing key inputs in the rate calculation, and a statement confirming the RRR data and pre-tax weighted cost of capital are consistent; confirmation of the total number of poles and joint use poles in the rate calculation, and a table outlining the rate of pole replacements and percentage of poles depreciated over the past 5 years; confirmation of the number of attaches that are specific to the distributor's service territory, a description of the types of poles and discussion of contractual arrangements with other entities that affect the number of attachments, including overlapping attachments; description of activities performed by the distributor to directly accommodate third party attaches, should include discussion of methodology, costs and data sources to calculate each component of direct costs, detailed calculations of total administration and LOP costs, including staff time and labour rates, as applicable; Distributors must use utility-specific costs to determine the LDC-specific Power Deduction Factor and LDC-specific Maintenance Allocation Factor applicable to third parties. If distributors choose to adopt the default factors in their application of a custom charge, distributors are still required to complete Table 8 and Table 10-a of the Pole Attachment Workform to substantiate the applicability of the default factors that were used in calculating the provincially approved charge.	N/A	
Low Voltage Service Rates			
55	Forecast of LV cost, sum of host distributors charges	Yes	Exhibit 8-8-1
55	Low Voltage Cost (historical, bridge, test), variances and explanations for substantive changes	Yes	Exhibit 8-8-1
55	Support for forecast LV, e.g. Hydro One Sub-Transmission charges	Yes	Exhibit 2-3-1; Exhibit 8-8-1
55	Allocation of LV cost to customer classes (typically proportional to Tx connection revenue)	Yes	Exhibit 8-8-1
55	Proposed LV rates by customer class	Yes	Exhibit 8-8-1
Smart Meter Entity Charge			
55	Distributor must follow accounting guidance provided on March 23, 2018	Yes	Exhibit 8-6-1
Loss Factors			
55	Proposed SFLF and Total Loss Factor for test year	Yes	Exhibit 8-9-1
56	Statement as to whether LDC is embedded including whether fully or partially	Yes	Exhibit 8-9-1
56	Study of losses if required by previous decision	N/A	No Study Requested
56	3-5 years of historical loss factor data - Completed Appendix 2-R	Yes	Exhibit 8-9-1
56	If proposed loss factor >5%, explanation and action plan to reduce losses going forward	N/A	Loss Factor is not >5%
56	Explanation of SFLF if not standard	N/A	
Tariff of Rates and Charges			
Addendum, Page 10	Current and proposed Tariff of Rates and Charges filed in the Tariff Schedule/Bill Impacts Model - must be filed in Excel format	Yes	Attachment 8-10-1(A)
56	Explanation and support of each change in the appropriate section of the application	N/A	
56	Explanation of changes to terms and conditions of service if changes affect application of rates	N/A	
Revenue Reconciliation			
56	Calculations of revenue per class under current and proposed rates; reconciliation of rate class revenue and other revenue to total revenue requirement (i.e. breakout volumes, rates and revenues by rate component etc.)	Yes	Attachment 6-1-1(A), (B), (C), (D), (E); Exhibit 8-11-1
56 & 57	Completed RRWF - Sheet 13 - rates and charges entered on this sheet should be rounded to the same decimal places as tariff	Yes	Attachment 6-1-1(A), (B), (C), (D), (E)
Bill Impact Information			
57	Completed Tariff Schedule and Bill Impacts Model. Bill impacts must identify existing rates, proposed changes to rates, and detailed bill impacts (including % change in distribution excluding pass through costs - Sub-Total A, % change in distribution - Sub-Total B, % change in delivery - Sub-Total C, and \$ change in total bill)	Yes	Exhibit 8-10-1; Attachment 8-10-1(A), (B); Exhibit 8-12-1; Attachment 8-12-1(A)
57	Impact of changes resulting from the as-filed application on representative samples of end-users (i.e. volume, % rate change and revenue). Commodity and regulatory charges held constant	Yes	Attachment 8-10-1(A), (B); Exhibit 8-12-1; Attachment 8-12-1(A)
57	Rates and charges input in the tariff schedule and Bill Impacts Model rounded to the decimal places as shown on the existing tariff	Yes	Attachment 8-10-1(A), (B); Attachment 8-12-1(A)
57	Bill impacts provided for typical customers and consumption levels. Must provide residential 750 kWh, residential at the lowest 10th percentile and GS<50 2,000 kWh. Bill impacts must be provided for a range of consumption levels relevant to the service territory.	Yes	Attachment 8-10-1(A), (B); Exhibit 8-12-1; Attachment 8-12-1(A)
57	If applicable, for certain classes where one or more customers have unique consumption and demand patterns, the distributor must show a typical impact and provide an explanation	Yes	Attachment 8-10-1(A), (B); Exhibit 8-12-1; Attachment 8-12-1(A)
Rate Mitigation			
58	Evidence showing that the monthly service charge would not rise by more than \$4 per year due only to the rate design change, and that the total bill impact, reflecting all proposed changes in the application, will not exceed 10%. If either of these criteria is not met, some form of mitigation may be required (i.e. extending transition period).	Yes	Hydro Ottawa transitioned to a fully fixed charge effective January 1, 2020; Attachment 8-10-1(A), (B); Exhibit 8-12-1; Attachment 8-12-1(A)
58	Evaluation of bill impact for residential customer at 10th consumption percentile. Describe methodology for determination of 10th consumption percentile. File mitigation plan for whole residential class if impact >10% for these customers.	N/A	Hydro Ottawa transitioned to a fully fixed charge effective January 1, 2020; rate impacts are below 10%
59	Mitigation plan if total bill increase for any customer class is >10% including: specification of class and magnitude of increase, description of mitigation measures, justification, revised impact calculation. The Tariff Schedule and Bill Impacts Model must reflect any mitigation plan proposed.	Yes	Exhibit 7-1-1
59	Rate Harmonization Plans, if applicable - including impact analysis	N/A	Rate Harmonization Plans not required
EXHIBIT 9 - DEFERRAL AND VARIANCE ACCOUNTS			
60	List of all outstanding DVA and sub-accounts; provide description of DVAs that were used differently than as described in the APH	Yes	Exhibit 9-1-1
60	Completed DVA continuity schedule for period following last disposition to present - live Excel format	Yes	Attachment 9-1-1(A)
60	Confirm use of interest rates established by the OEB by month or by quarter for each year	Yes	Exhibit 9-1-1
60	Explanation if account balances in continuity schedule differs from trial balance in RRR and AFS	Yes	Exhibit 9-1-1; Attachment 9-1-1(A); Exhibit 9-1-3; Exhibit 9-1-4
60	Identification of Group 2 accounts that will continue/discontinue going forward, with explanation	Yes	Exhibit 9-1-1; Exhibit 9-1-3; Exhibit 9-2-1
60	Statement as to any new accounts, and justification.	Yes	Exhibit 9-2-1
60 & 61	Statement whether any adjustments made to DVA balances previously approved by OEB on final basis; explanation, amount of adjustment and supporting documents	Yes	Exhibit 9-1-1
61	Breakdown of energy sales and cost of power by USoA - as reported in AFS mapped and reconciled to USoA. Provide explanation if making a profit or loss on commodity.	Yes	Exhibit 9-1-2
61	Statement confirming that IESO GA charge is pro-rated into RPP and non-RPP; provide explanation if not pro-rated.	Yes	Exhibit 9-1-2
Account 1575, IFRS-CGAAP Transitional PP&E Amounts			
Addendum, Page 10	For applicants that have already rebased under revised CGAAP, but have made further material transitional changes, these impacts should be recorded in Account 1575, and an explanation provided	N/A	Not requesting addition transitioning adjustments
Retail Service Charges			
61 & 62	Retail Service Charges - material balance in 1518 or 1548 - confirm variances are incremental costs of providing retail services; identify drivers for balances - provide schedule identifying all revenues and expenses listed by USoA for 2013, actual/forecast for bridge and test year - state whether Article 490 of APH has been followed; explanation if not followed	Yes	Attachment 9-1-1(A); Exhibit 9-1-5
62	Retail Service Charges - zero balance in 1518 or 1548 - state whether Article 490 of APH has been followed; explanation if not followed	Yes	Exhibit 9-1-5
Disposition of Deferral and Variance Accounts			
62	Identify all accounts for which LDC is seeking disposition; identify DVA for which LDC is not proposing disposition and the reasons why	Yes	Attachment 9-1-1(A); Exhibit 9-1-3; Exhibit 9-1-4; Exhibit 9-3-1
62	Statement whether DVA balances before forecasted interest match the last AFS; explain any variances	Yes	Exhibit 9-1-1; Attachment 9-1-1(A); Exhibit 9-1-3; Exhibit 9-1-4; Exhibit 9-3-1

62	Provide an explanation of variance > 5% between amounts proposed for disposition and amounts reported in RRR for each account.	Yes	Exhibit 4-5-2; Exhibit 9-1-1; Attachment 9-1-1(A); Exhibit 9-1-3; Exhibit 9-1-4; Exhibit 9-3-1
62	Provide explanations if variances are < 5% threshold if the variances in question relate to: (1) matters of principle (i.e. conformance with the APH or prior OEB decisions, and prior period adjustments); and/or, (2) the cumulative effect of immaterial differences over several accounts total to a material difference between what is proposed for disposition in total before forecasted interest and what is recorded in the RRR filings	N/A	
62	For any utility specific accounts requested for disposition, supporting evidence showing how balance is derived and relevant accounting order	Yes	Exhibit 9-1-3
62	Disposition of residual balances for vintage Account 1595 are only done once - distributors expected to seek disposition of the balance a year after a rate rider's sunset date has expired. No further dispositions of these accounts are generally expected unless justified by the distributor	N/A	No Account 1595 disposal is being requested
62	Proposed mechanisms for disposition with all relevant calculations: allocation of each account (including rationale), billing determinants for recovery purposes in accordance with Rate Design Policy	Yes	Exhibit 4-5-2; Attachment 9-1-1(A); Exhibit 9-1-3; Exhibit 9-3-1
62	Rate riders where volumetric rider is \$0.0000 for one or more classes not included in the tariff for those classes	Yes	Exhibit 8-10-1; Attachment 8-10-1(A), (B)
63	Propose rate riders for recovery or refund of balances that are proposed for disposition. The default disposition period is one year; if the applicant is proposing an alternative recovery period must provide explanation.	Yes	Exhibit 9-3-1
63	Establish separate rate riders to recover balances in the RSVA's from Market Participants who must not be allocated the RSVA balances related to charges for which the MP's settle directly with the IESO.	N/A	No Group 1 Accounts are being proposed for disposition; 2018 audited balances were disposed as part of 2020 rate application
63 & 64	Proposed disposition of Account 1580 sub-account CBR Class B in accordance with the CBR Accounting Guidance. - embedded distributors who are not charged CBR (therefore no balance in sub-account CBR Class B) must indicate this is the case for them - In the DVA continuity schedule, applicants must indicate whether they serve any Class A customers during the period where Account 1580 CBR Class B sub-account balance accumulated. - Account 1580 sub-account CBR Class A is not to be disposed through rates proceedings but rather follow the OEB's accounting guidance. - The DVA continuity schedule will allocation the portion of Account 1580 sub-account CBR Class B allocated to customers who transitioned between Class A and Class B based on consumption levels	N/A	No Group 1 accounts are being proposed for disposition at this time, as 2018 audited balances were disposed are part of 2020 rate application
Global Adjustment			
64	Establishment of a separate rate rider included in the delivery component of the bill that would apply prospectively to Non-RPP Class B customers when clearing balances from the GA Variance Account	N/A	
Addendum, Pages 10-11			
	GA Analysis Workform in live Excel format and responses to questions in Appendix A of the GA Analysis Workform Instructions; explain discrepancies between actual and expected balance; unexplained discrepancies for each year greater than +/- 1% of total annual IESO GA charges considered material	Yes	Attachment 9-3-1(A), (B)
65 & 66	Description of settlement process with IESO or host distributor, specify GA rate used for each rate class, itemize process for providing estimates and describe true-up process, details of method for estimating RPP and non-RPP consumption, treatment of embedded generation/distribution. If distributor uses the actual GA rate to bill non-RPP Class B customers, a proposal must be made to exclude these customer classes from the allocations of the balance of Account 1589 and the calculation of the resulting rate riders	Yes	Exhibit 9-1-2
66	RPP Settlement True-Up - distributors to follow guidance in May 23, 2017 letter pertaining to the period that is being requested for disposition for Accounts 1588 and 1589	Yes	Exhibit 9-1-3
66 & 67	Certification by the CEO, CFO or equivalent that distributor has robust processes and internal controls in place for the preparation, review, verification and oversight of account balances being proposed for disposition	Yes	Exhibit 1-1-8; Exhibit 9-1-2
Establishment of New Deferral and Variance Accounts			
67	New DVA - information provided which addresses that the requested DVA meets the following criteria: causation, materiality, prudence; include draft accounting order.	Yes	Exhibit 9-2-1

TOTAL "NO"

0

ADMINISTRATION

1. INTRODUCTION

In accordance with the Ontario Energy Board's ("OEB") *Chapter 2 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019 ("Filing Requirements"), this Schedule provides information relating to the administration of this Application.

2. PRIMARY CONTACT INFORMATION

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3. LEGAL REPRESENTATION

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4. INTERNET ADDRESS & MEDIA ACCOUNTS

Hydro Ottawa Limited's ("Hydro Ottawa") main webpage is the following: www.hydroottawa.com.

Regulatory documents will be available in the Active Applications tab of the Regulatory Affairs section of the website: <https://hydroottawa.com/about-us/regulatory-affairs/active-applications>.

The social media accounts maintained by Hydro Ottawa are as follows:

- Twitter – twitter.com/hydroottawa
- Facebook – facebook.com/hydroottawa
- Instagram – Instagram.com/hydroottawa
- YouTube – youtube.com/hydroottawa
- LinkedIn – linkedin.com/company/hydro-ottawa

5. MATERIAL IMPACTS ON CUSTOMERS

While the proposals set forth in this Application will change the rates for all customer classes, there are no proposed changes that will result in bill impacts which exceed the 10% bill impact threshold and which would thus have a material impact on customers.

6. MATERIALITY THRESHOLD

As per the Filing Requirements, default materiality threshold is defined as \$1.0M for distributors with a revenue requirement greater than \$200.0M. Hydro Ottawa's service revenue requirement for 2021 is \$214.9M. Consequently, the default materiality threshold is \$1.0M. However, consistent with the approach taken in its prior rebasing application,¹ Hydro Ottawa has generally explained variances based on a materiality threshold of \$750K for purposes of this Application.

Hydro Ottawa notes that the \$1.0M materiality threshold will apply to the utility for any future Z factor application.

¹ Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-setting Distribution Rate Application*, EB-2015-0004 (April 29, 2015).

7. PUBLICATION AND NOTICE

Hydro Ottawa recommends that the Notice of Hearing for this Application be published in the *Ottawa Citizen* and *Le Droit* newspapers, both of which are paid daily publications. The *Ottawa Citizen* is the English language newspaper serving Ottawa and the surrounding region, including the Village of Casselman. It has a total daily circulation of approximately 80,200. *Le Droit* is the French language newspaper serving Ottawa and the surrounding region, including the Village of Casselman. Its total daily circulation is approximately 30,000.

8. BILL IMPACTS

Table 1 and Table 2 provide a summary of distribution bill impacts and total bill percentage impact for a typical residential customer using 750 kWh per month and for a General Service < 50 kW customer using 2,000 kWh per month.

Table 1 – Residential Bill Impact

Residential (750 kWh)	2021	2022	2023	2024	2025
Change in Distribution Charge (\$)	\$1.31	\$2.18	\$1.84	\$0.98	\$0.61
Change in Distribution Charge (%)	4.57%	7.28%	5.73%	2.88%	1.75%
Total Bill % change	1.32%	1.54%	1.28%	0.68%	0.43%

Table 2 – General Service < 50 kW Bill Impact

General Service < 50 kW (2000 kWh)	2021	2022	2023	2024	2025
Change in Distribution Charge (\$)	\$1.74	\$5.07	\$5.15	\$3.05	\$2.25
Change in Distribution Charge (%)	2.44%	6.94%	6.59%	3.66%	2.61%
Total Bill % change	0.65%	1.37%	1.37%	0.81%	0.59%

9. FORM OF HEARING REQUESTED

Hydro Ottawa requests that this Application be disposed of by way of an oral hearing.

10. REQUESTED EFFECTIVE DATE

Hydro Ottawa is requesting approval of the proposed distribution rates and other charges set forth in this Application effective January 1, 2021.

11. CHANGES TO METHODOLOGIES USED IN PREVIOUS APPLICATIONS

For certain business processes and for certain components in this Application, the methodology employed by Hydro Ottawa has changed since the filing of the utility's previous rebasing application. These changes are as follows:

- Hydro Ottawa has adopted three new accounting standards, all of which are in the International Financial Reporting Standard ("IFRS") family of standards: IFRS 15 – *Revenue from Contracts with Customers*, IFRS 9 – *Financial Instruments*, and IFRS 16 – *Leases*. Please see Exhibit 1-3-10: Changes to Accounting Policies Used in Previous Applications for more information.
- With the goal of achieving greater alignment with the definitions utilized in the *Chapter 5 Filing Requirements for Electricity Transmission and Distribution Applications*, Hydro Ottawa has restructured certain classifications within its capital program. For example, the utility has shifted both the Metering Program and Station Enhancements Program to the System Service category, as the projects within these programs are more aligned with the drivers under this category. For additional examples and details, please see Exhibit 2-4-3: Distribution System Plan.
- As noted in section 16 below, Hydro Ottawa is requesting changes to the years of useful life for certain assets within the General Plant category. Please see Exhibit 2-4-4: Capitalization Policy and Exhibit 4-3-1: Depreciation, Amortization, Disposal for more information.
- In light of the modifications to the Conservation First Framework, this Application is proposing to rate-base certain conservation and demand management activities for all classes of customers, with a focus on commercial customers. For details, please refer to Exhibit 4-1-6: Conservation and Demand Management.
- Various modifications have been made to the pricing methodology and the scope of Service Level Agreements governing the provision of shared services and allocation of costs between Hydro Ottawa and its affiliates. Please see Exhibit 4-2-1: Shared Services and Corporate Cost Allocation.

- In accordance with Bill C-97, which received Royal Assent in June 2019, Hydro Ottawa has implemented new rules permitting accelerated capital cost allowance for eligible capital assets. Please see Exhibit 4-4-1: Payments in Lieu of Taxes for more information.
- In this Application, Hydro Ottawa has completed a cost allocation study based upon the OEB-approved model. The utility has made minor adjustments to the load profile data for purposes of cost allocation, as further explained in Exhibit 7-1-1: Cost Allocation.
- Hydro Ottawa is proposing to use updated Loss Adjustment Factors for the 2021-2025 period. Please see Exhibit 8-9-1: Loss Adjustment Factors for more information.

12. OEB DIRECTIONS FROM PREVIOUS DECISIONS AND/OR ORDERS

Below is a summary of previous OEB directives and a description of how such directives are addressed by Hydro Ottawa in this Application.

12.1. DIRECTIVE #1

In EB-2012-0383, the OEB indicated that unmetered load (kW) and consumption (kWh) data should ultimately be used to update load profile data for the purpose of the distributor's next cost allocation filing with the OEB, which occurs during the distributor's next cost of service application to the OEB. Subsequently, in a letter dated June 12, 2015, the OEB stated that "[t]here may be merit in updating load profiles to be more reflective of an individual distributor's circumstances. The OEB expects individual distributors to be mindful of material changes to load profiles and to propose updates in their respective cost of service or Custom IR applications when warranted."²

In this Application, details on updated load profiles can be found in Exhibit 7-1-1: Cost Allocation.

² Ontario Energy Board, Letter re: *Issuance of New Cost Allocation Policy for Street Lighting Rate Class* (June 12, 2015), page 4.

1 **12.2. DIRECTIVE #2**

2 On August 21, 2014, amendments to the *Distribution System Code* ("DSC") came into force
3 which require a distributor to install a MIST meter on any installation that is forecast by the
4 distributor to have a monthly average peak demand during a calendar year of over 50 kW.³ The
5 deadline for distributors to comply with this DSC provision is August 21, 2020. Hydro Ottawa
6 confirms that it is on track to achieve compliance with this requirement within the prescribed
7 timeline.

8
9 **12.3. DIRECTIVE #3**

10 In its Decision rendered in EB-2015-0004 on February 25, 2016 (in the matter of a pole
11 attachment charge for Hydro Ottawa for the utility's 2016-2020 Custom Incentive Rate-Setting
12 ["Custom IR"] term), the OEB stated that Hydro Ottawa should use the pole attachment rate
13 approved in the Decision, "subject to any direction from the OEB regarding the implementation
14 of any changes resulting from the Policy Review."⁴

15
16 The OEB's policy review culminated with the issuance of the *Report of the Board on Wireline*
17 *Pole Attachment Charges* on March 22, 2018.⁵ In this report, the OEB established a policy that
18 "at the time of rebasing, LDCs may choose to select the provincially approved charge or to use
19 utility-specific costs and pursue an LDC-specific pole attachment charge that better reflects their
20 cost structures."⁶

21
22 As directed, during its 2016-2020 rate term, Hydro Ottawa has maintained use of the pole
23 attachment charge that was approved as part of the adjudication of its 2016-2020 Custom IR
24 application. By way of this Application, Hydro Ottawa is proposing to use the OEB's generic pole
25 attachment rate for the 2021-2025 rate period. For additional information, please see Exhibit
26 8-7-1: Specific Service Charges.

³ Ontario Energy Board, *Notice of Amendment to a Code: Amendments to the Distribution System Code*, EB-2013-0311 (May 21, 2014).

⁴ Ontario Energy Board, *Decision and Rate Order on Pole Attachment Charge*, EB-2015-0004 (February 25, 2016) page 15.

⁵ Ontario Energy Board, *Report of the Ontario Energy Board - Wireline Pole Attachment Charges*, EB-2015-0304 (March 22, 2018).

⁶ *Ibid*, page 52.

1 **12.4. DIRECTIVE #4**

2 In the aforementioned decision rendered in EB-2015-0004 with respect to a pole attachment
3 charge for Hydro Ottawa (hereafter referred to as the "Pole Attachment Decision"), the OEB
4 directed Hydro Ottawa to issue invoices for the difference between the interim rate of \$22.35
5 and the approved pole attachment rate of \$53.00, should the utility have already issued
6 invoices. Hydro Ottawa issued invoices for the pole attachment difference where invoices had
7 already been issued. Please see Exhibit 6-1-1: Calculation of Revenue Deficiency or Sufficiency
8 for the adjustment to base revenue requirement related to the Pole Attachment Decision.
9

10 **12.5. DIRECTIVE #5**

11 In the Decision rendered in EB-2015-0004 on December 22, 2015 (in the matter of Hydro
12 Ottawa's 2016-2020 Custom IR application), the OEB established a variance account for "the
13 difference between revenue based on the final pole attachment charge yet to be approved by
14 the OEB for Hydro Ottawa for 2016, and revenue based on the pole attachment charge
15 underpinning the distribution rates approved by this order (i.e. \$57)."⁷ As instructed by the Pole
16 Attachment Decision and approved as part of Hydro Ottawa's 2017 rate adjustment application,
17 the amount was collected as part of Hydro Ottawa's 2017 rates.⁸ For additional information,
18 please see Exhibit 9-1-3: Group 2 Accounts.
19

20 **12.6. DIRECTIVE #6**

21 In the Decision rendered in EB-2018-0044 on December 13, 2018 (in the matter of Hydro
22 Ottawa's 2019 rate adjustment application), the OEB stated that it expected Hydro Ottawa to
23 continue reporting on both the Efficiency Adjustment Mechanism and the Earnings Sharing
24 Mechanism in the utility's 2021 application.⁹ Hydro Ottawa is therefore reporting on the 2019
25 Efficiency Adjustment Mechanism and 2018 Earnings Sharing Mechanism deferral accounts as
26 part of this Application. For additional details, please see Exhibit 9-1-3: Group 2 Accounts.

⁷ Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015), page 7.

⁸ Hydro Ottawa Limited, *2017 Electricity Distribution Rate Application*, EB-2019-0046 (August 12, 2019).

⁹ Ontario Energy Board, *Decision and Rate Order*, EB-2019-0046 (December 17, 2019), page 6.

1 **12.7. DIRECTIVE #7**

2 In the aforementioned Decision rendered in EB-2018-0044, the OEB instructed Hydro Ottawa to
3 provide an update on the resolution to an Industrial Conservation Initiative (“ICI”) enrollment
4 matter and report on any necessary adjustments.¹⁰ Hydro Ottawa has engaged the OEB on this
5 matter and, at this time, is not requesting any adjustments. As part of its Decision and Order on
6 Hydro Ottawa’s 2020 rate adjustment application, the OEB stated, in reference to this directive,
7 that “the OEB will proceed to finalize the balances for 2017 and 2018, and in light of the OEB’s
8 October 31, 2019 letter regarding Adjustments to Correct for Errors in Electricity Distributor
9 ‘Pass-Through’ Variance Accounts After Disposition, the OEB expects that any revisions to
10 previous balances relating to this matter will be accommodated through the disposition of future
11 variance account balances.”¹¹

12
13 **12.8. DIRECTIVE #8**

14 On February 14, 2019, the OEB issued a Decision and Order directing electricity distributors –
15 including distributors with utility-specific charges – to implement new Retail Service Charges.¹²
16 Hydro Ottawa implemented the new charges as directed and has used the updated rates as a
17 placeholder as part of this Application. For additional details, please see Exhibit 8-4-1: Retail
18 Service Charges.

19
20 In addition, any electricity distributor which had discontinued the use of Account 1518 and
21 Account 1548 was to establish a new 1508 Sub-Account to record the difference in the
22 incremental revenue as a result of the Decision and Order.¹³ As Hydro Ottawa had discontinued
23 the use of Account 1518 and Account 1548, a new Sub-Account to 1508 has been established.
24 In accordance with OEB direction, Hydro Ottawa started tracking the incremental revenue in this
25 new Sub-Account effective May 1, 2019. For additional details, please see Exhibit 9-1-3: Group
26 2 Accounts.

¹⁰ Ontario Energy Board, *Decision and Rate Order*, EB-2018-0044 (December 13, 2018), page 15.

¹¹ Ontario Energy Board, *Decision and Rate Order*, EB-2019-0046 (December 17, 2019), page 13.

¹² Ontario Energy Board, *Decision and Order in the matter of energy retailer service charges effective May 1, 2019*, EB-2015-0304 (February 14, 2019).

¹³ *Ibid*, Schedule B, page 1.

1 **12.9. DIRECTIVE #9**

2 In its Decision rendered in EB-2019-0077 on October 17, 2019, the OEB approved an
3 application submitted by Hydro One Networks Inc. ("HONI") and Hydro Ottawa, pursuant to
4 section 92 of the *Ontario Energy Board Act, 1998*, seeking leave to construct the Power South
5 Nepean Project.¹⁴ The project consists of two key components: (1) a new municipal transformer
6 station to be constructed by Hydro Ottawa; and (2) upgrades to existing transmission facilities,
7 as well as construction of a segment of new transmission line by HONI. The leave granted was
8 subject to the OEB's standard conditions of approval, one of which was that "[t]he applicants
9 shall advise the OEB of any proposed material change in the project, including but not limited to
10 changes in: the proposed route, construction schedule, the necessary environmental
11 assessment approvals, and all other approvals, permits, licences, certificates and rights
12 required to construct the proposed facilities."¹⁵

13
14 By way of this Application, Hydro Ottawa is informing the OEB of minor modifications to the
15 project's construction schedule. Whereas the original schedule had contemplated an in-service
16 date of November 2021, this date has subsequently been revised to Q2 2022. In addition, the
17 name of the station has been changed from South Nepean Municipal Transformer Station
18 ("MTS") to Cambrian MTS. For additional information, please see Attachment 2-4-3(E): Material
19 Investments.

20
21 **13. CONDITIONS OF SERVICE**

22 The current version of Hydro Ottawa's Conditions of Service is available for viewing on the
23 following page of the utility's website:

24 <https://hydroottawa.com/about-us/policies/conditions-service>.

25
26 Since the filing of Hydro Ottawa's last rebasing application, there have been two sets of
27 revisions to the utility's Conditions of Service. Version 6 came into effect on April 1, 2017, while

¹⁴ Ontario Energy Board, *Decision and Order*, EB-2019-0077 (October 17, 2019).

¹⁵ *Ibid*, Schedule B.

Version 7 came into effect on April 1, 2019. A summary of the major changes to both versions can be found below in Table 3 below.

Table 3 – Summary of Changes to Hydro Ottawa’s Conditions of Service (2016-2019)

Section	Subject	Details	Implementation Date
1.6	Customer Rights and Responsibilities	Updated to identify customer rights	April 1, 2019
1.7	Distributor Rights and Responsibilities	Added distributor responsibilities to line up with the OEB’s Consumer Charter	April 1, 2019
2.1	Connection	Added provisions for a Design Deposit for preparing and Offer to Connect, as well as a potential material and construction deposit for project-specific equipment.	April 1, 2017.
2.1.1	Point of Supply	Updated to reflect that Hydro Ottawa may choose to permit multiple services per property to accommodate electric vehicle charging (at its discretion)	April 1, 2019
2.1.2.1 / 3.1.3.7	Basic Credit	Policy clarified - one basic connection credit including one clearance or in-line pole. Expansion beyond that is subject to economic evaluation	April 1, 2019
2.2.1	Refusal to Connect for Previous Arrears	Updated to reflect Hydro Ottawa’s policy on a refusal to connect unless previous amounts owing (related to previous accounts) are paid in full	April 1, 2019
2.4.5.5	Transformer Ownership Credit	Clarified that unmetered and temporary services do not receive a Transformer Ownership Credit (“TOC”) and grandfathering conditions for TOCs that existed prior to November 1, 2000.	April 1, 2017
2.4.6.1	Methods of Payment and Payment Plans	Expanded options for bill payment.	April 1, 2017.
2.6.1 / 2.6.2	Customer Rate Classification	Clarified and updated criteria in determining customer rate classification.	April 1, 2017
3.0.8	Property Reinstatement	Added section outlining developer and property owner responsibilities with respect to new subdivision driveways and sidewalks.	April 1, 2017
3.0.17	Other Points of Ownership Demarcation	New section detailing demarcation of control signal lines and secondary distribution vault supplies	April 1, 2017
3.2.2 / 3.9.1	Service Requirements	Added 120/280 V, 2-phase, 3-wire, and 347.600V, 3-phase, 4-wire overhead supply up to 400A as offerings.	April 1, 2017
3.9	Temporary Services	Added conditions with respect to separate Temporary Services in addition to existing electrical Services	April 1, 2017

At the time of filing, Hydro Ottawa is not expecting that any of the approvals requested in this Application would result in changes to its Conditions of Service.

Hydro Ottawa confirms that no rates and charges are listed in its Conditions of Service that are not in its Tariff of Rates and Charges.

14. CORPORATE AND UTILITY ORGANIZATIONAL STRUCTURE

A description of Hydro Ottawa's corporate and utility organizational structure, along with a corporate entities relationship chart, is included in Exhibit 1-4-1: Corporate Structure and Governance.

There are currently no plans for modifying Hydro Ottawa's corporate or operational structure, nor for amending the utility's legal organization or control.

15. ACCOUNTING GUIDANCE FOR ACCOUNTS 1588 & 1589

In 2019, the OEB issued updated accounting guidance with respect to Account 1588 RSVA – Power and Account 1589 RSVA – Global Adjustment.¹⁶ Hydro Ottawa confirms that its journal entries are recorded, as per the instructions set forth in this guidance. For additional details, please see Exhibit 9-1-2: Group 1 Accounts.

16. SPECIFIC RELIEF REQUESTED

This Application is submitted pursuant to section 78 of the *Ontario Energy Board Act, 1998*. Herein, Hydro Ottawa is seeking the following approvals, which are also separately identified in Appendix 2-A and clearly documented throughout applicable sections of this Application:

- a) Approval of 2021-2025 revenue requirement, as proposed in Exhibit 6-1-1: Calculation of Revenue Deficiency or Sufficiency;

¹⁶ Ontario Energy Board, *Accounting Procedures Handbook Update - Accounting Guidance Related to Commodity Pass-Through Accounts 1588 & 1589* (February 21, 2019).

- 1 b) Approval of 2021 distribution rates and charges, effective January 1, 2021, as proposed
- 2 in Exhibit 8-10-1: Current and Proposed Tariff of Rates and Charges;
- 3 c) Approval of the Custom IR rate-setting formula and related elements for 2022-2025
- 4 distribution rates and charges, as proposed in Exhibit 1-1-10: Alignment with the
- 5 Renewed Regulatory Framework;
- 6 d) Approvals related to deferral and variance accounts, as thus proposed throughout
- 7 various Schedules in Exhibit 9:
- 8
 - 9 i) approval of the continuation of certain existing deferral and variance accounts, as
 - 10 set out in Exhibit 9-1-1: Summary of Current Deferral and Variance Accounts;
 - 11 ii) approval of the discontinuance of certain existing deferral and variance accounts,
 - 12 as proposed in Exhibit 9-1-1: Summary of Current Deferral and Variance
 - 13 Accounts and Exhibit 9-1-3: Group 2 Accounts;
 - 14 iii) approval of new deferral and variance accounts, as proposed in Exhibit 9-2-1:
 - 15 New Deferral and Variance Accounts; and
 - 16 iv) disposition of balances in existing deferral and variance accounts, as set out in
 - 17 Exhibit 9-3-1: Disposition of Deferral and Variance Accounts.
- 18 e) Approval of annual reporting for the 2021-2025 rate term, as proposed in Exhibit 1-1-11:
- 19 Proposed Annual Reporting - 2021-2025;
- 20 f) Approval for a transformer substation called Cambrian MTS, with assets that operate
- 21 above 50 kV, to form part of the Hydro Ottawa distribution system, as proposed in
- 22 Exhibit 2-4-3: Distribution System Plan;
- 23 g) Approval of the inclusion into the 2021 opening rate base of Hydro Ottawa's New
- 24 Facilities and Connection Cost Recovery Agreement Payments, whose revenue
- 25 requirement has been held in deferral and variance accounts;
- 26 h) Approval to include the cost of any future right-of-use assets related to leases as part of
- 27 rate base, as proposed in Exhibit 1-3-10: Changes to Accounting Policies Used in
- 28 Previous Applications;
- 29 i) Approval to cease providing the transformer ownership credit effective November 1,
- 30 2025, as proposed in Exhibit 8-1-1: Fixed/Variable Proportion;
- j) Approval to increase the Standard Supply Service Administrative Charge;

- 1 k) Approval of revised loss factor per Exhibit: 8-9-1 Loss Adjustment Factors;
- 2 l) Approval to change the years of useful life for certain assets within the General Plant
- 3 category, as requested in Exhibit 2-4-4: Capitalization Policy and Attachment 2-4-3(F):
- 4 Fleet Replacement Program; and
- 5 m) Approval of other items or amounts that may be requested by Hydro Ottawa in the
- 6 course of the proceeding, and such other relief or entitlements that the OEB may grant.

Appendix 2-A List of Requested Approvals

The distributor must fill out the following sheet with the complete list of specific approvals requested and relevant section(s) of the legislation must be provided. All approvals, including accounting orders (deferral and variance accounts) new rate classes, revised specific service charges or retail service charges which the applicant is seeking, must be separately identified, as well being clearly documented in the appropriate sections of the application.

Additional requests may be added by copying and pasting blank input rows, as needed.

If additional requests arise, or requested approvals are removed, during the processing of the application, the distributor should update this list.

Hydro Ottawa Limited is seeking the following approvals in this application:

1		Approval of 2021-2025 revenue requirement, as proposed in Exhibit 6-1-1: Calculation of Revenue Deficiency or Sufficiency;
2		Approval of 2021 distribution rates and charges, effective January 1, 2021, as proposed in Exhibit 8-10-1: Current and Proposed Tariff of Rates and Charges;
3		Approval of the Custom Incentive Rate-Setting formula and related elements for 2022-2025 distribution rates and charges, as proposed in Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework;
4		Approvals related to deferral and variance accounts, as thus proposed throughout various Schedules in Exhibit 9, as outlined in 4i- iv below:
4	i	approval of the continuation of certain existing deferral and variance accounts, as set out in Exhibit 9-1-1: Summary of Current Deferral and Variance Accounts;
4	ii	approval of the discontinuance of certain existing deferral and variance accounts, as proposed in Exhibit 9-1-2: Group 1 Accounts and Exhibit 9-1-3: Group 2 Accounts;
4	iii	approval of new deferral and variance accounts, as proposed in Exhibit 9-2-1: New Deferral and Variance Accounts; and

4	iv	disposition of balances in existing deferral and variance accounts, as set out in Exhibit 9-3-1: Disposition of Deferral and Variance Accounts
5		Approval of annual reporting for the 2021-2025 rate term, as proposed in Exhibit 1-1-11: Proposed Annual Reporting - 2021-2025;
6		Approval for a transformer substation called Cambrian MTS, with assets that operate above 50kV, to form part of the Hydro Ottawa distribution system, as proposed in Exhibit 2-4-3: Distribution System Plan;
7		Approval of the inclusion into the 2021 opening rate base of Hydro Ottawa's New Facilities and Connection Cost Recovery Agreement Payments, whose revenue requirement has been held in deferral and variance accounts;
8		Approval to include the cost of any future right-of-use assets related to leases as part of rate base, as proposed in Exhibit 1-3-10: Changes to Accounting Policies Used in Previous Applications;
9		Approval to cease providing the transformer ownership credit effective November 1, 2025, as proposed in Exhibit 8-1-1: Fixed/Variable Proportion;
10		Approval to increase the Standard Supply Service Administrative Charge;
11		Approval of revised loss factor per Exhibit: 8-9-1 Loss Adjustment Factors;
12		Approval to change the years of useful life for certain assets within the General Plant category, as requested in Exhibit 2-4-4: Capitalization Policy and Attachment 2-4-3(F): Fleet Replacement Program; and
13		Approval of other items or amounts that may be requested by Hydro Ottawa in the course of the proceeding, and such other relief or entitlements that the OEB may grant.

CERTIFICATION OF EVIDENCE

I, Geoff Simpson, Chief Financial Officer of Hydro Ottawa Limited ("Hydro Ottawa"), hereby certify that, to the best of my knowledge, the evidence filed in support of Hydro Ottawa's 2021-2025 Custom Incentive Rate-setting Application is accurate, consistent, and complete.

This certification is provided pursuant to the Ontario Energy Board's *Chapter 2, Chapter 3, and Chapter 5 Filing Requirements for Electricity Distribution Rate Applications*, as issued on July 12, 2018 and addended on July 15, 2019.

DATED this **10th** day of **February, 2020**.

A handwritten signature in blue ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Geoff Simpson
Chief Financial Officer
Hydro Ottawa Limited

APPLICATION SUMMARY

1. INTRODUCTION

This Schedule provides all of the information that is requested pursuant to section 2.1.6 of the Ontario Energy Board's ("OEB") *Chapter 2 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019 ("Filing Requirements"). In addition, this Schedule summarizes the changes proposed in this Application that will have a material impact on customers of Hydro Ottawa Limited ("Hydro Ottawa"), including any changes to rates and charges that may affect discrete customer groups. As appropriate, specific customers or customer groups that will be impacted by such proposals are also identified.

2. REVENUE REQUIREMENT

As presented in Table 1, Hydro Ottawa's Service Revenue Requirement is \$214.9M for the 2021 Test Year.

Table 1 – Service Revenue Requirement - Change and Drivers (\$'000s)

	OEB- Approved	Test Year	Change		Drivers
	2020	2021	\$	%	
Return on Rate Base	\$56,211	\$67,489	\$11,278	20%	<ul style="list-style-type: none"> \$173.8M increase in net fixed assets Previously excluded items added back to rate base
Distribution Expenses (not including amortization)	\$89,007 ¹	\$93,923	\$4,916	6%	<ul style="list-style-type: none"> Increases in compensation Inflationary increases Increase in distribution operations expenses
Amortization	\$49,384	\$52,450	\$3,066	6%	<ul style="list-style-type: none"> Increase in sustainment additions
Payment in Lieu of Taxes	\$5,943	\$1,024	(\$4,919)	(83%)	<ul style="list-style-type: none"> Higher CCA deduction caused by large amount of fixed asset additions
Service Revenue Requirement²	\$200,544	\$214,886	\$14,342	7%	

¹ This figure includes the mid-term adjustment to operations, maintenance and administration ("OM&A") expenses.

² Totals may not sum due to rounding.

For further details on Hydro Ottawa's revenue requirement, please see Exhibit 6-1-1: Calculation of Revenue Deficiency or Sufficiency.

3. BUDGETING AND ACCOUNTING ASSUMPTIONS

3.1. ECONOMIC OVERVIEW (GROWTH AND INFLATION)

In keeping with the rate adjustment formula used in its 2016-2020 Custom Incentive Rate-setting ("Custom IR") plan, Hydro Ottawa has assumed the Conference Board of Canada's updated inflation rate of 2.01% for all non-compensation-related costs in this Application.

With respect to operations, maintenance and administration ("OM&A") expenses, year one of the Application term (2021) is a traditional rebasing year, with rates set on the basis of a forecast Test Year of \$93.9M. Thereafter, OM&A expenditures in each year of the rate term will be adjusted using a Custom Price Escalation Factor ("CPEF") of 2.51%. The CPEF is comprised of three components, including a forecasted inflation factor of 2.26%. This factor is derived from applying Hydro Ottawa's specific labour/non-labour weighting factors to two indices (the Gross Domestic Product Implicit Price Index and Average Weekly Earnings for workers in Ontario, both reported by Statistics Canada) and averaging them over the 2017-2025 period.

For more information on the CPEF, please see Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework.

3.2. ACCOUNTING STANDARDS

Hydro Ottawa adopted International Financial Reporting Standards ("IFRS") for financial reporting purposes on January 1, 2015.

Subsequent to that action, and to the filing of Hydro Ottawa's last rebasing application,³ the utility has adopted three new accounting standards as required by the International Accounting Standards Board, as follows:

³ Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-Setting Distribution Rate Application*, EB-2015-0004 (April 29, 2015).

- 1 ● IFRS 9 – *Financial Instruments*: this standard introduces revised guidance on the
2 classification and measurement of financial assets, including basing the classification of
3 financial assets on their contractual cash flow characteristics and the entity's business
4 model for managing financial assets. Hydro Ottawa's adoption of IFRS 9 was effective
5 as of January 1, 2018. There is no impact to revenue requirement associated with
6 adoption of this standard.
- 7 ● IFRS 15 – *Revenue from Contracts with Customers*: IFRS 15 provides a standardized,
8 five-step model to recognize revenue (i.e. identify contract, identify performance
9 obligations, determine transaction price, allocate transaction price, and recognize
10 revenue). The adoption of IFRS 15 was effective as of January 1, 2018. There is no
11 impact to revenue requirement associated with its adoption.
- 12 ● IFRS 16 – *Leases*: this standard eliminates the current dual model (i.e. on and off
13 balance sheet) and aims to provide greater comparability between companies who lease
14 assets (i.e. right-of-use assets) and those who purchase assets with a single on-balance
15 sheet approach. Hydro Ottawa adopted IFRS 16 as of January 1, 2019. As of that date,
16 the adoption of IFRS 16 did not result in any right-of-use assets being recognized by the
17 utility. However, by way of this Application, Hydro Ottawa is proposing to include the cost
18 of any future right-of-use assets related to leases as part of rate base, since it is akin to
19 purchasing property, plant, and/or equipment and financing it.

20
21 For additional information on the aforementioned IFRS standards, please see Exhibit 1-3-10:
22 Changes to Accounting Policies Used in Previous Applications.

23 24 **4. LOAD FORECAST SUMMARY**

25 Hydro Ottawa's forecasted energy sales for the 2021 Test Year are 7,065,745 MWh. This is
26 374,879 MWh (5.0%) lower than the 2016 OEB-approved MWh forecast.

Hydro Ottawa's demand sales forecast for the 2021 Test Year is 9,465,512 kW.⁴ This is 659,441 kW (6.5%) lower than the 2016 OEB-approved kW forecast.

The utility's forecasted average number of customers for the 2021 Test Year is 344,936, representing an increase of 6.1% over the 2016 OEB-approved number.

Table 2 provides a high-level summary of Hydro Ottawa's load forecast for the 2021-2025 Custom IR term.

Table 2 – Load Forecast Summary

Year	Total Sales (MWh)	Total Sales Demand (kW) ⁵	Average Customers ⁶
2021	7,065,745	9,465,512	344,936
2022	7,088,184	9,452,590	348,104
2023	7,116,619	9,452,792	351,138
2024	7,165,092	9,472,485	354,088
2025	7,179,631	9,457,798	357,017

Hydro Ottawa has provided a detailed five-year, class-specific, and weather-normalized load forecast and customer connection forecast for each rate class in Exhibit 3-1-1: Load Forecast. This forecast incorporates modifications to the provincial electricity conservation framework that were enacted in 2019 as well as the impacts of embedded generation.

5. DISTRIBUTION SYSTEM PLAN

Hydro Ottawa has formulated a consolidated Distribution System Plan ("DSP"), which provides a detailed and comprehensive view of the utility's investment plans and supporting information for the 2021-2025 period.⁷ The DSP identifies the capital investments in Hydro Ottawa's distribution system and general plant assets which are required to maintain safe and reliable service to customers in the City of Ottawa and Village of Casselman, with operations that

⁴ This represents kW sales for commercial classes above 50kW, Sentinel Lighting, Street Lighting, and Standby Power.

⁵ *Ibid.*

⁶ Customer numbers do not include Street Lighting, Sentinel Lights, Unmetered Scattered Load, and Standby Power.

⁷ Please see Exhibit 2-4-3.

1 remain responsive to their primary needs and preferences: (i) keeping distribution rates low; (ii)
2 maintaining reliability; and (iii) investing in new technology. In addition, the DSP outlines how
3 capital investments will be prioritized, paced, and optimized, while minimizing rate impacts for
4 customers and facilitating continuous improvement and productivity.

5

6 The expenditures outlined in the DSP are driven by distinct, specific needs. Table 3 below
7 summarizes the major drivers underlying Hydro Ottawa's capital investment program for the
8 2021-2025 rate period.

1

Table 3 – 2021-2025 Capital Expenditure Drivers by Investment Category

Investment Category	Driver	Description
System Access	Customer Service Request	Customer request for new connection (load or generation)
	Third Party Requirements	Request by a third party for plant relocation or upgrade to an existing service
	Mandated Service Obligation	Regulatory requirement to maintain distribution licence under the <i>Distribution System Code</i> or requirement as per Hydro Ottawa's Conditions of Service
System Renewal	Assets at End of Service Life i. Failure ii. Failure Risk iii. Substandard Performance iv. High Performance Risk v. Functional Obsolescence	<ul style="list-style-type: none"> i. Asset no longer meets functional requirements ii. Asset is at risk of no longer meeting functional requirements iii. Asset still meets functional requirements; however, it falls below standards for operability or efficiency iv. Asset is at risk of failure in a way that can cause harm or damage to other equipment or assets or would put the distribution system in a detrimental state v. Asset is functionally obsolete with no spare parts, tools, and/or software to continue operation
System Service	Capacity Constraint	Requirement for additional capacity (station transformation or circuit) due to planned or realized load increases
	Reliability	Requirements driven by poor distribution system performance such as abnormally high duration or frequency of interruptions
	System Operability	Requirements for improved system operability and visibility
General Plant	System Capital Investment Support	<ul style="list-style-type: none"> • Capital contributions to Hydro One Networks Inc. for connection projects • Requirement for fleet/vehicle acquisition
	System Maintenance Support	Requirement for tools and associated equipment
	Business Operations Efficiency	Requirements for information technology software and systems
	Non-System Physical Plant	Building infrastructure requirements

2

Table 4 provides a summary of the total capital expenditures that are planned for the 2021-2025 Custom IR rate term.

Table 4 – Summary of 2021-2025 Capital Expenditures (\$'000,000s)

Investment Category	2021	2022	2023	2024	2025	Average 2021-2025
System Access	\$56.7	\$41.0	\$37.4	\$34.5	\$34.0	\$40.7
System Renewal	\$43.3	\$44.0	\$40.2	\$39.4	\$40.5	\$41.5
System Service	\$31.0	\$27.4	\$24.3	\$25.2	\$23.9	\$26.4
General Plant	\$32.0	\$11.7	\$7.6	\$17.4	\$16.9	\$17.1
Capital Contributions	\$(41.3)	\$(25.2)	\$(19.9)	\$(19.2)	\$(19.3)	\$(25.0)
TOTAL	\$121.8	\$98.9	\$89.6	\$97.2	\$96.0	\$100.7

These figures illustrate the sustained level of need for significant capital investment in Hydro Ottawa's distribution system, in order to maintain reliability and service quality for customers. This need is the result of several factors, including aging infrastructure, an expanding customer base, continued growth across the City of Ottawa, and the effects of severe weather events.

5.1.1. Renewable Energy Connection Costs

There are no renewable energy connection projects included in Hydro Ottawa's DSP which seek cost recovery from all ratepayers.

Similarly, Hydro Ottawa is not planning to specifically address stations that have restrictions for the connection of Energy Resource Facilities ("ERFs") within its capital expenditure plan. Nevertheless, the utility intends to replace station transformers that are identified for replacement through its Asset Management Process with units that have reverse-flow capabilities and can thus accommodate injection of renewable energy onto the grid.

The DSP does acknowledge that the number of ERF connections is expected to continue growing over the 2021-2025 rate period. Hydro Ottawa will respond to customer/generator

requests for ERF connection and will seek appropriate recovery of costs from ERF proponents, as per its established Connection Impact Assessment process.

5.1.2. Smart Grid Costs

Table 5 identifies planned investments related to Smart Grid for the 2021-2025 period.

Table 5 – Planned Smart Grid Investments (\$'000s)

Budget Program & Project ⁸	Forecast					
	2021	2022	2023	2024	2025	Total
Stations Enhancements • Station Temperature Sensors • Station Cybersecurity (OT Visibility & Safeguards)	\$905	\$459	\$459	\$459	\$459	\$2,741
Distribution Enhancements • Smart Grid Fund Initiatives • Great-DR Phase 2 (MiGen) • Other Distribution Enhancement Projects	\$5,955	\$4,016	\$2,262	\$1,860	\$1,788	\$15,881
SCADA Upgrades • SCADA System Renewal • Outage Management System Replacement • Distribution Management System • AMI Outage Management Integrations	\$803	\$2,708	\$1,521	\$501	\$1,891	\$7,424
RTU Upgrades • Self-Healing Grid	\$253	\$253	\$253	\$253	\$253	\$1,265
Communications Infrastructure • Optical Telecommunications Network Replacement • Field Area Network	\$1,790	\$1,044	\$1,044	\$1,044	\$2,035	\$6,957
Remote Disconnected Smart Meter	\$501	\$501	\$501	\$501	\$501	\$2,505
Cybersecurity Enhancement	\$302.3	\$201.5	\$201.5	\$201.5	\$201.5	\$1,108

5.1.3. Regional Planning Initiatives

Hydro Ottawa is currently engaged in the latest Integrated Regional Resource Plan (“IRRP”) cycle for the Greater Ottawa area, which is expected to be completed in Q1 2020. A number of

⁸ Additional information on these projects are available in Attachment 2-4-3(E): Material Investments. With the exception of Cybersecurity Enhancement, all of the projects listed fall under the System Service category. Cybersecurity Enhancement is within the General Plant category.

regional and bulk system needs are currently being studied to determine optimal solutions. Table 6 summarizes the preliminary short-term needs that have thus far been identified through the IRRP process. Of note, along with Hydro Ottawa, Hydro One Networks Inc. (“HONI”) is set to be assigned responsibility for executing certain solutions that are under consideration for addressing identified needs.

Table 6 – Preliminary Results from Active IRRP Cycle for Greater Ottawa Region

Need	Description	Preliminary Solution
Supply to Kanata	Several stations in the area are operating at or near their planning capacity. Large commercial and residential developments are driving significant growth in electricity demand in the near-term and medium-term.	Limitations on the existing transmission system in the area cannot accommodate expansion of the existing stations. A new station is likely required to provide reliable long-term supply in the area. The IESO is currently developing a bulk transmission plan in parallel to the Greater Ottawa IRRP that might impact requirements for connecting the new station. Bulk transmission plan will be finalized in 2020. Hydro Ottawa is planning to implement distribution system upgrades to distribute forecast growth between stations in the area.
Supply to South East Ottawa	Several stations in the area are operating at or near their planning capacity. Demand is expected to increase driven by large residential, mixed and industrial developments.	Hydro Ottawa will proceed with a plan to build a new 230 kV connected supply station in the south east part of the City. The new station is planned for energization in 2025. HONI will evaluate the options for this upgrade in the Regional Infrastructure Plan.
Supply to East Ottawa	Bilberry Creek TS came into service in 1976 and is approaching end of life. Options to decommission or refurbish the station were evaluated including the impact to the bulk system. Large industrial and residential mixed-use developments are forecasted to increase demand over the near-term and medium-term.	HONI will refurbish Bilberry Creek TS, including like for like transformer replacement. HONI will expand the station to provide two additional breaker positions to supply Hydro Ottawa customers.
Supply to the Regional 115kV System	Several of the 230/115 kV transformers at Merivale and Hawthorne are operating at or near their capability	HONI will replace the more limiting of the 230/115 kV transformers at Merivale TS in the near-term so that the two Merivale transformers have similar capability. Subsequent to the release of the IRRP, the Working Group will undertake an IRRP Addendum Study. This will include an evaluation of the potential benefit of non-wires options to manage future demand growth on the 115kV system.

Hydro Ottawa’s five-year investment plan incorporates required projects to address the near-term regional needs, as identified in Table 7 below. Of note, these investments will remain subject to change through the finalization of the IRRP and subsequent Regional Infrastructure Plan (“RIP”) processes.

Table 7 – Planned Investments Related to Regional Planning (\$'000,000s)

Project	Forecast					
	2021	2022	2023	2024	2025	Total
Cambrian Municipal Transformer Station ⁹	\$27.9	\$2.2	\$0	\$0	\$0	\$30.1
New East Station ¹⁰	\$0.51	\$2.61	\$7.32	\$10.46	\$9.79	\$30.69
Distribution Capacity Upgrades (Kanata North, South Nepean, Bilberry)	\$1.49	\$2.10	\$3.80	\$3.04	\$1.50	\$11.93

6. RATE BASE

Table 8 summarizes proposed changes in rate base for 2021. Hydro Ottawa's 2021 Test Year rate base is budgeted to be \$244.8M or 25% higher than the 2020 OEB-approved amount. The increase is attributable to planned increases in capital additions as well as to previously-excluded items being placed back into rate base at their net book value.

Full details on Hydro Ottawa's proposed rate base for 2021-2025 can be found in Exhibit 2-1-1: Rate Base Overview.

Table 8 – 2020 OEB-Approved Rate Base vs. 2021 Test Year Rate Base (\$'000s)

	OEB-Approved	Test Year	Change	
	2020	2021	\$	%
Rate Base	\$973,801	\$1,218,659	\$244,858	25%

Table 9 below provides a summary of the change in capital expenditures between the 2021-2025 Test Year proposals and OEB-approved expenditures for the 2016-2020 period. The \$34.0M reduction in capital expenditures can be largely explained by the completion of the Facilities Renewal Program.¹¹ For further details, please see Exhibit 2-4-1: Capital Expenditure Summary and Exhibit 2-4-3: Distribution System Plan.

⁹ Project costs include Connection Cost Recovery Agreement ("CCRA") payments to HONI.

¹⁰ Project costs include CCRA payments to HONI.

¹¹ For more information on the Facilities Renewal Program, please see Attachment 2-1-1(A): New Administrative Office and Operations Facilities.

Table 9 – 2016-2020 OEB-Approved Capital Expenditures vs. 2021-2025 Proposed Capital Expenditures (\$'000s)

	OEB-Approved	Test Years	Change	
	2016-2020	2021-2025	\$	%
Capital Expenditures	\$537,450 ¹²	\$503,494	\$(33,956)	(6%)

7. OPERATIONS, MAINTENANCE, AND ADMINISTRATION EXPENSE

Hydro Ottawa's 2021 OM&A budget was developed as a Test Year rebasing budget and is based on the utility's forecast of expenditures needed to maintain service reliability and safety, and to remain in compliance with regulatory and legislative requirements.

As discussed in section 3.1 above, for the 2022-2025 Test Years Hydro Ottawa will adjust OM&A using a CPEF to align with the principles of incentive regulation, as enshrined in the Renewed Regulatory Framework ("RRF"). This formula consists of a two-component Price Cap Index ("PCI"): inflation and productivity. The formula includes an inflation factor and two factors for productivity. One productivity factor is a fixed amount for industry-wide productivity, and the other is a stretch factor which is set each year based on the level of productivity the distributor has achieved. In addition to the PCI components, the CPEF includes a growth factor as well.

The CPEF that Hydro Ottawa is proposing to apply to OM&A costs for the 2022-2025 Test Years is 2.51%. For more information on the CPEF and how it was developed, please see Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework.

Table 10 below outlines Hydro Ottawa's Historical, Bridge, and Test Year OM&A expenditures.

¹² Approved capital expenditures for 2016-2020 are equivalent to those which were included in Hydro Ottawa's original 2016-2020 rate application. In the Approved Settlement Agreement governing the utility's 2016-2020 rate plan, the \$10.0M reduction was applied to capital additions only.

Table 10 – OM&A Expenditures & Variances (\$'000s)

	Year	OM&A	Previous Year	Variance	Variance
Historical	2016	\$82,621			
	2017	\$82,245	\$82,621	\$(376)	(0.46)%
	2018	\$86,863	\$82,245	\$4,619	5.62%
Bridge	2019	\$87,545	\$86,863	\$682	0.79%
	2020	\$91,990	\$87,545	\$4,445	5.08%
Test	2021	\$93,923	\$91,990	\$1,932	2.10%
	2022	\$96,280	\$93,923	\$2,357	2.51%
	2023	\$98,697	\$96,280	\$2,417	2.51%
	2024	\$101,174	\$98,697	\$2,477	2.51%
	2025	\$103,714	\$101,174	\$2,539	2.51%

For 2021 Test Year OM&A, Table 11 shows both the dollar and percentage change from the last year of OM&A expenditures approved by the OEB (i.e. 2020 Bridge Year).

Table 11 – 2020 OEB-Approved OM&A vs. 2021 Test Year OM&A (\$'000s)

	OEB-Approved	Test	Change	
	2020	2021	\$	%
OM&A	\$89,007	\$93,923	\$4,916	5.5%

For more information on OM&A, please see Exhibit 4-1-1: Operations, Maintenance and Administration Summary and Exhibit 4-1-3: Operations, Maintenance and Administration Program Costs.

7.1. COST DRIVERS & TRENDS

Table 12 below shows the overall cost drivers for OM&A. More detailed explanations for each item are provided in Exhibit 4-1-4: Operations, Maintenance and Administration Cost Drivers and Program Variance Analysis.

1 **Table 12 – Summary of Overall OM&A Cost Drivers and Trends (\$'000,000s)**

Major Driver	2016 Historical Year	2017 Historical Year	2018 Historical Year	2019 Bridge Year	2020 Bridge Year	2021 Test Year
OPENING BALANCE	\$83.1¹³	\$ 82.6	\$ 82.2	\$ 86.8	\$ 87.5	\$ 91.9
Labour Compensation and Benefits		\$(0.2)	\$3.3	\$0.6	\$1.6	\$2.0
Proactive and Reactive Distribution System Maintenance		\$0.1	\$0.5	\$0.5	\$(0.1)	\$0.3
Facilities, Insurance and Fuel		\$0.1	\$0.3	\$2.9	\$(1.5)	\$0.2
OEB Fees and CDM Allocation		\$(0.1)	\$0.0	\$0.2	\$0.2	\$0.7
Call Centre, Postage and Bad Debt		\$0.3	\$(1.0)	\$ (0.7)	\$0.8	\$0.0
Dark Fiber Fees		\$(0.1)	\$0.0	\$0.3	\$0.9	\$(1.7)
Technology		\$0.8	\$0.4	\$0.5	\$1.3	\$0.9
SLA Cost Reclassification		\$0.0	\$0.0	\$(3.7)	\$(0.2)	\$(0.1)
Other	\$(0.5)	\$(1.3)	\$1.1	\$0.1	\$1.4	\$(0.3)
Total Change	\$(0.5)	\$(0.4)	\$4.6	\$0.7	\$4.4	\$2.0
CLOSING BALANCE¹⁴	\$ 82.6	\$ 82.2	\$ 86.8	\$ 87.5	\$ 91.9	\$ 93.9

2 7.2. COMPENSATION

3
4
5 Table 13 below shows the total compensation included in OM&A for each of the Historical,
6 Bridge, and Test Years. For more information, please see Exhibit 4-1-4: Operations,
7 Maintenance and Administration Cost Drivers and Program Variance Analysis as well as Exhibit
8 4-1-5: Workforce Staffing and Compensation.

¹³ The 2016 Opening Balance represents that which was approved by the OEB in the adjudication of Hydro Ottawa's 2016-2020 Custom IR application (EB-2015-0004).

¹⁴ Totals may not sum due to rounding.

Table 13 – Total Compensation Costs, Including Benefits (\$'000s)

	Year	Compensation	Previous Year	Variance (\$)	Variance (%)
Historical	2016	\$72,127			
	2017	\$71,939	\$72,127	\$(188)	(0.26)%
	2018	\$75,205	\$71,939	\$3,266	4.54%
Bridge	2019	\$75,810	\$75,205	\$605	0.80%
	2020	\$77,447	\$75,810	\$1,637	2.16%
Test	2021	\$79,486	\$77,447	\$2,039	2.63%

The Filing Requirements stipulate that applicants must specify total compensation costs for the Test Year as well as the change in compensation costs between the Test Year and the last OEB-approved year (expressed in both monetary and percentage terms). In this regard, Hydro Ottawa notes that the previous approval granted by the OEB with respect to compensation costs was embedded in the OEB's general approval of the utility's total OM&A costs for the 2016-2020 period. More specifically, in the adjudication of Hydro Ottawa's 2016-2020 Custom IR application, the utility was granted approval for an overall envelope of OM&A costs (inclusive of compensation) for the 2016 base year, with 2017-2020 OM&A costs adjusted on an annual basis using an escalator factor.

For more information on Hydro Ottawa's compensation costs, including a comparison of 2021 Test Year compensation costs with Historical and Bridge Year costs for the 2016-2020 period, please see Exhibit 4-1-5(A): Employee Compensation Strategy.

8. COST OF CAPITAL

Table 14 below summarizes the capital structure, cost of capital parameters, and Weighted Average Cost of Capital ("WACC") that Hydro Ottawa is proposing to utilize for purposes of this Application.

Table 14 – 2021-2025 Weighted Average Cost of Capital

Year	Short-Term Debt Weight	Short-Term Debt Rate	Long-Term Debt Weight	Long-Term Debt Rate	Equity Weight	Return on Equity	WACC
2021	4%	2.75%	56%	3.35%	40%	8.88%	5.54%
2022	4%	2.75%	56%	3.36%	40%	9.13%	5.64%
2023	4%	2.75%	56%	3.40%	40%	9.31%	5.74%
2024	4%	2.75%	56%	3.44%	40%	9.41%	5.80%
2025	4%	2.75%	56%	3.69%	40%	9.46%	5.96%

Hydro Ottawa is using the OEB's cost of capital methodology for its capital components. The short-term debt component uses the 2.75% rate as outlined in the OEB's 2020 Cost of Capital Parameters letter dated October 31, 2019.¹⁵ Hydro Ottawa is proposing that this rate be locked in for the five-year term covered by this Application. The long-term debt and return on equity ("ROE") are calculated as per Exhibit 5-1-1: Cost of Capital and Capital Structure, and use the OEB's formulaic methodology to determine the forecast rates. The only deviation from this is the use of Hydro Ottawa's own historical spreads in determining long-term interest rates.

9. COST ALLOCATION AND RATE DESIGN

9.1. COST ALLOCATION

Hydro Ottawa engaged Elenchus Research Associates ("Elenchus") to assist in preparing a Cost Allocation Model for the 2021 Test Year. Using the OEB's approved cost allocation methodologies and the V3.7 Cost Allocation Model, Hydro Ottawa's 2021 base revenue requirement has been allocated to the utility's nine rate classes. The primary purpose of the Cost Allocation Report is to determine the proportions of total revenue requirement that are the responsibility of each rate class.¹⁶ The resulting revenue-to-cost ratios for each rate class were determined using the total revenues over costs for the Test Year, pursuant to the OEB's policies for cost allocation by electricity distributors.¹⁷

¹⁵ Ontario Energy Board, Letter re: *2020 Cost of Capital Parameters* (October 31, 2019).

¹⁶ Please see Attachment 7-1-1(B): Cost Allocation Report.

¹⁷ Ontario Energy Board, *Report of the Board - Review of Electricity Distribution Cost Allocation Policy*, EB-2010-0219 (March 31, 2011).

9.2. RATE DESIGN

The results of the Cost Allocation Report were the main input into Hydro Ottawa's rate design process. Elenchus undertook the study to determine whether refinements were necessary to better reflect the OEB's principle of cost causality in the utility's cost allocation to customers. The result of Elenchus' study indicated that some classes of customers fell outside the acceptable revenue-to-cost ranges as established by the OEB. The utility adjusted GS <50 kW, Large Use, and Street Lighting customer classes to bring them within the specified ranges. The Sentinel customer class will be adjusted over a five-year period to mitigate the bill impact associated with a large increase in revenue requirement that is necessary to bring that class within its range.

As of January 1, 2020, Residential distribution rates are fully fixed in compliance with the policy adopted by the OEB in 2015.¹⁸ Rates for all other customer classes will continue to have both a fixed component and a variable component based on consumption (kWh) or demand (kW).

10. DEFERRAL AND VARIANCE ACCOUNTS

Hydro Ottawa proposes to clear Group 2 deferral accounts, including the Lost Revenue Adjustment Mechanism ("LRAM") Account. The total net deferral and variance ("DVA") balance proposed for disposition is \$(5,751,923). Hydro Ottawa is proposing that the Rate Riders for Group 2 Accounts (excluding LRAM) be disposed of over two years. For the LRAM Variance Account, a one-year disposition period is proposed. As no Group 1 Accounts are being requested for disposition at this time, the rate riders are the same for Regulated Price Plan ("RPP") and non-RPP customers.

Hydro Ottawa is proposing modifications to the following DVAs (for details, please refer to Exhibit 9-2-1: New Deferral and Variance Accounts):

¹⁸ Ontario Energy Board, *Board Policy - A New Distribution Rate Design for Residential Electricity Customers*, EB-2012-0410 (April 2, 2015).

- 1 • Uniform System of Account (“USofA”) Sub-Account 1508 Connections Cost Recovery
- 2 Agreement Payments Deferral Account
- 3 • USofA Sub-Account 1508 Capital Additions Revenue (excluding System Access)
- 4 Differential Variance Account
- 5 • USofA Sub-Account 1508 System Access Capital Additions Revenue Requirement
- 6 Differential Variance Account
- 7 • USofA Sub-Account 1508 Earnings Sharing Mechanism Variance Account
- 8

9 In addition, Hydro Ottawa is requesting that the following DVAs be discontinued:

- 10
- 11 • 1508 Sub-Account - Energy East Consultation Costs
- 12 • 1508 Sub-Account - Pole Attachment Charge Revenues Variance Account
- 13 • 1508 Sub-Account - Wireless Attachment Revenues Deferral Account
- 14 • 1508 Sub-Account - Y-Factor Variance Account
- 15 • 1508 Sub-Account - Gains/Losses from Sale of Existing Facilities Deferral
- 16 • 1508 Sub-Account - New Facilities Deferral Account
- 17

18 The following Accounts were approved for discontinuance as part of Hydro Ottawa’s 2016-2020
19 rate plan. However, clearance of final balances are being requested as part of this Application.

- 20
- 21 • Account 1518 - Retail Cost Variance Account – Retail
- 22 • Account 1548 - Retail Cost Variance Account – STR
- 23

24 Further information regarding DVAs, the amounts proposed for clearance, and proposals for
25 new DVAs, please refer to Exhibit 9-1-1: Summary of Current Deferral and Variance Accounts,
26 Exhibit 9-2-1: New Deferral and Variance Accounts, and Exhibit 9-3-1: Disposition of Deferral
27 and Variance Accounts.

1 **11. BILL IMPACTS**

2 In developing its capital and OM&A budgets for the 2021-2025 period, Hydro Ottawa was
3 careful to have due regard for the impacts that bill increases may have on customers. The
4 utility's objective was to keep the total bill impacts for each of its customer classes as minimal
5 as possible.

6
7 Table 15 below provides a summary of the total bill impacts for typical customers in all classes.
8 Further details regarding Hydro Ottawa's proposed bill impacts are available in Exhibit 8-12-1.

1

Table 15 – Summary of Bill Impacts

Rate Class		Approved	Proposed				
		2020	2021	2022	2023	2024	2025
Residential (750 kWh)	Distribution Charge	\$28.64	\$29.95	\$32.13	\$33.97	\$34.95	\$35.56
	Change in Distribution Charge		\$1.31	\$2.18	\$1.84	\$0.98	\$0.61
	% Distribution Increase		4.57%	7.28%	5.73%	2.88%	1.75%
	% Increase of Total Bill		1.32%	1.54%	1.28%	0.68%	0.43%
General Service <50 kW (2,000 kWh)	Distribution Charge	\$71.32	\$73.06	\$78.13	\$83.28	\$86.33	\$88.58
	Change in Distribution Charge		\$1.74	\$5.07	\$5.15	\$3.05	\$2.25
	% Distribution Increase		2.44%	6.94%	6.59%	3.66%	2.61%
	% Increase of Total Bill		0.65%	1.37%	1.37%	0.81%	0.59%
General Service 50 kW - 1,499 kW (250 kW)	Distribution Charge	\$1,461.93	\$1,537.98	\$1,669.42	\$1,785.17	\$1,853.01	\$1,905.37
	Change in Distribution Charge		\$76.05	\$131.44	\$115.76	\$67.84	\$52.36
	% Distribution Increase		5.20%	8.55%	6.93%	3.80%	2.83%
	% Increase of Total Bill		1.59%	0.74%	0.65%	0.38%	0.29%
General Service 1,500 kW - 4,999 kW (2,500 kW)	Distribution Charge	\$15,941.18	\$16,614.68	\$18,015.99	\$19,263.84	\$19,992.90	\$20,452.40
	Change in Distribution Charge		\$673.50	\$1,401.31	\$1,247.85	\$729.06	\$459.50
	% Distribution Increase		4.22%	8.43%	6.93%	3.78%	2.30%
	% Increase of Total Bill		1.53%	0.78%	0.69%	0.40%	0.25%
Large Use (7,500 kW)	Distribution Charge	\$48,420.32	\$53,922.32	\$58,287.22	\$62,092.67	\$64,292.42	\$65,709.17
	Change in Distribution Charge		\$5,502.00	\$4,364.90	\$3,805.45	\$2,199.75	\$1,416.75
	% Distribution Increase		11.36%	8.09%	6.53%	3.54%	2.20%
	% Increase of Total Bill		2.16%	0.79%	0.68%	0.39%	0.25%
Sentinel Lighting (0.4 kW)	Distribution Charge	\$9.53	\$10.91	\$13.14	\$15.31	\$17.20	\$18.99
	Change in Distribution Charge		\$1.38	\$2.23	\$2.17	\$1.89	\$1.79
	% Distribution Increase		14.46%	20.46%	16.54%	12.33%	10.44%
	% Increase of Total Bill		7.36%	8.74%	7.83%	6.32%	5.65%
Street Lighting (1 kW)	Distribution Charge	\$7.76	\$6.99	\$7.97	\$8.68	\$8.98	\$9.24
	Change in Distribution Charge		\$(0.77)	\$0.98	\$0.71	\$0.30	\$0.26
	% Distribution Increase		(9.98)%	14.07%	8.92%	3.46%	2.91%
	% Increase of Total Bill		(1.10)%	3.16%	2.24%	0.96%	0.83%
Unmetered Scattered Load (470 kWh)	Distribution Charge	\$17.08	\$17.49	\$19.55	\$21.37	\$22.67	\$23.82
	Change in Distribution Charge		\$0.41	\$2.06	\$1.82	\$1.30	\$1.15
	% Distribution Increase		2.42%	11.76%	9.33%	6.10%	5.07%
	% Increase of Total Bill		0.98%	2.36%	2.05%	1.44%	1.26%

2

DISTRIBUTION SYSTEM OVERVIEW

1. OVERVIEW

Hydro Ottawa operates in the City of Ottawa and the Village of Casselman. Hydro Ottawa is a corporation incorporated pursuant to the *Business Corporations Act* RSO 1990 c. B.16 in Ontario and is licensed under Ontario Energy Board ("OEB") Electricity Distributor License No. ED-2002-0556. With approximately 340,000 customers within its service territory as of the end of 2019, the utility is one of the largest Local Distribution Companies ("LDCs") in the province in terms of customer count.

Hydro Ottawa was created in November 2000, following the amalgamation of several municipalities in the region and the formation of the City of Ottawa. Hydro Ottawa acquired the assets of Casselman Hydro Inc. in April 2002. The Ottawa and Casselman segments of the service territory are non-contiguous and separated by the territory of Hydro One Networks Inc. ("Hydro One"). A map of Hydro Ottawa's service territory is provided in Attachment 1-1-6(A): Distribution System Map.

Like other LDCs in Ontario, Hydro Ottawa carries out its business activities under the same direction and oversight from the OEB, but operates within its own unique environment. Hydro Ottawa's foremost distinctiveness is the profile and physical size of its service territory. With a service area comprised of 662 km² of rural area and 454 km² of urban area, its total footprint of 1,116 km² makes it the fifth physically largest in the province.

The breakdown of Hydro Ottawa's total customer base of 339,771 customers is as follows: 311,464 residential; 25,080 small commercial; 3,216 commercial; and 11 Large Users. Hydro Ottawa is one of the largest LDCs in the province in terms of customer count, ranking behind only Hydro One, Alectra Utilities Corporation, and Toronto Hydro Electric-System Limited in this category. As an LDC serving the National Capital Region, Hydro Ottawa has a customer demographic with a number of institutional customers, including many Federal Government facilities and campuses, four hospitals, and three post-secondary educational institutions.

Hydro Ottawa's service territory is a geographically diverse area, with significant population dispersion. The utility's service territory sits at the convergence of three major rivers: the Ottawa River, the Gatineau River, and the Rideau River. The Ottawa River functions as the northern border of the service territory, with the province of Québec located beyond it. Hydro Ottawa's service area includes the majority of the City of Ottawa and is otherwise completely surrounded by the service territory of Hydro One. The Rideau Canal, which bypasses unnavigable sections of the Rideau River, winds itself through the service area. Constructed barriers such as Highways (417, 416, and 174) and rail lines further subdivide the territory.

Around the main urban area of the City of Ottawa is an extensive greenbelt comprised of mostly forest, farmland, and marshland. Outside of the greenbelt, there are a number of rapidly expanding suburban communities. These distinct geographical features present Hydro Ottawa with unique circumstances in terms of response time and, ultimately, operating costs.

2. HOST VS. EMBEDDED DISTRIBUTOR

As noted above, Hydro Ottawa's service area is surrounded by the service territory of Hydro One. There are no licensed distributors embedded within Hydro Ottawa's service area. Hydro Ottawa's load is primarily delivered through transmission connection points; however, there are a number of delivery points embedded in the Hydro One distribution system.

3. HIGH VOLTAGE DISTRIBUTION ASSETS

The following list of substations includes all of Hydro Ottawa's assets that operate at or above 50kV and form part of the distribution system:¹

- Bridlewood MS (8kV)
- Bridlewood MS (27.6kV)
- CentrepoinTE DS
- Cyrville MS

¹ "DS" means "distribution station," "MS" means "municipal station," and "MTS" means "municipal transformer station." This terminology is historical, often based on past ownership arrangements.

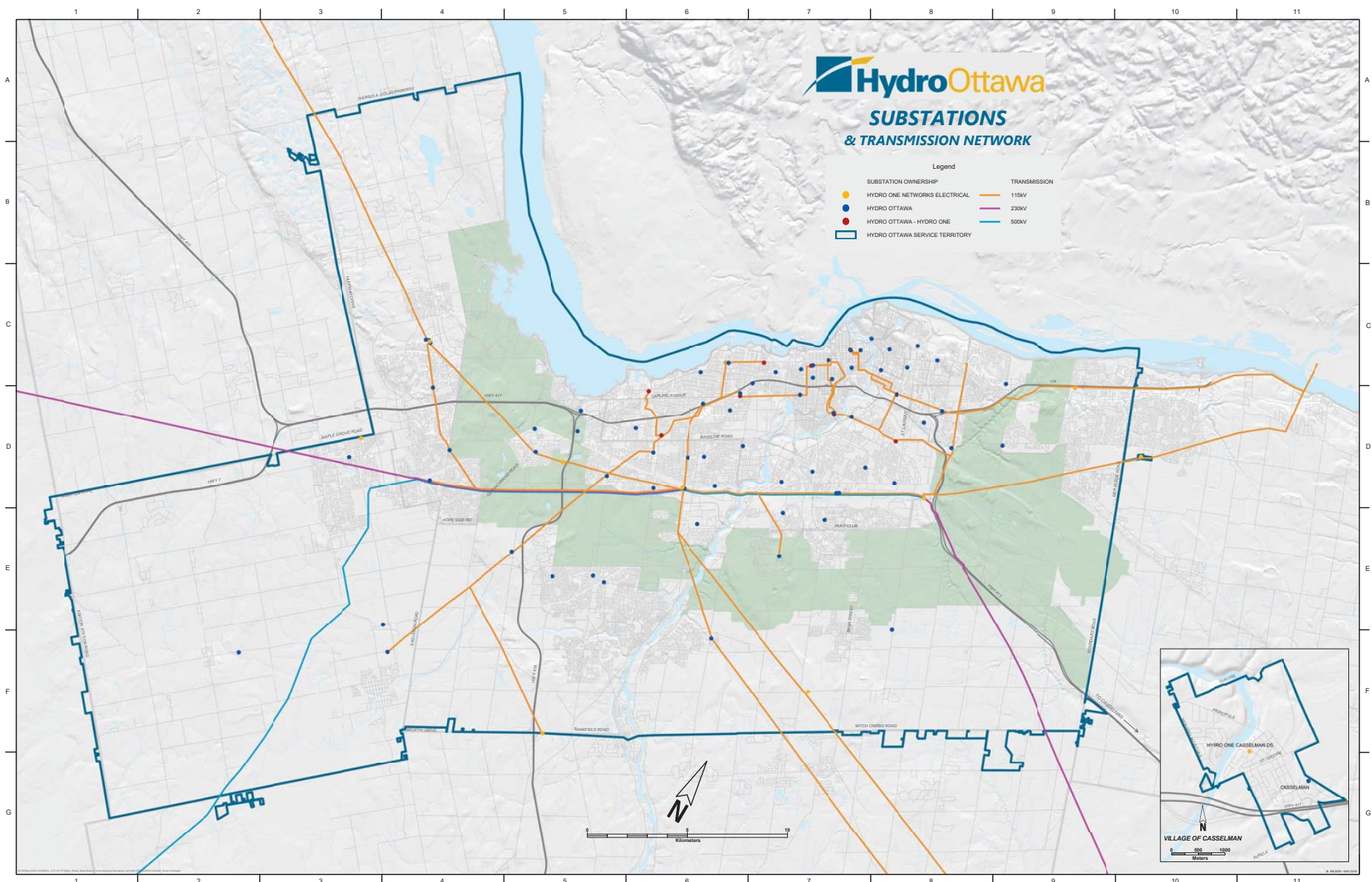
- Ellwood MS
- Epworth DS
- Fallowfield DS
- Kanata MTS
- Limebank MS
- Manordale DS
- Marchwood MS
- Merivale DS
- Moulton MS
- Richmond South DS
- Terry Fox DS
- Uplands MS (27.6kV)

Hydro Ottawa plans to add one transformer station above 50kV to its distribution system over the period of 2021-2025. Cambrian MTS, which will serve customers in South Nepean, has a planned in-service date of 2022.

In 2019, the OEB granted Hydro Ottawa leave to construct approval for Cambrian MTS.² By way of this Application, the utility is therefore seeking approval from the OEB that this substation form part of Hydro Ottawa's distribution system and that the asset be included in rate base.³ Hydro Ottawa records these stations per the Uniform System of Accounts in Account 1815 Transformer Station Equipment - Normally Primary above 50 kV.

² Ontario Energy Board, *Decision and Order on the Power South Nepean Project*, EB-2019-0077 (October 17, 2019).

³ Exhibit 1-1-4: Administration includes a separate request for approval pertaining to Cambrian MTS.



CUSTOMER SUMMARY

A copy of Hydro Ottawa's Customer Summary is attached below, in accordance with section 2.1.3 of the *Chapter 2 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019.

In this Schedule, Hydro Ottawa has presented bill impacts with respect to the distribution portion of bills for the residential and GS < 50 kW customer classes. As of January 1, 2020, Hydro Ottawa completed its transition to fully fixed rates for residential customers. Seeing as there is no longer a variable component in the distribution rates charged to residential customers, Hydro Ottawa has not utilized a consumption threshold in its presentation of distribution bill impacts for these customers.

Understanding Hydro Ottawa's 2021-2025 Rate Application



ABOUT HYDRO OTTAWA

Hydro Ottawa is the third largest municipally-owned electricity distributor in Ontario. We distribute electricity to approximately 340,000 customers, serving a population of more than one million people in the City of Ottawa and the Village of Casselman. We are a private business corporation that is 100% owned by our shareholder, the City of Ottawa.

It's our responsibility to transport power from the provincial transmission grid and deliver it safely and reliably to homes and businesses across our service territory. We own and operate a large, complex distribution network consisting of 50,000 poles, 2,700 km of overhead lines, 3,000 km of underground cable, and 45,000 transformers.

OUR FIVE-YEAR BUSINESS PLAN

Hydro Ottawa is seeking approval from the Ontario Energy Board (OEB) for the distribution rates that will be charged to customers for the 2021-2025 period.

The electricity industry in Ontario is regulated by the OEB. One of the OEB's roles is to review the business and distribution plans of all electricity distributors and approve the rates that they charge customers.

Between 2016 and 2020, Hydro Ottawa invested in distribution system capacity as well as the replacement of aging infrastructure to maintain operational effectiveness and efficiency. Upgrades to our fibre optic network and Customer Care and Billing System were also a focus, in addition to consolidating employees in two new buildings from end-of-life facilities.

HOW DOES HYDRO OTTAWA PLAN?

Hydro Ottawa is proposing a plan that is responsive to:



Legal and regulatory requirements by continuing to meet our obligations.



Internal business planning based on expert analysis and professional judgment to develop construction and operations programs that address safety, business, technical, and operational needs.



Customer feedback collected throughout our consultation on the application and ongoing customer engagements.

Over the course of 2021 to 2025, Hydro Ottawa will need to continue to invest in our infrastructure, equipment, and workforce.

These needs are being driven by a diverse set of factors, such as aging infrastructure, sustained population and economic growth in the Ottawa area, an increasing number of severe weather events, technological evolution, cyber security threats, and workforce retirements. The plan forward includes major asset replacement and upgrades, vehicle replacements, systems and software for resource planning programs, data analytics, and productivity improvements.



As a result, key initiatives that we have planned include:

- Building new distribution stations in growing areas of the city
- Connecting thousands of new customers every year
- Supporting local infrastructure projects like Light Rail Transit
- Upgrading and modifying infrastructure to enhance reliability and capacity on the grid
- Replacing equipment that has reached end-of-life
- Strengthening the grid's ability to withstand the effects of severe weather
- Investing in digital solutions to enhance customer service
- Renewing our vehicle fleet
- Recruiting and retaining a new generation of highly-skilled employees

To learn more about Hydro Ottawa's plan, please see Exhibit 1-1-9 Business Plan in the application.



HOW CUSTOMERS HELPED INFORM OUR PLAN

Our goal is to put the customer at the centre of everything we do. Hydro Ottawa is committed to engaging with our customers, understanding their needs and preferences, and operating in an efficient and cost effective manner. In preparing our business plan, we reached out directly to customers, to better understand their priorities and expectations for the electricity services they receive. Price, reliability, and investing in new technology ranked as the top three priorities.

Together with the customer feedback that we receive on an ongoing basis, we took this input and developed a plan emphasizing four principles:

- 01 Minimize rate increases
- 02 Maintain reliability and service quality
- 03 Address key pressures to the distribution system
- 04 Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs

Nearly 21,000 customers shared their thoughts on our preliminary plan through the completion of an online survey. The majority of residential customers (83%), small business customers (76%), and mid-market and key account customers (69%) shared that they supported Hydro Ottawa's planned increase or even spending a bit more to improve service based on the priorities above.

To learn more on how Hydro Ottawa engages customers and responds to their needs, please see Exhibit 1-2-1 Customer Engagement in the application.

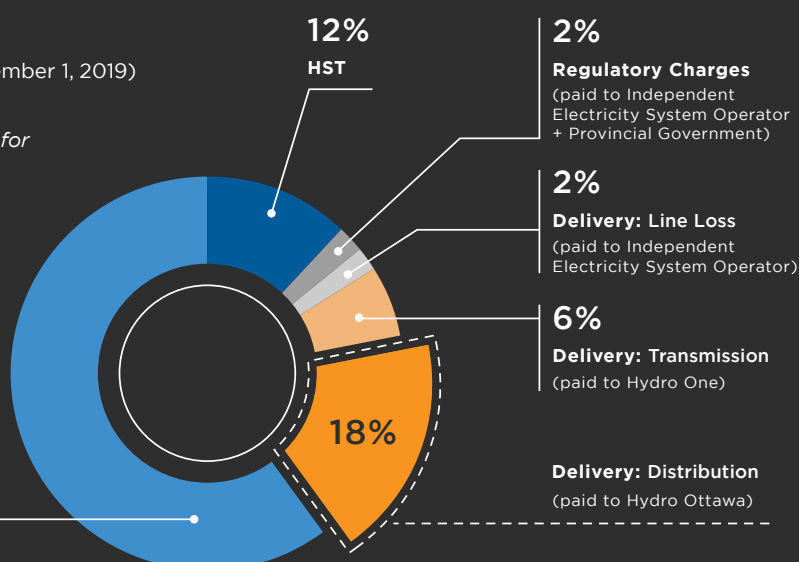
Electricity distributors like Hydro Ottawa are funded through the distribution rates paid by customers. We do not receive taxpayer money to fund our operations or investments in the distribution system. While Hydro Ottawa is responsible for collecting payment for the entire electricity bill, we retain only a portion of the delivery charge representing less than 20% of the bill.

Figure 1

Hydro Ottawa Bill Breakdown (November 1, 2019)

These are the electricity charges for the average residential customer using 700 kWh per month. These percentages do not include the Ontario Electricity Rebate.

60%
Electricity Generation Charges
 (paid to generation companies)



DOLLARS AND CENTS – EXPECTED COSTS OF THE PLAN

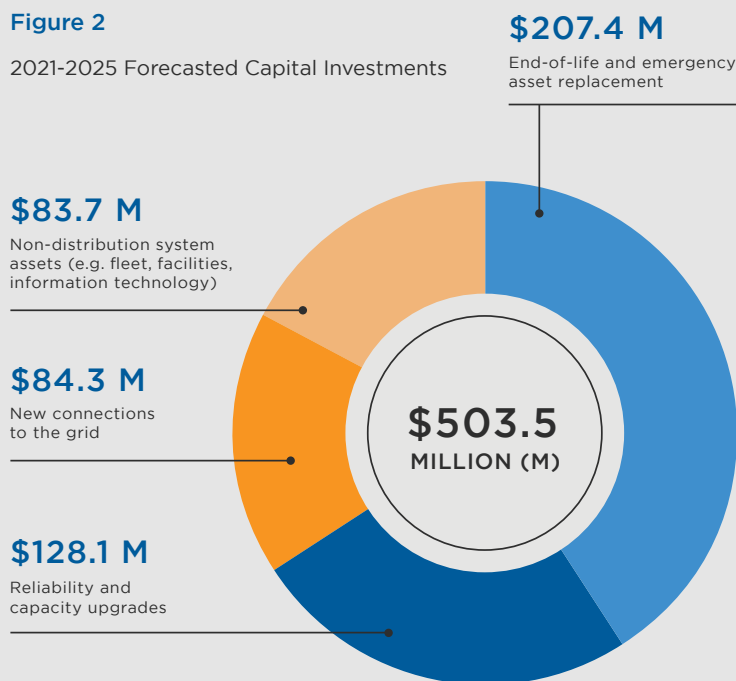
Like most businesses, Hydro Ottawa manages both a capital and an operating budget.

Capital expenditures are assets that have lasting benefits over many years (e.g. poles and wires), while operating expenditures are recurring expenses in day-to-day management of the company (e.g. tree trimming and billing).

For the 2021-2025 period, the capital required to maintain system reliability and safety, and invest in infrastructure and equipment priorities is \$503.5 million. For operations, a budget of \$493.8 million is needed.

Figure 2

2021-2025 Forecasted Capital Investments



In order to move forward with our proposals, we're seeking approval from the OEB to change our rates.

The expected impacts on the distribution portion of customer bills over the five-year rate period are shown in the table below.

Impacts on Customers' Distribution Rates

	Change in Distribution Charge	2021 Proposed	2022 Proposed	2023 Proposed	2024 Proposed	2025 Proposed	Average
Residential	\$/month	\$1.31	\$2.18	\$1.84	\$0.98	\$0.61	\$1.38
	%	4.57%	7.28%	5.73%	2.88%	1.75%	4.44%
General Service (<50 kW)	\$/month	\$1.74	\$5.07	\$5.15	\$3.05	\$2.25	\$3.45
	%	2.44%	6.94%	6.59%	3.66%	2.61%	4.45%

DELIVERING VALUE FOR MONEY – EXPECTED BENEFITS FOR CUSTOMERS

Moving forward on our five-year plan will enable us to maintain a high level of reliability for customers, while ensuring that we keep costs low and continuously improve the way we do business.

Some of the ways in which customers and communities are expected to benefit from the proposals in our plan include the following:

- Improved system reliability (fewer and shorter outages, quicker restoration times, enhanced resilience to severe weather)
- Greater electricity supply capacity for growing areas of the city
- Greater personalization, choice, convenience, and self-serve capability in the services provided to customers
- More options and solutions to help customers manage and monitor energy use with ongoing development of the Hydro Ottawa app and MyAccount
- Stronger protections for grid assets and customer data against cyber threats
- Increased ability to connect more renewable energy resources to the grid
- Lower costs, relative to alternative investment scenarios



HAVE YOUR SAY

The OEB will review Hydro Ottawa's plan and proposed rates in an open and transparent public process.

For more information on how you can participate in that process, please visit hydroottawa.com/active-applications.



EXECUTIVE SUMMARY

1. INTRODUCTION

This Schedule provides a summary of Hydro Ottawa Limited's ("Hydro Ottawa" or "the utility") application to the Ontario Energy Board ("OEB") seeking approval of its proposed distribution rates and other charges for the five-year period of January 1, 2021 to December 31, 2025. This application ("Application") is submitted pursuant to section 78 of the *Ontario Energy Board Act, 1998*. In preparing this Application, Hydro Ottawa has been guided by the provisions set forth in the *Chapter 2, Chapter 3, and Chapter 5 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019 ("Filing Requirements"), as well as the *Handbook for Utility Rate Applications* issued in 2016.

Herein, Hydro Ottawa highlights the key elements of this Application. These include the business, capital, and operational plans that underpin the Application, and the corresponding funding that is required to enable the utility to continue providing efficient and reliable services, along with a first-class customer experience, to Hydro Ottawa customers. This Schedule likewise explains how these plans align with customer needs and expectations, as well as what types of impacts are expected on customers' bills. For details on the specific approvals that Hydro Ottawa is requesting from the OEB by way of this Application, please see Exhibit 1-1-4: Administration and Attachment 1-1-4(A): OEB Appendix 2-A - List of Requested Approvals.

This Application employs the Custom Incentive Rate-setting ("Custom IR") method and marks the second successive rate filing in which Hydro Ottawa has opted to avail itself of this particular rate-setting approach.

Looking ahead to the 2021-2025 term, Hydro Ottawa anticipates a sustained need to undertake significant levels of capital investment in its distribution system, in order to maintain reliability and service quality for its customers. This need is the result of several factors, including aging infrastructure, an expanding customer base, continued growth across the City of Ottawa, and the effects of severe weather events. With respect to operational requirements, the utility

1 likewise continues to face numerous pressures, such as ongoing shifts in consumer
2 expectations for innovative services, the evolution of mission critical technologies, increased
3 penetration of distributed energy resources (“DERs”), and workforce retirements. Together,
4 these and other challenges are driving the need for investments and solutions which will ensure
5 that overall system performance is maintained and customer preferences are met – all while
6 safeguarding rates at a reasonable level. Accordingly, as described further below and elsewhere
7 in this Application, the Custom IR method remains the most suitable rate-setting option to
8 govern the approaching rate period for the utility.

9
10 The rate plan set forth in this Application builds upon the scope and success of the Custom IR
11 plan that Hydro Ottawa has been implementing over the course of the 2016-2020 period.
12 Numerous milestones have been achieved in the execution of this plan. Foremost was the
13 roll-out of a multi-year Customer Experience Roadmap, which was anchored in the twin
14 imperatives of putting the customer at the centre of everything that Hydro Ottawa does and
15 facilitating a customer experience that is driven by customer choice. Among the flagship
16 deliverables in this initiative were enhancements to the Customer Contact Centre (including
17 becoming one of the first distributors in Ontario to expand its hours of operation into Saturdays),
18 deployment of omni-channel capabilities and self-serve features to support customer
19 communication through preferred channels, introduction of a mobile application, achievement of
20 the highest level of customer participation in online billing of any distributor in Ontario, and the
21 launch of voice-activated digital assistance through such devices as Amazon Alexa and Google
22 Home (the first of its kind by any electric utility in Canada). Concurrent with the implementation
23 of this roadmap, Hydro Ottawa consistently received high marks from its customers in the
24 annual surveys that were commissioned to measure customer satisfaction with the utility.

25
26 Under its 2016-2020 rate plan, Hydro Ottawa has also crossed a new frontier in terms of
27 operational effectiveness. As of the end of 2019, the utility was on track to successfully execute
28 the largest multi-year capital expenditure plan in its history, with significant progress made in
29 replacing a large portion of assets at the end of their useful lives, connecting new customers to
30 the grid, and enhancing system capacity to keep pace with shifts in loads within the service

territory. These expenditures have translated into improved system reliability and performance, with the utility having consistently met or exceeded its reliability targets over the 2016-2018 timeframe. In fact, over the course of 2016-2018, Hydro Ottawa met or exceeded each of the measures in the annual Electricity Utility Scorecard for which a target had been assigned, with 100% of those measures showing performance improvement or consistent trending. Moreover, the outage management and emergency restoration capabilities of the utility were put to the test during several significant extreme weather events – the most damaging of which was the unprecedented series of tornadoes that touched down in Hydro Ottawa’s service territory in September 2018. While challenging, these events nevertheless presented the opportunity for the utility to demonstrate its organizational and operational strength, depth, and maturity. The positive response from customers and the community attested to the success of these efforts.

Hydro Ottawa also successfully completed a once-in-a-generation project to consolidate the majority of its employees into new administrative and operations facilities. This project was executed pursuant to approval granted by the OEB in its Decision and Rate Order on Hydro Ottawa’s 2016-2020 Custom IR application.¹ For more background information, including a detailed justification of the prudence of the costs incurred by the utility in the completion of this project, please see Attachment 2-1-1(A): New Administrative Office and Operations Facilities.

Other noteworthy performance outcomes from 2016-2020 included the following:

- Productivity gains through cost containment and increased automation of business processes;²
- Successful delivery of conservation programs to customers;
- Greater efficiencies in maintenance and construction work;
- Upgrades to core business systems (including migration to cloud-based platforms);
- Implementation of a formal cyber security program;
- Replenishment of the workforce through execution of a Talent Management Strategy;

¹ Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015).

² Several productivity initiatives have enabled Hydro Ottawa to seek a reduction in specific customer charges for the 2021-2025 rate term. Please see Exhibit 8-7-1: Specific Service Charges for details.

- Expansion of the fibre telecommunications network to connect field area devices with select substations; and
- Financial returns consistent with approved Return on Equity (“ROE”) levels.

It merits observation that Hydro Ottawa achieved the aforementioned outcomes and their attendant benefits against the backdrop of approximately 6.0% growth in total customer count during the 2016-2020 period, and of successful efforts to ensure no net increase in overall permanent full-time employee headcount.

In light of its best-in-class performance in many areas, Hydro Ottawa received numerous industry and professional awards during the 2016-2020 period, with recognition extended in the contexts of customer programs, human resources and safety innovation, corporate social responsibility, and best employer (among others).

Hydro Ottawa is confident that the accomplishments of the 2016-2020 rate term will position the utility for continued success in delivering value to customers and meeting their needs for reliable, responsive, and cost-effective services over the upcoming five-year period. As they did in the preceding rate plan, customer engagement, continuous improvement, and performance measurement will remain hallmarks of Hydro Ottawa’s planned activity for 2021-2025. Productivity expectations and initiatives are embedded throughout the plans underpinning this Application, alongside a robust framework for tracking and measuring outcomes, much of which is informed by the benchmarking of Hydro Ottawa’s performance in several key program areas.

2. ABOUT HYDRO OTTAWA

Hydro Ottawa is licensed by the OEB to distribute electricity to approximately 340,000 customers, as of the end of 2019, within the City of Ottawa and the Village of Casselman. By number of customers, Hydro Ottawa is the third largest municipally-owned electricity distributor in Ontario. Its service territory covers 1,116 square kilometres and is comprised of a dense urban core, large areas of suburban development, and a vast rural area that represents 60% of the overall footprint.

Hydro Ottawa and its predecessor utilities have proudly served communities in the National Capital Region for over 100 years. The utility's unique customer base includes residential customers, commercial businesses, farms, and large institutional and industrial customers. As the national seat of government, Ottawa is home to the federal parliament and key institutions within the Government of Canada. Moreover, in terms of population, the city serves as the second largest in the Province of Ontario and the sixth largest in the country.

In its current corporate structure, Hydro Ottawa serves as the successor to five utilities which consolidated in the year 2000 (Ottawa Hydro, Kanata Hydro, Gloucester Hydro, Nepean Hydro, and Goulbourn Hydro), following the amalgamation of several municipalities in the region and the formation of the City of Ottawa. In 2002, the service territory of Casselman Hydro was acquired.

Hydro Ottawa is a wholly-owned subsidiary of Hydro Ottawa Holding Inc., which is 100% owned by the City of Ottawa and governed by an independent Board of Directors.

3. HYDRO OTTAWA'S BUSINESS PLAN

In accordance with the OEB's *Handbook for Utility Rate Applications*, Hydro Ottawa has prepared a formal Business Plan that serves as the basis for the utility's overall strategy and goals, elucidates the intersection between these goals and the proposals set forth in this Application, and speaks to the benefits that will accrue to customers as a result of the plan's execution. This Business Plan was approved by Hydro Ottawa's Board of Directors on November 28, 2019 and is included in this Application as Exhibit 1-1-9.

3.1 CORPORATE VISION & STRATEGIC OBJECTIVES

Hydro Ottawa's vision is to serve as a leading partner in a smart energy future and as the trusted energy advisor for customers. In order to achieve this vision, the utility has organized its business strategy for several years around four critical areas of focus and their accompanying strategic objectives. Hydro Ottawa will maintain continuity in these core objectives heading into the 2021-2025 period. The key rationale for this approach is the level of success achieved

1 during the preceding five-year rate term, as well as the trajectory of the business and policy
2 landscape in which Hydro Ottawa operates.

3
4 Accordingly, as denoted in Figure 1, the business objectives that will guide Hydro Ottawa's
5 activities and investments throughout the 2021-2025 rate period will be the following:

- 6
7 • **Customer Value:** we will deliver value across the entire customer experience by
8 providing reliable, responsive, and innovative services at competitive rates.
9
- 10 • **Financial Strength:** we will create sustainable growth in our business and our earnings
11 by improving productivity and pursuing business growth opportunities that leverage our
12 strengths – our core capabilities, our assets, and our people.
13
- 14 • **Organizational Effectiveness:** we will achieve performance excellence by cultivating a
15 culture of innovation and continuous improvement.
16
- 17 • **Corporate Citizenship:** we will contribute to the well-being of the community by acting
18 at all times as a responsible and engaged corporate citizen.
19

20 **Figure 1 – Corporate Strategic Objectives**



1 Of these objectives, the most important driver for Hydro Ottawa's business strategy will remain
2 Customer Value, with the utility striving to put the customer at the centre of everything it does.

3 4 **3.2 ALIGNMENT WITH THE RENEWED REGULATORY FRAMEWORK**

5 The primary objectives animating Hydro Ottawa's corporate vision are wholly consistent with the
6 main performance outcomes promoted under the OEB's Renewed Regulatory Framework
7 ("RRF"). Hydro Ottawa views this broad alignment as a competitive advantage and remains
8 committed to firmly entrenching RRF principles and objectives throughout its operations and
9 business.

10
11 Table 1 below illustrates the alignment between the utility's overarching objectives and the key
12 categories of performance outcomes under the RRF. For additional context, the table also
13 shows the congruence of Hydro Ottawa's high-level performance goals and strategic outcomes
14 – which are utilized to measure progress in achieving the strategic objectives – with the RRF's
15 areas of focus.

Table 1 – Alignment of Hydro Ottawa’s Corporate Areas of Focus and Strategic Objectives with the OEB’s RRF Performance Outcomes

OEB	Hydro Ottawa		
RRF Performance Outcomes	Key Area of Focus	Corporate Performance Goal	Strategic Outcome
Customer Focus	Customer Value	<ul style="list-style-type: none"> Assist customers in managing their energy consumption and electricity costs Deliver on customer expectations for service quality and responsiveness Maintain overall distribution system reliability 	<ul style="list-style-type: none"> Customer loyalty and satisfaction
Operational Effectiveness	Organizational Effectiveness	<ul style="list-style-type: none"> Continue to enhance operational performance and productivity Maintain leading health and safety record Enhance organizational and employee capability 	<ul style="list-style-type: none"> Efficient and effective operations Safe and healthy work environment Engaged, aligned and prepared workforce
Public Policy Responsiveness	Corporate Citizenship	<ul style="list-style-type: none"> Enhance our brand image in the community and the industry Continue to improve our environmental performance and reduce our impact on the environment 	<ul style="list-style-type: none"> Leading governance and business practices Engaged stakeholders Safe, secure and environmentally responsible services Positive community impact
Financial Performance	Financial Strength	<ul style="list-style-type: none"> Grow revenues from new sources Enhance / protect revenues from existing business lines 	<ul style="list-style-type: none"> Growth in shareholder value

Further detail with respect to Hydro Ottawa’s alignment with the RRF can be found in Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework.

3.3 CUSTOMER ENGAGEMENT

The integration of customer feedback and providing customers with value for money serve as cornerstones of Hydro Ottawa’s business planning. In step with its overall business strategy to put the customer at the centre of everything it does, the utility endeavours to ensure that its capital and operational investment plans are guided and informed by customer needs, preferences, and priorities.

1 Hydro Ottawa avails itself of numerous tools, activities, and interactions to engage customers
2 and to reflect their input in the utility's planning and plans. Foremost among these are the
3 engagement initiatives that are administered on an ongoing basis. These represent an
4 evergreen posture on Hydro Ottawa's part to develop a genuine understanding of customers'
5 interests through a fluid and continuous feedback loop, which helps inform and sharpen the
6 utility's service delivery as a matter of established routine. Several of these activities are in line
7 with industry best practice, such as an annual customer satisfaction survey, formal Key
8 Accounts program, and engagement in numerous social media platforms. Other activities are
9 homegrown, having been formulated and customized to suit the particular needs of the utility
10 and its unique customer base. These include project-specific consultations that are hosted by
11 Hydro Ottawa when major distribution system projects have the potential to impact customers
12 and their community. Based on customer feedback, these consultations have resulted in the
13 evaluation of additional design options, the use of less impactful equipment, and/or the
14 collaborative scheduling of mutually agreeable timelines for project completion. Other examples
15 include surveys that are conducted each month of customers who contact Hydro Ottawa's
16 contact centre. Each customer is contacted and invited to rate their customer service
17 experience. Through analysis and monitoring of these results, Hydro Ottawa is able to identify
18 areas for improvement and adapt its processes to respond to customer preferences.

19
20 As a complement to the foregoing activities, Hydro Ottawa undertook targeted customer
21 outreach to inform the development of the specific plans and proposals set forth in this
22 Application. Consisting of a mix of qualitative and quantitative methodologies, this engagement
23 was launched in January 2019 and extended through September 2019.

24
25 The initial phase yielded consistent findings across low-volume customer classes – namely, that
26 reliability, prices, and investment in new technology constituted the top three priorities for
27 customers. Moreover, these customers generally held favourable views on making proactive
28 investments in aging infrastructure and grid modernization at the present time, with the
29 understanding that this may lead to near-term costs but will result in future savings.

1 Based upon the feedback received during Phase I, Hydro Ottawa undertook a second, more
2 expansive phase of engagement, in which the utility surveyed customers for their detailed
3 feedback on proposed plans for capital and operational investments over the 2021-2025 period.
4 A series of expenditure options were presented – namely, a reference case outlining the utility’s
5 proposed course of action, along with scenarios which either accelerated and expanded the
6 proposal, or which scaled back the scope and timing of the proposal. Customers were thus able
7 to express their views on a range of alternative proposals, as well as the respective trade-offs,
8 outcomes, and rate impacts.

9
10 Ultimately, the response from customers in all classes was heavily weighted in support of Hydro
11 Ottawa’s proposed plans or spending more than proposed for certain services. Nearly one-half
12 of respondents in the residential, small business, and mid-market and Key Account classes
13 (48%, 47%, and 46%, respectively) identified that Hydro Ottawa should maintain the forecasted
14 annual increase to deliver a program which focuses on the stated priorities. An additional 35%,
15 29%, and 23% of customers in these segments, respectively, expressed support for further
16 improvements in service, even if this entailed additional rate increases.

17
18 Of note, the number of customers who participated in this engagement exercise – nearly 21,000
19 in total – was the largest in the history of any Hydro Ottawa rate application. In itself, this result
20 was encouraging and instilled confidence in the quality of the information gleaned and the
21 representativeness of the sample pool of customers. Beyond this, however, Hydro Ottawa was
22 buoyed by the fact that the rate of response (i.e. number of respondents as a percentage of the
23 total customer base) exceeded that which was observed in the most recent rate filings from the
24 three largest distribution utilities in Ontario.³ In fact, according to the external vendor retained by
25 Hydro Ottawa to help execute the customer consultation process, the utility’s engagement
26 represented the single largest proportion of customers ever engaged by an electricity distributor
27 in Ontario for the purpose of informing the development of a rate application.⁴

³ Hydro One Networks Inc., *2018-2022 Custom Incentive Rate-setting Distribution Rate Application*, EB-2017-0049 (March 31, 2017); Toronto Hydro-Electric System Limited, *2020-2024 Custom Incentive Rate-setting Distribution Rate Application*, EB-2018-0165 (August 15, 2018); and Alectra Utilities Inc., *2020 Electricity Distribution Rate Application*, EB-2019-0018 (May 28, 2019).

⁴ Attachment 1-2-2(A): Customer Engagement Report, page 2.

Based upon customer feedback, Hydro Ottawa has crafted capital and operational plans that emphasize the following four core principles:

1. Minimize rate increases
2. Maintain reliability and service quality
3. Address key pressures to the system, including:
 - Aging infrastructure
 - An expanding customer base and continued population growth
 - The effects of severe weather events
4. Make prudent investments in emerging technologies to enhance service offerings and/or reduce operation costs

Additional information on the portfolio of Hydro Ottawa's customer engagement activities, as well as the targeted activities undertaken to consult customers on the development of this Application, is available in Exhibit 1-2-1: Customer Engagement Overview and Exhibit 1-2-2: Customer Engagement on the 2021-2025 Rate Application.

3.4 DISTRIBUTION SYSTEM PLAN

Hydro Ottawa's Distribution System Plan ("DSP") represents the culmination of multiple internal and external planning processes related to business strategy, customer engagement, capital investment, asset management, and regional planning. The DSP details how distribution system expenditures will be prioritized, paced, and optimized, while minimizing rate impacts for customers and facilitating continuous improvement and productivity.

The DSP in its entirety can be viewed in Exhibit 2-4-3.

3.5 PERFORMANCE MANAGEMENT AND MEASUREMENT

Hydro Ottawa is committing to a robust performance measurement and reporting framework for the upcoming five-year rate period. This framework expands and builds upon the success of the

1 one that was in place for 2016-2020, and will maintain the approach of combining standard OEB
2 performance measures with others that are customized for Hydro Ottawa's unique use.

3
4 An integral component of this framework is the set of measures that will form the basis of Hydro
5 Ottawa's 2021-2025 Custom Performance Scorecard (see Table 2 below). These measures
6 have been selected based upon a variety of factors and drivers, including responsiveness to
7 customer preferences, alignment with core RRF and corporate strategic objectives, and
8 correlation to key findings from the benchmarking analyses performed in support of this
9 Application.

Table 2 – Custom Performance Scorecard Measures for 2021-2025

Outcome	OEB Reporting Category	Hydro Ottawa Custom Measures	New/Existing	Target
Customer Focus	Customer Satisfaction	Contact Centre Satisfaction – Transactional Feedback	New	Maintain
		Number of MyAccount Customers	New	Increase
		Number of Online Billing Accounts	New	Increase
Operational Effectiveness	Safety	All Injury/Illness Frequency Rate	New	Reduce
		Lost Workday Severity Rate	New	Reduce
	System Reliability	Customer Average Interruption Duration Index	Existing	Monitor
		Feeders Experiencing Multiple Sustained Interruptions	Existing	Maintain
		Worst Feeder Analysis – Number of Feeders with Very Poor Performance	Existing	Reduce
		Stations Exceeding Planning Capacity	Existing	≤5%
		Feeders Exceeding Planning Capacity	Existing	≤10%
		Stations Approaching Rated Capacity	Existing	0%
		Feeders Approaching Rated Capacity	Existing	0%
	Cost Control	Productive Time	Existing	Maintain
		Labour Allocation	Modified	Maintain
		3-Year Average Cost per Pole – Wood Pole Replacement	New	Monitor
		3-Year Average Cost per Meter – Underground Cable	New	Monitor
		Average Cost per Kilometer – Vegetation Management	New	Monitor
		Average Cost per Pole – Pole Test and Inspection	New	Monitor
Operational Effectiveness	Asset Efficiency	Technology Infrastructure Cost per Employee	New	Monitor
Public Policy Responsiveness	Environment	Annual Oil Spills & Costs of Remediation	Existing	Reduce
		Non-Hazardous Waste Diversion Rate	New	Maintain
		Percentage of Green Suppliers	New	Maintain
Financial Performance	Financial Metrics	OM&A per Customer	New	Monitor
		Bad Debt as a Percentage of Total Electricity Revenue	New	Monitor
		Cumulative Capital Additions per Investment Category	New	Monitor
		Annual Capital Spending per Investment Category	New	Monitor

This proposed reporting regime is intended to equip the OEB, customers, and other stakeholders with the ability to better monitor and understand diverse aspects of Hydro Ottawa's performance, and to demonstrate the utility's accountability in transparently communicating the outcomes achieved under its performance management framework.

3.6 BENCHMARKING

The preparation of Hydro Ottawa's business plan was supported by year-over-year comparisons of Hydro Ottawa's costs and outcomes, along with evaluations of the utility's performance against its peers. The scope and substance of particular capital and operational programs were shaped, in part, by the analysis of trends in the achievement of system reliability, customer value, and financial strength outcomes. Similarly, the benchmarking of Hydro Ottawa's expenditures and performance relative to samples of utilities across Ontario, Canada, and the United States has yielded valuable insights into areas in which the utility performs well and those in which there is room for improvement.

To help inform the development of its business plan, the utility commissioned the following benchmarking studies from third-party experts:

Table 3 – Benchmarking Studies Filed in this Application

Benchmarking Review	External Consultant	Application Attachment
Econometric Benchmarking Study of Hydro Ottawa's Total Cost and Reliability	Clearspring Energy Advisors	Attachment 1-1-12(A)
Unit Costs Benchmarking Study	UMS Group	Attachment 1-1-12(B)
IT Budget Assessment Benchmark	Gartner	Attachment 1-1-12(F)
2019 Market Benchmarking	Mercer Canada	Attachment 1-1-12(G)

The results from these studies consistently revealed that Hydro Ottawa is a strong performer relative to its peers in numerous categories, and that the utility is well-positioned to sustain ongoing improvements in key areas of performance.

These findings have been internalized and incorporated into specific work programs, and will serve as important baselines and points of reference against which to measure the utility's progress.

3.7 PRODUCTIVITY & CONTINUOUS IMPROVEMENT

Responsibly controlling costs and focusing on cost-effective delivery of outcomes that matter to customers remain core priorities for Hydro Ottawa. Amidst the unique and challenging confluence of compounding demands, pressures, and constraints on operations, the utility is placing increased emphasis on incorporating productivity and continuous improvement gains, so as to offset increasing expenditures and boost organizational capacity. Hydro Ottawa has adopted numerous controls to provide the OEB, customers, and other stakeholders with robust assurance that productivity, cost control, and continuous improvement objectives have been firmly integrated into the utility's business planning process, and the resultant capital and operational plans, for the 2021-2025 rate period.

For information on the range of productivity and continuous improvement activities that are planned over the course of the upcoming rate term, please see Exhibit 1-1-13: Productivity and Continuous Improvement Initiatives.

4. HYDRO OTTAWA'S CUSTOM IR APPLICATION

As noted in the OEB's 2012 report entitled *Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* ("RRFE Report"), the Custom IR method is "intended to be customized to fit the specific applicant's circumstances"⁵ and "may be appropriate for distributors with significantly large multi-year or highly variable investment commitments with relatively certain timing and level of associated expenditures."⁶

4.1. PRINCIPAL DRIVERS JUSTIFYING THE USE OF CUSTOM IR

The foregoing description of the suitable context for employing the Custom IR option is one which remains applicable to Hydro Ottawa, as it prepares to enter into a new five-year rate period. The results of the utility's asset management and network investment planning processes have confirmed that significant capital investments are required over the course of

⁵ Ontario Energy Board, *Report of the Board - Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* (October 18, 2012), page 19.

⁶ *Ibid*, page 14.

1 2021-2025, in order to ensure Hydro Ottawa is able to deliver safe and reliable electricity
2 service and to meet the needs and expectations of customers.

3
4 The drivers underlying this need are numerous. For starters, while the overall profile of Hydro
5 Ottawa's asset demographic is positive, a major segment of the asset population (19%) has
6 reached its expected service life and thus poses a higher risk of failure. This includes
7 approximately 51% of stations and 23% of overhead system assets (i.e. poles, transformers,
8 and switches). Alongside these asset demographic figures, the utility's asset demographic
9 ratings show that 17% of assets are in Poor or Very Poor condition.⁷

10
11 What's more, the City of Ottawa continues to experience steady year-over-year growth, with
12 municipal policy promoting the development of new residential subdivisions and business parks,
13 as well as intensification in urban areas.

14
15 In addition, an increase in storms and severe weather events is placing greater stress on the
16 system, with an upward trend over the last five years in the number of outages caused by
17 adverse weather. During a six-month span in 2018 alone, there were three major weather
18 events that affected the Ottawa area (tornadoes, flooding, and freezing rain), which in turn
19 caused considerable damage to the system and heavily impacted spending in emergency
20 replacement of assets.

21 22 **4.2. CAPITAL EXPENDITURES**

23 Hydro Ottawa developed its forecasted capital expenditures for the years 2021-2025 based
24 upon an identification and analysis of system needs, customer expectations, and requirements
25 for general plant capital. The total capital expenditure forecast underwent a number of iterations
26 and refinements, in order to address issues of priority, customer preference, rate and bill
27 impacts, resource capacity, and financing capability.

⁷ Please see Exhibit 2-4-3: Distribution System Plan for more information on the demographics and condition of the utility's assets.

In response to feedback expressed by customers, appropriate parameters and constraints have been incorporated to limit the costs and impacts on bills associated with planned capital investments. In its customer engagement activities, Hydro Ottawa heard a recurring preference for reliability to be maintained or improved at minimal or no increased cost. As a result, the utility has created a capital plan that paces investments in order to minimize rate impacts, with a focus on continuous improvement with respect to the efficiency and productivity of distribution planning and plan implementation.

One practical effect of this approach is that the proposals set forth in this Application do not encompass all of the investments that Hydro Ottawa would deem to be worthwhile for purposes of optimally fulfilling system needs during the 2021-2025 period.⁸ Nevertheless, Hydro Ottawa is confident that the portfolio of capital investments that ultimately emerged from its prioritization and calibration process will enable strong performance of the system and will serve customers' interests effectively.

Hydro Ottawa's capital expenditure plan for the 2021-2025 period proposes an average annual expenditure of \$100.7M per year, as follows:

Table 4 – Summary of 2021-2025 Capital Expenditures (\$'000,000s)

Investment Category	2021	2022	2023	2024	2025	Average 2021-2025
System Access	\$56.7	\$41.0	\$37.4	\$34.5	\$34.0	\$40.7
System Renewal	\$43.3	\$44.0	\$40.2	\$39.4	\$40.5	\$41.5
System Service	\$31.0	\$27.4	\$24.3	\$25.2	\$23.9	\$26.4
General Plant	\$32.0	\$11.7	\$7.6	\$17.4	\$16.9	\$17.1
Capital Contributions	\$(41.3)	\$(25.2)	\$(19.9)	\$(19.2)	\$(19.3)	\$(25.0)
TOTAL	\$121.8	\$98.9	\$89.6	\$97.2	\$96.0	\$100.7

⁸ As explained further in Exhibit 2-4-1: Capital Expenditure Summary, the process undertaken by the utility to rationalize its initial asset needs forecast resulted in a reduction in the 2021-2025 capital expenditure forecast of approximately \$50.0M per year.

1 For more detail on 2021-2025 capital funding requirements, please refer to Hydro Ottawa's DSP
2 and associated attachments in Exhibit 2-4-3.

3 4 **4.3. OPERATIONS, MAINTENANCE & ADMINISTRATION EXPENDITURES**

5 Hydro Ottawa's duties to manage a safe and reliable distribution system, serve customers in a
6 manner that is responsive to their needs and preferences, and maintain compliance with a
7 broad range of legislative and regulatory requirements compel the utility to incur a level of costs
8 that is proportionate to the magnitude of its operational obligations. Responsibly controlling
9 these costs and focusing on cost-effective delivery of outcomes therefore remain core priorities
10 for the utility. What's more, the critical importance of cost control is magnified against the
11 backdrop of the evolution underway across the broader North American electricity sector, which
12 is forcing utilities to modernize aspects of their service delivery models in order to adapt to the
13 increased complexity of system operations, the changing expectations of customers, and the
14 shifting economics of the marketplace.

15
16 It is important to understand Hydro Ottawa's proposed operations, maintenance, and
17 administration ("OM&A") expenditures for the years 2021-2025 in the context of OM&A costs for
18 the 2016-2020 Custom IR rate period, as presented in Table 5 below.

Table 5 – Historical, Bridge, and Test Year OM&A Costs by Major OM&A Category (\$'000s)

OM&A Category	Historical			Bridge		Test	CAGR ⁹
	2016	2017	2018	2019	2020	2021	
Operations	\$18,399	\$18,860	\$20,877	\$22,398	\$23,824	\$22,924	4.5%
Maintenance	\$9,739	\$10,299	\$9,125	\$8,653	\$9,767	\$9,855	0.2%
Subtotal	\$28,138	\$29,158	\$30,003	\$31,050	\$33,591	\$32,779	3.1%
Billing and Collecting	\$12,594	\$12,745	\$11,941	\$10,220	\$12,052	\$12,711	0.2%
Community Relations	\$5,290	\$5,120	\$4,759	\$5,131	\$5,895	\$6,365	3.8%
Subtotal	\$17,884	\$17,865	\$16,700	\$15,352	\$17,946	\$19,076	1.3%
Administrative and General	\$36,599	\$35,222	\$40,161	\$41,143	\$40,453	\$42,068	2.8%
TOTAL OM&A EXPENSES¹⁰	\$82,621	\$82,245	\$86,863	\$87,545	\$91,990	\$93,923	2.6%

Based on the proposed costs for the 2021 Test Year, OM&A expenditures for the remaining years of the 2021-2025 Custom IR period have been calculated through the application of an escalation factor, which is discussed in further detail in section 4.4 below. The result is the breakdown of OM&A costs shown in Table 6.

Table 6 – Annual OM&A Program Expenditures for 2021-2025 (\$'000s)

2021	2022	2023	2024	2025
\$93,923	\$96,280	\$98,697	\$101,174	\$103,714

Hydro Ottawa's proposed OM&A costs over the 2021-2025 term translate into an average annual expenditure of \$98.8M.

Of note, during the internal budgeting process, the initial levels of OM&A submitted by the various Divisions within the utility resulted in a compound annual growth rate ("CAGR") of 3.5% over the 2021-2025 period. In step with its commitment to continuous improvement and with customer preferences for minimizing rate increases, Hydro Ottawa then applied a custom

⁹ CAGR represents the compound annual growth rate between 2017 and 2021.

¹⁰ Totals may not sum due to rounding.

1 OM&A escalation factor to contain upward pressure on operational expenses and to embed
2 productivity expectations throughout the 2021-2025 period. This lowered the overall OM&A
3 CAGR to 2.51% and achieved a reduction of \$13.1M in OM&A spending over the course of the
4 rate term.

5
6 For additional information on Hydro Ottawa's OM&A programs, cost drivers, and year-over-year
7 variances, please see Exhibit 4-1-1: Operations, Maintenance and Administration Summary and
8 Exhibit 4-1-4: Operations, Maintenance and Administration Cost Drivers and Program Variance
9 Analysis.

10 11 **4.4. CUSTOM PRICE ESCALATION FACTOR**

12 As established by the RRF, under a price cap form of incentive rate-setting, rates are adjusted
13 using a formulaic approach in the years following the first year base rates. This formula consists
14 of a two-component Price Cap Index ("PCI"): inflation and productivity. For electricity
15 distributors, the formula includes an industry-specific inflation factor and two factors for
16 productivity. One productivity factor is a fixed amount for industry-wide productivity, and the
17 other is a stretch factor which is set each year based on the level of productivity the distributor
18 has achieved as evaluated by the Pacific Economics Group ("PEG") econometric model.

19
20 Under a Custom IR approach, the annual rate adjustment must be based on a custom index
21 supported by empirical evidence that can be tested. The annual adjustment must include explicit
22 financial incentives for continuous improvement and cost control targets. As noted in the OEB's
23 *Handbook for Utility Rate Applications*, "these incentive elements, including a productivity factor,
24 must be incorporated through a custom index or an explicit revenue reduction over the term of
25 the plan (not built into the cost forecast)."¹¹

26
27 As a result, for years two through five of its upcoming rate term (i.e. 2022-2025), Hydro Ottawa
28 is proposing to adopt a Custom Price Escalation Factor ("CPEF") framework, which is based on

¹¹ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 25.

the approach approved by the OEB in Hydro Ottawa's 2016-2020 Custom IR application.¹² This framework is aligned with OEB policy and based on sound ratemaking principles, and incorporates the OEB's key principles and expectations of a Custom IR application.

Hydro Ottawa is proposing that OM&A costs in years two through five of its rate term be adjusted by the CPEF, on an annual basis, as follows:

$$\text{CPEF} = I - X + G$$

where

"I" is the inflation factor

"X" is the two-component productivity factor

"G" is the growth factor

Using this formula, Hydro Ottawa has determined that the CPEF will be 2.51%.

A more detailed explanation of the CPEF and the evidence supporting the use and assigned value of each factor is included in Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework.

4.5. RATE BASE

Hydro Ottawa's requested rate base for the 2021 test year is \$1,219M, which represents an increase of approximately \$244.8M or 25% over the OEB-approved rate base for the 2020 Bridge Year. Table 7 below identifies the rate base requested for each year during the 2021-2025 period. Please refer to Exhibit 2-1-1: Rate Base Overview for further details.

¹² Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015), page 1.

Table 7 – Summary of Rate Base (\$'000s)

	2021	2022	2023	2024	2025
Rate Base	\$1,218,659	\$1,303,922	\$1,349,619	\$1,376,805	\$1,419,763

4.6. REVENUE REQUIREMENT

Hydro Ottawa is requesting approval for both service and base revenue requirement for each year in its planned 2021-2025 rate term, along with the resulting rates and riders based on forecast capital expenditures, OM&A, depreciation expense, cost of capital, payments in lieu of taxes ("PILS"), and revenue from other sources. For the 2021 Test Year, Hydro Ottawa requests a service revenue requirement of \$214.9M, which represents an increase of \$14.3M or 7% from the service revenue requirement previously approved by the OEB for 2020.

The principal cost drivers underlying Hydro Ottawa's Test Year revenue requirement are the increases to rate base, which are attributable to capital investments that the utility must undertake in order to continue providing safe and reliable electricity service to the residents and businesses in Ottawa and Casselman. Other cost drivers include increases to amortization expense, OM&A expenses, interest, and return on rate base.

Table 8 below provides a summary of the proposed revenue requirement for 2021-2025.

For additional details regarding Hydro Ottawa's revenue requirement and related cost drivers, please refer to Exhibit 6-1-1: Calculation of Revenue Deficiency or Sufficiency.

Table 8 – Summary of Revenue Requirement for 2021-2025 (\$'000s)

	2021	2022	2023	2024	2025
Return on Rate Base	\$67,489	\$73,588	\$77,441	\$79,860	\$84,624
Distribution Expenses (not including amortization)	\$93,923	\$96,280	\$98,697	\$101,174	\$103,714
Amortization	\$52,450	\$56,860	\$59,142	\$60,711	\$64,027
Payment in Lieu of Taxes	\$1,024	\$5,211	\$8,766	\$11,660	\$7,689
Service Revenue Requirement	\$214,886	\$231,939	\$244,045	\$253,405	\$260,053
Less Revenue Offsets	\$10,977	\$11,013	\$11,667	\$12,151	\$12,457
Base Revenue Requirement	\$203,909	\$220,926	\$232,378	\$241,254	\$247,596
Transformer Ownership Credit	\$1,056	\$1,056	\$1,056	\$1,059	\$886
Revenue Requirement from Rates	\$204,965	\$221,982	\$233,434	\$242,312	\$248,483
Forecasted Load at 2020 Rates	\$187,905	\$188,833	\$189,716	\$190,703	\$191,468
Cumulative Revenue Deficiency (over 2020)	\$(17,060)	\$(33,149)	\$(43,719)	\$(51,609)	\$(57,014)
Yearly Revenue Deficiency over 2020	\$(17,060)	\$(16,089)	\$(10,570)	\$(7,891)	\$(5,405)

4.7. LOAD FORECAST

Hydro Ottawa's forecasted energy consumption for the 2021 Test Year is 7,065,745 MWh. This is 374,879 MWh (5.0%) lower than the 2016 OEB-approved MWh forecast. The utility's forecasted number of customers for the 2021 Test Year is 344,936, representing an increase of 6.1% over the 2016 OEB-approved number.

Table 9 provides a high-level summary of Hydro Ottawa's forecasted load for 2021-2025.

Table 9 – Load Forecast Summary

Year	Total Sales (MWh)	Total Customers ¹³
2021	7,065,745	344,936
2022	7,088,184	348,104
2023	7,116,619	351,138
2024	7,165,092	354,088
2025	7,179,631	357,017

¹³ Figures in this column do not include Standby Power customers.

Hydro Ottawa has provided a five-year detailed class-specific weather normalized load forecast and customer connection forecast for each rate class in Exhibit 3-1-1: Load Forecast. This forecast incorporates modifications to the provincial electricity conservation framework that were enacted by the Government of Ontario in 2019, as well as the impacts of embedded generation.

4.8. COST OF CAPITAL

Cost of capital components have been determined for each year during the 2021-2025 planned rate term. Hydro Ottawa has used the following debt/equity ratio for all years: 4% short-term debt, 56% long-term debt, and 40% equity.

Hydro Ottawa has utilized the short-term debt rate of 2.75%, as provided in the 2020 Cost of Capital Parameters letter dated October 31, 2019, for the full five-year term covered by this Application. The utility has forecasted the weighted average cost of long-term debt based on the cost of existing embedded debt, anticipated long-term borrowing requirements, and the forecast yield for 2021-2025 long-term debt issuances. Using the OEB's formulaic calculation, Hydro Ottawa has also forecast an ROE for the full five-year period covered by this Application.

It is Hydro Ottawa's intention to provide regulatory efficiency and rate stability over the five-year term of this Application by not making any further updates to cost of capital components.

For additional details on the cost of capital determinations and calculations employed by Hydro Ottawa, please see Exhibit 5-1-1: Cost of Capital and Capital Structure.

4.9. COST ALLOCATION AND RATE DESIGN

Hydro Ottawa has prepared a cost allocation model for each of the five years in the proposed 2021-2025 rate plan using the OEB's cost allocation methodologies and model. Hydro Ottawa's 2021 base revenue requirement has been allocated across the utility's nine rate classes. The resulting revenues-to-cost ratios for each rate class were determined using the total revenues over costs for each year, pursuant to OEB guidelines.

1 Hydro Ottawa engaged Elenchus Research Associates to undertake a Cost Allocation Model
2 study to determine whether refinements were necessary to better reflect the OEB's principle of
3 cost causality in its cost allocation to customers. The results of the study indicated that four rate
4 classes require adjustments to bring them within OEB-approved ranges. In this Application, the
5 utility is proposing the necessary adjustments to achieve this result. For more information,
6 please see Exhibit 7-1-1: Cost Allocation.

7
8 With respect to rate design, one noteworthy feature of Hydro Ottawa's 2021-2025 rate plan is
9 that it marks the first five-year rate term for the utility in which distribution rates for residential
10 customers will be set at a fully fixed charge. Effective January 1, 2020, Hydro Ottawa completed
11 the transition to fully fixed rates for these customers, in accordance with the policy adopted by
12 the OEB in 2015.¹⁴ As noted elsewhere, the execution of this transition has implications for the
13 presentation of information pertaining to the impacts on residential customer rates associated
14 with the proposals and plans set forth in this Application.¹⁵

16 **4.10. DEFERRAL AND VARIANCE ACCOUNTS**

17 Hydro Ottawa is proposing to clear Group 2 Accounts, including the Lost Revenue Adjustment
18 Mechanism ("LRAM") Account. The total net deferral and variance ("DVA") balance proposed for
19 disposition is \$(5,751,923). Hydro Ottawa is proposing that the Rate Riders for Group 2
20 Accounts (excluding LRAM) be disposed of over two years. For the LRAM Variance Account, a
21 one-year disposition period is proposed. As no Group 1 Accounts are being requested for
22 disposition at this time, the rate riders are the same for Regulated Price Plan ("RPP") and
23 non-RPP customers.

24
25 In this Application, Hydro Ottawa is also proposing modifications to and the discontinuance of
26 certain DVAs. For further such information, as well as for details on amounts proposed for DVA
27 clearances, please see Exhibit 9-1-1: Summary of Current Deferral and Variance Accounts and
28 Exhibit 9-2-1: New Deferral and Variance Accounts.

¹⁴ Ontario Energy Board, *Board Policy - A New Distribution Rate Design for Residential Electricity Customers*, EB-2012-0410 (April 2, 2015). Please see Exhibit 8-2-1: Rate Design Policy Consultation for details.

¹⁵ For example, please see the explanation provided in Exhibit 1-1-7: Customer Summary.

1 **4.10.1. Capital Variance Account**

2 In this Application, Hydro Ottawa proposes to sustain the use of a variance account wherein it
3 will record, on an annual basis, the impacts on revenue requirement arising from variances
4 between actual and forecasted cumulative capital additions. Capital additions would be tracked
5 using three categories: System Access, System Service and System Renewal, and General
6 Plant.¹⁶ The creation and use of such a variance account was sanctioned as part of the
7 Approved Settlement Agreement governing Hydro Ottawa's 2016-2020 rates. The utility
8 believes that the administration of this capital variance account on an ongoing basis is an
9 effective means of ensuring transparency and accountability in the planning, execution, and
10 reporting of annual capital expenditures. By proposing the calculation of the annual variance on
11 a cumulative basis, Hydro Ottawa's intent is to ensure that if projects are delayed, but are
12 completed as planned at a later time, then the reduction to revenue requirement will only reflect
13 the period of delay and will cease when the projects have been added to rate base.

14
15 The one modification to the capital variance account that Hydro Ottawa is proposing to
16 introduce for the 2021-2025 period is the use of a separate sub-account for System Access
17 capital additions. The rationale for this proposal is that capital spending in this category is driven
18 by customer requests and is therefore difficult to predict, as the level of required expenditure is
19 outside of the utility's control.

20
21 For additional information on the Capital Variance Account, please see Exhibit 9-2-1: New
22 Deferral and Variance Accounts.

23 **4.10.2. Earnings Sharing Mechanism**

24
25 In order to insulate customers from the risk of Hydro Ottawa generating excess earnings, the
26 utility is proposing the inclusion of an earnings sharing mechanism ("ESM"). ESMs permit the
27 sharing of utility earnings with customers when earnings rise above or fall below a certain
28 threshold. Under an ESM, earnings may be passed along to customers in the form of rate

¹⁶ The System Renewal and System Service categories have been merged into one category to reflect Hydro Ottawa's standard operating practice to shift funds between the two categories, as warranted by customer and operational requirements.

reductions or rate offsets. Hydro Ottawa is proposing an asymmetrical ESM such that it is only proposing to share earnings that exceed a basis point threshold above the utility's ROE, with no corresponding adjustment if its earnings fall below the basis point threshold.

The proposed ESM formula is as follows:

Table 10 – Proposed ESM Formula

#	Threshold	Treatment
1	Under earning	Borne entirely by shareholder
2	0-150 basis points	Fully retained by shareholder
3	Above 150 basis points	50/50 sharing of ratepayer/shareholder

Additional detail on the ESM is included in Exhibit 9-2-1: New Deferral and Variance Accounts.

4.10.3. Z Factor(s)

In its *Handbook for Utility Rate Applications*, the OEB affirmed its policy that “[a]n acceptable adjustment during a Custom IR term is a Z factor mechanism for cost recovery of unforeseen events.”¹⁷ In step with this guideline, Hydro Ottawa intends to reserve its right over the course of the 2021-2025 rate term to file a Z factor application in order to recover costs resulting from unforeseen events, decisions, or activities, the results of which cannot be reasonably anticipated or quantified at this juncture and where the costs exceed the utility's materiality threshold. Examples include unforeseen weather events or changes to laws or regulations requiring significant implementation investment.

4.10.4. Certification of Evidence - Commodity Accounts 1588 and 1589

As per the Filing Requirements, Hydro Ottawa's Chief Financial Officer hereby certifies that the utility maintains robust processes and internal controls for the preparation, review, verification, and oversight of Account 1588 RSVA – Power and Account 1589 RSVA – Global Adjustment.

¹⁷ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 27.

1 **4.11. BILL IMPACTS**

2 Table 11 below provides a summary of the total bill impacts for typical customers in all rate
3 classes. Further details regarding Hydro Ottawa's proposed bill impacts are available in Exhibit
4 8-12-1: Bill Impact Information.

1

Table 11 – Summary of Bill Impacts

Rate Class		Approved	Proposed				
		2020	2021	2022	2023	2024	2025
Residential (750 kWh)	Distribution Charge	\$28.64	\$29.95	\$32.13	\$33.97	\$34.95	\$35.56
	Change in Distribution Charge		\$1.31	\$2.18	\$1.84	\$0.98	\$0.61
	% Distribution Increase		4.57%	7.28%	5.73%	2.88%	1.75%
	% Increase of Total Bill		1.32%	1.54%	1.28%	0.68%	0.43%
General Service <50 kW (2,000 kWh)	Distribution Charge	\$71.32	\$73.06	\$78.13	\$83.28	\$86.33	\$88.58
	Change in Distribution Charge		\$1.74	\$5.07	\$5.15	\$3.05	\$2.25
	% Distribution Increase		2.44%	6.94%	6.59%	3.66%	2.61%
	% Increase of Total Bill		0.65%	1.37%	1.37%	0.81%	0.59%
General Service 50 kW - 1,499 kW (250 kW)	Distribution Charge	\$1,461.93	\$1,537.98	\$1,669.42	\$1,785.17	\$1,853.01	\$1,905.37
	Change in Distribution Charge		\$76.05	\$131.44	\$115.76	\$67.84	\$52.36
	% Distribution Increase		5.20%	8.55%	6.93%	3.80%	2.83%
	% Increase of Total Bill		1.59%	0.74%	0.65%	0.38%	0.29%
General Service 1,500 kW - 4,999 kW (2,500 kW)	Distribution Charge	\$15,941.18	\$16,614.68	\$18,015.99	\$19,263.84	\$19,992.90	\$20,452.40
	Change in Distribution Charge		\$673.50	\$1,401.31	\$1,247.85	\$729.06	\$459.50
	% Distribution Increase		4.22%	8.43%	6.93%	3.78%	2.30%
	% Increase of Total Bill		1.53%	0.78%	0.69%	0.40%	0.25%
Large Use (7,500 kW)	Distribution Charge	\$48,420.32	\$53,922.32	\$58,287.22	\$62,092.67	\$64,292.42	\$65,709.17
	Change in Distribution Charge		\$5,502.00	\$4,364.90	\$3,805.45	\$2,199.75	\$1,416.75
	% Distribution Increase		11.36%	8.09%	6.53%	3.54%	2.20%
	% Increase of Total Bill		2.16%	0.79%	0.68%	0.39%	0.25%
Sentinel Lighting (0.4 kW)	Distribution Charge	\$9.53	\$10.91	\$13.14	\$15.31	\$17.20	\$18.99
	Change in Distribution Charge		\$1.38	\$2.23	\$2.17	\$1.89	\$1.79
	% Distribution Increase		14.46%	20.46%	16.54%	12.33%	10.44%
	% Increase of Total Bill		7.36%	8.74%	7.83%	6.32%	5.65%
Street Lighting (1 kW)	Distribution Charge	\$7.76	\$6.99	\$7.97	\$8.68	\$8.98	\$9.24
	Change in Distribution Charge		\$(0.77)	\$0.98	\$0.71	\$0.30	\$0.26
	% Distribution Increase		(9.98)%	14.07%	8.92%	3.46%	2.91%
	% Increase of Total Bill		(1.10)%	3.16%	2.24%	0.96%	0.83%
Unmetered Scattered Load (470 kWh)	Distribution Charge	\$17.08	\$17.49	\$19.55	\$21.37	\$22.67	\$23.82
	Change in Distribution Charge		\$0.41	\$2.06	\$1.82	\$1.30	\$1.15
	% Distribution Increase		2.42%	11.76%	9.33%	6.10%	5.07%
	% Increase of Total Bill		0.98%	2.36%	2.05%	1.44%	1.26%

2

Hydro Ottawa Limited Business Plan 2021-2025

November 2019

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1. INTRODUCTION

Hydro Ottawa Limited (“Hydro Ottawa” or “the utility”) has prepared a formal Business Plan that serves as the basis for the utility’s overall strategy and goals, highlights the intersection between these goals and the proposals set forth in its 2021-2025 Custom Incentive Rate-setting (“Custom IR”) application, and speaks to the benefits that will accrue to customers as a result of the plan’s execution.

This Business Plan has been prepared in conformance with the requirements set forth in the Ontario Energy Board’s (“OEB”) *Handbook for Utility Rate Applications*.

2. COMPANY OVERVIEW

Mission

To create long-term value for our shareholder, benefitting our customers and the communities we serve

Organizational Values

Teamwork, Integrity, Excellence, Service

Vision

Hydro Ottawa – a leading partner in a smart energy future

Hydro Ottawa is a regulated electricity distribution company serving approximately 340,000 customers within the City of Ottawa and the Village of Casselman, as of the end of 2019. As the third-largest municipally owned electrical utility in Ontario, the company maintains one of the safest, most reliable, and cost-effective electricity distribution systems in the province. Its service territory stretches 1,116 square kilometres and is comprised of a dense urban core, large areas of suburban development, and a vast rural area that represents 60% of the overall footprint.

Hydro Ottawa and its predecessor utilities have proudly served communities in the National Capital Region for over 100 years. The utility's unique customer base includes residential customers, commercial businesses, farms, and large institutional and industrial customers. As the national seat of government, Ottawa is home to the federal parliament and key institutions within the Government of Canada. Moreover, the city is the second largest in the Province of Ontario and the sixth largest in the country.

The utility is a wholly-owned subsidiary of Hydro Ottawa Holding Inc., which is 100% owned by the City of Ottawa and governed by an independent Board of Directors.

3. INTEGRATED BUSINESS PLANNING & PERFORMANCE MANAGEMENT FRAMEWORK

For more than a decade, the larger corporate enterprise of which Hydro Ottawa is a member has successfully administered an integrated business planning and corporate performance management framework. This framework links the strategic and business planning, budgeting, performance measurement, management reporting, and employee alignment activities into one continuous business and improvement cycle. Applying this framework in whole, Hydro Ottawa is able to chart its course for a five-year period, implement and operate in accordance with annual plans and budgets, and monitor and report performance and progress against these plans and budgets.

In accordance with its charter, Hydro Ottawa's Board of Directors ("the Board") is responsible for developing and approving a business plan which indicates the overarching strategy that the utility intends to pursue. The Board must regularly review the integrity of the business plan. At any time, if the Board is of the opinion that the then-existing business plan is no longer appropriate, the Board – in conjunction with the Chief Executive Officer ("CEO") – must develop a revised business plan. What's more, on an ongoing basis, the Board is likewise responsible for monitoring the utility's implementation of the plan and the progress toward achieving it. Similarly, the Board is tasked with approving the annual budget, and monitoring its progress and achievement at each regular meeting.

The key components of the integrated planning and performance management framework are as follows:

- a. An enterprise strategic plan approved by the holding company Board that sets the course for the enterprise for a five-year period.
- b. Annual business plans that are approved at both the holding company and regulated distribution utility levels, which are comprised of a corporate performance scorecard and budget. These elements operationalize the strategic plan in a given year and cascade to employees through individual contribution and performance appraisal systems. The annual business plans are informed by, and draw upon, updated plans for each administrative division within the utility which are prepared by the applicable member of the Executive Management Team.
- c. Regular monitoring and reporting of performance and progress against annual plans and budget, including:
 - i. Monthly reviews by the Executive Management Team of financials, status of priorities and critical projects, and performance measures and targets as established for each key area of focus in the annual Corporate Performance Scorecard;
 - ii. Monthly updates to the Shareholder;
 - iii. A quarterly President and CEO Report to the holding company and regulated distribution utility Boards of progress against the Corporate Performance Scorecard, including enterprise risk management reporting;
 - iv. Quarterly financial reports to the Shareholder;
 - v. Review by the holding company and regulated distribution utility Boards of annual results against the Corporate Performance Scorecard and financial results in April; and
 - vi. An annual report to the Shareholder in June.
- d. As part of the development of the annual plan for the next year, an annual review of the critical issues and opportunities facing the utility by the Executive Management Team,

and subsequently by the Board of Directors, to determine whether an adjustment to the five-year plan is required.

In addition, a key input into the process is a set of formal guidelines from the Chief Financial Officer for the preparation of five-year budgets for Hydro Ottawa's subsequent distribution rate period. This guidance is circulated approximately one year in advance of the expected filing date of the rate application. The document lays out a timeline for budget development; identifies constraints and expectations relevant to such matters as compensation, headcount, and capital and operational expenditure levels; and stipulates requirements related to productivity, continuous improvement, cost control, and alignment of spending to the utility's priorities.

A copy of the memorandum setting forth guidelines for 2020-2025 budgets and priorities is included as an attachment below.

4. CUSTOMER NEEDS & PREFERENCES

Providing customers with value for money and facilitating a customer experience that is driven by choice are cornerstones of Hydro Ottawa's business planning. In step with its overall business strategy to put the customer at the centre of everything it does, the utility endeavours to ensure that its capital and operational investment plans are guided and informed by customer needs, preferences, and priorities.

4.1. ONGOING CUSTOMER ENGAGEMENT

Hydro Ottawa avails itself of numerous tools, activities, and interactions to engage customers and to reflect their input in the utility's planning and plans on an ongoing basis. These reflect an evergreen posture on Hydro Ottawa's part to develop a genuine understanding of customers' interests through a fluid and continuous feedback loop. This helps inform and sharpen the utility's service delivery as a matter of established routine, and embed a customer-centric culture across the organization.

Hydro Ottawa's approach to customer engagement represents a blend of activities that are either aligned with industry best practice or are homegrown, having been formulated and customized internally in order to suit the particular needs of the utility and its customer base. Key channels for interaction include telephone, email, web chat, social media, website, in person, and community events. Focus groups, surveys, and analytics are also important research tools for gleaning broader insights and trends.

The following serve as illustrative – but by no means comprehensive – examples of specific instruments used by Hydro Ottawa to identify customer needs and preferences, and to incorporate them into the utility's plans for providing electricity distribution services:

- **Social media platforms** – Hydro Ottawa uses social media channels to engage in two-way conversations with customers on a daily basis. Channels are monitored during business hours and, in particular, during prolonged power outages in order to answer customer questions or concerns. Recent trends indicate that many customers have a strong preference to use social media to share information or ask questions related to outages, and that they value real-time responses to their inquiries.
- **Transactional surveys** – every week, customers who phoned Hydro Ottawa's call centre during the previous week are automatically invited to rate their experience with the service received. Based upon the survey results, Hydro Ottawa is able to enhance the customer experience and adapt processes in a timely and responsive manner. More recently, Hydro Ottawa added email and web chat features to this survey, in keeping with the utility's commitment to engage customers through the channel of their choice.
- **Annual customer satisfaction survey** – survey questions cover a wide variety of topics, including overall satisfaction with Hydro Ottawa, reliability, customer service, power outages, billing, cost of electricity, and corporate image. Feedback from these surveys is incorporated into Hydro Ottawa's planning process, and ultimately forms the

basis of plans which address customer needs as well as service improvements and offerings.

- **Key Accounts program** – customers are categorized as a Key Account based on their size of service, financial impact, and impact on the community and the grid. Hydro Ottawa works proactively with these large business and institutional customers on a range of priorities, including billing, load profile, rates analysis, power quality, energy management, and education and awareness of provincial regulations.
- **Project-specific open houses** – these are hosted by Hydro Ottawa when major distribution system projects have the potential to impact customers and their community. Based on customer feedback, these consultations have resulted in the evaluation of additional design options, the use of less impactful equipment, and/or the scheduling of mutually agreeable timelines for project completion. Between 2016 and 2019, Hydro Ottawa held 35 such open houses.
- **Collaboration with contractors and developers** – this takes the form of routine information sharing and participation in dedicated associations and forums with members of this unique stakeholder group. These engagements offer valuable insights into customer expectations around Hydro Ottawa's communications, processes, standards, specifications, costing, and Conditions of Service.
- **Conditions of Service revisions** – Hydro Ottawa compiles suggested edits to its Conditions of Service ("COS") on an ongoing basis, in response to customer feedback. Prior to the filing of any revised COS, Hydro Ottawa solicits customer comments through its website and social media accounts. All customers likewise receive notification of the review period through an on-bill message. In addition, contractors, City of Ottawa contacts, and Key Accounts are directly notified of the review period by letter.

- **Engagement with the City of Ottawa** – given the impact of municipal planning, services, and regulations on customer needs, the relationship with the City is a vital one. Accordingly, Hydro Ottawa frequently interacts with numerous divisions across the municipal government. These interactions serve as platforms for discussing critical matters, such as long-term planning, capital programs, permitting, standards, and servicing. In turn, they play a valuable role in enhancing communications and coordination, sharing of lessons learned, identifying opportunities for improvement, and building mutual understanding.

4.2. CUSTOMER CONSULTATION ON THE 2021-2025 RATE APPLICATION

As a complement to, and extension of, the foregoing activities, Hydro Ottawa undertook targeted customer outreach activities to inform the development of the specific plans and proposals set forth in its 2021-2025 rate application. Consisting of a mix of qualitative and quantitative methodologies, this engagement was launched in January 2019 and extended through September 2019.

Phase I of this consultation focused on low-volume customers (residential and small business), seeing as these segments represent approximately 99% of the total customer base. This initial phase focused on gathering general insights on customer priorities, preferences, and needs.

Consistent findings were yielded across low-volume customer classes. To begin, the clear majority of these customers expressed satisfaction with the current service they receive from Hydro Ottawa. In addition, ensuring reliability, maintaining reasonable rates, and investing in technology in order to help reduce future costs constituted the top three priorities for customers. Moreover, these customers generally held favourable views on making proactive investments in aging infrastructure and grid modernization at the present time, with the understanding that this may lead to near-term costs but will result in future savings. With respect to reliability outcomes, above all customers placed a premium on accelerating restoration times following extreme weather events. Minimizing the number and duration of outages in general was flagged as the next most pressing priority.

Based upon the feedback received during Phase I, Hydro Ottawa undertook a second, more expansive phase of engagement, in which the utility surveyed customers for their detailed feedback on proposed plans for capital and operational investments over the 2021-2025 period. A series of expenditure options was presented – namely, a reference case outlining the utility’s proposed course of action, along with scenarios which either accelerated and expanded the proposal, or which scaled back the scope and timing of the proposal. Customers were thus able to express their views on a range of alternative proposals, as well as the respective trade-offs, outcomes, and rate impacts.

For residential and small business customer classes, the response was heavily weighted in support of Hydro Ottawa’s proposed plans or spending more than proposed for certain services. Nearly one-half of respondents in both segments (48% and 47%, respectively) identified that “Hydro Ottawa should maintain the forecasted annual increase to deliver a program which delivers on the stated priorities.” A further 35% of residential and 29% of small business customers expressed support for further improvements in service, even if this entailed additional rate increases. What’s more, a majority of respondents called for investments above and beyond the reference case for purposes of renewing the overhead and underground portions of the grid, while more than 75% of customers signalled a willingness to pay more on their monthly bill in order to enable Hydro Ottawa to undertake measures to prepare for the effects of severe weather.

With respect to participants from large customer segments, these voices expressed concern over the rate increases being proposed and were open to potential decreases in service reliability if this equated to reductions in forecasted bill increases. This feedback was highly valuable, insofar as it emphasized the critical importance of a balanced plan – one which maximizes the impact of investments to match residential customer expectations without exacerbating rate pressures on business customers (and all while relentlessly pursuing efficiency and productivity improvements).

Of note, the number of customers who participated in this engagement exercise – nearly 21,000 in total – was the largest in the history of any Hydro Ottawa rate application. In itself, this result was encouraging and instilled confidence in the quality of the information gleaned and the representativeness of the sample pool of customers. Beyond this, however, Hydro Ottawa was buoyed by the fact that the rate of response (i.e. number of respondents as a percentage of the total customer base) exceeded that which has been observed in any rate filing from an OEB-regulated distributor in recent memory.

5. STRATEGIC CONTEXT

Hydro Ottawa has formulated its corporate vision and objectives against the backdrop of numerous trends and shifts that are unfolding in the operational, business, and policy environments in which the utility carries out its activity.

5.1. OPERATIONAL CHALLENGES

5.1.1. Aging Infrastructure

Foremost among the operational pressures facing the utility is the advanced age of a significant subset of its asset base. Large segments of the system were constructed in the 1960s through the 1980s. With most assets having a lifespan of approximately 50 years, a considerable proportion of the system is approaching or has exceeded the anticipated end of life.

For example, nearly 19% of all assets have reached their expected service life and now pose a higher risk of failure. This includes approximately 51% of stations and 23% of overhead system assets (i.e. poles, transformers, and switches). Another 12% of the asset population is within 10 years of reaching its end of life.

In the absence of critical system renewal investments, the increased potential of failures posed by these aging assets will impact Hydro Ottawa's ability to maintain grid reliability.

5.1.2. An Expanding Customer Base

Compounding the challenge of replacing aging infrastructure is the sustained growth which the City of Ottawa continues to experience. This trend has translated into a steady expansion in the number of customers served by the utility and the number of new customers requiring connection to Hydro Ottawa's network on an annual basis.

Similar to the patterns observed throughout 2016 to 2020, Hydro Ottawa anticipates a comparable level of growth over the course of the planned 2021-2025 rate term. In fact, the City of Ottawa is projecting an increase of over 16% in the city's population by 2031, relative to 2016 levels. This growth is expected to take several distinct forms: the development of new mixed commercial/residential communities; intensification of development within the urban core of the service territory; continued suburban growth in the east, west, and southern regions; and former rural areas fed by long distribution lines becoming suburban centres. Alongside this development, major infrastructure projects such as the Stage 2 expansion of Ottawa's Light Rail Transit system are also set to overlap with the utility's upcoming rate period.

5.1.3. Extreme Weather Effects

In a 2019 report examining Canada's top climate change risks, the Council of Canadian Academies found that "climate change is very likely to cause significant negative impacts across many natural and human systems in Canada over the next 20 years." The report concluded that adaptation action will need to be pursued through effective partnerships among government, the private sector, communities, and individuals, in order to avoid the worst damages stemming from climate change.

Over the last five years, Hydro Ottawa and its customers experienced firsthand the growing frequency of severe weather events and their adverse impacts on the distribution grid. During a six-month span in 2018 alone, there were three major weather events that affected the Ottawa area (including a multiple-tornado event during the month of September) which caused considerable damage and heavily impacted spending on emergency replacement of assets. This series of events was bookended on either side by historic flooding along the Ottawa River

in 2017 and 2019, which resulted in tens of millions of dollars in economic losses and prolonged disruptions to customers in affected areas.

In light of these findings and events, and in view of the rising trend of extreme weather, Hydro Ottawa will be compelled to enhance adaptation and risk mitigation measures within the design, operation, and maintenance of its system, in order to help protect infrastructure, service delivery, and occupational health and safety. To that end, the utility has already commissioned and received a formal distribution system climate risk and vulnerability assessment, and is undertaking a multi-year action plan to implement the recommendations.

5.1.4. Technological Complexity

The operational and informational technology systems that underpin utilities' performance are rapidly evolving and becoming increasingly complex. The business systems and processes supporting frontline operations and back-office functions are steadily migrating towards digital, mobile-friendly, and cloud-based solutions. Core operational systems continue their convergence with enterprise information systems. Automation is on the rise, with the frontier into artificial intelligence likewise being crossed. And while utilities are navigating this shifting terrain, they are simultaneously compelled to mitigate the risk of technologies becoming obsolete – whether as a result of third-party providers discontinuing maintenance services for legacy solutions or existing tools having reached the end of their useful lives (as in the case of first-generation smart meters).

Meanwhile, the implementation of smart grid equipment and devices, alongside the proliferation of distributed energy resources ("DERs"), has fostered a more dynamic ecosystem of transactions, participants, and flows of energy, information, and communications. What's more, a central tenet of the "Smart City" movement is that utilities will enable the connectivity which harnesses the power of data and technology to enhance the quality of life for communities.

Taken together, the aforementioned technological trends and pressures introduce a wide spectrum of both risk and opportunity for Hydro Ottawa.

5.1.5. Cyber Security

The critical nature of the services provided by utilities makes for a double-edged sword. On the one hand, there is widespread recognition of the indispensable role played by electricity distributors in the quality of life that is enjoyed by consumers. Conversely, the essential role played by electricity means that utilities rank among the most high-value targets for malicious actors in cyberspace. This risk is magnified for a distributor like Hydro Ottawa, which serves the capital city of a G7 country and a multitude of customers with unique service quality and data confidentiality needs.

The risks faced by utilities in Ontario in relation to cyber security are set to amplify exponentially over the coming five-year horizon and beyond, in light of the rising complexity of operational and informational technology systems noted in the foregoing section. Further reflection of the shifting risk landscape is the OEB's recent implementation of a cyber security framework for utilities under its jurisdiction, as well as the expansion of the Independent Electricity System Operator's ("IESO") mandate to provide cyber security information services to licensed transmitters and distributors.

5.1.6. Workforce Retirements

Hydro Ottawa has long maintained that its strength and success as a company is derived from the quality of its employees. Like many companies in the electricity sector, though, Hydro Ottawa faces challenging workforce demographics. For example, over the next 10 years, 34% of the workforce will be eligible for retirement, of which 60% are skilled workers in trades or technical professions. Taken together with the fact that almost one-third of employees have five years or less of service, the picture of the workforce population at Hydro Ottawa is one in which there is less experience in a highly complex and safety-focused operating environment. The ability of the utility to proactively prepare for the impacts of workforce demographics, as well as the impacts of technological and digital transformation on requisite employee skill sets, will be a critical determinant of whether core business objectives and customer needs can be met.

5.2. BUSINESS ENVIRONMENT

5.2.1. State of the Economy

The state of the local, provincial, national, and international economies can have a significant impact on Hydro Ottawa's business through factors such as inflation, customer credit risk, weakening demand for electricity and/or value-added services, and availability of market capital to fund growth. The economic climate can also have an effect on the stability and performance of some of the utility's key business partners. While near- and mid-term indicators in Ottawa, Ontario, and Canada are generally positive, the prospect of economic headwinds and uncertainty lingers, especially in relation to competitiveness and regulatory and tax burdens.

5.2.2. Evolution of the Utility Business Model

It is widely acknowledged across industry, academic, and government circles that the sector is in the midst of a historic transition. In some corners, this transformation is attributed to the confluence of key factors known as the "three Ds" – decentralization, decarbonisation, and digitization. Innovative tools, technologies, and data sets are introducing new options to enhance customers' control, understanding, and supply of energy. In turn, this is cultivating higher customer expectations for leading-edge services and solutions. Moreover, the economics of supply options have evolved significantly. Maturing forms of non-emitting resources are approaching cost parity with conventional generation resources, while the appeal of DERs has also grown.

Against this backdrop of change, the prevailing consensus favours the view that the utility has no choice but to abandon its conventional business model. What ought to replace it, however, remains a subject of contentious debate. It is a question that every utility will be compelled to address and resolve in short order. If an effective and viable response is not forthcoming, the risk emerges of actors and forces beyond the utility's control making the decision instead.

5.2.3. Customer Interest in Choice & Sustainability

As signalled in the foregoing section, the engine that is fueling the transformation unfolding in the sector is the changing role of the customer. Whereas this role has historically been passive

in nature, it has become much more influential in the new landscape. The opportunities and expectations for customized service, control, and convenience continue to expand. A prominent example in this regard is the rising level of customer interest in sourcing power from clean sources of energy and the manifestation of this appetite in the steady proliferation of DERs across Ontario.

The shifting sands of customers' needs and choices present an exciting opportunity for offering new products and services to enhance customer value and service. To realize these opportunities, utilities will need to continuously improve the way they do business, with a particular focus on creating a more effortless and engaging customer experience. As the preferences and priorities of customers continue to evolve, Hydro Ottawa must be ready, willing, and able to fulfill them. Maintaining a business strategy that puts the customer at the centre of everything the utility does will be a fundamental prerequisite for success.

5.2.4. Consolidation & Shared Services in the Distribution Sector

The business environment of Ontario's electricity distribution sector is unique, in terms of the number of participating members. Over 60 local distributors provide electricity to the province's 5.2 million customers. For many years, public policy has sought to encourage and incentivize consolidation within the distribution community. What's more, numerous aspects of the sector's evolution and the changing utility business model seem to favour economies of scale in a distributor's operations and activities. It is therefore not altogether surprising that, since the filing of Hydro Ottawa's last rebasing application in 2015, the sector has witnessed a steady succession of consolidations, along with an uptick in the entry into shared services agreements.

The footprint and dispersion of distribution utilities throughout Eastern Ontario means that Hydro Ottawa remains well-positioned to pursue consolidation opportunities. Similarly, the utility's range of experience with shared services has underscored the value of targeted collaboration and partnership with utility peers, where appropriate. As such, going forward, these options will remain important parts of the utility's toolkit to provide the most cost-effective solutions to customers.

5.2.5. Market Renewal

Hydro Ottawa is a registered participant in the provincial electricity market administered by the IESO. In its capacity as a market participant, the company purchases electricity from the IESO on behalf of the vast majority of its customers. Accordingly, Hydro Ottawa has a direct stake in an efficient and reliable market, which is able to supply customers with power at the lowest possible cost. Since 2016, the IESO has been exploring a series of enhancements to the design and administration of Ontario's markets. Several of these proposals contemplate fundamental changes to the structures and methodologies for determining the wholesale price of electricity. Under the IESO's project management timeline for Market Renewal, the initial group of these proposals is slated to take effect in March 2023, near the mid-point of Hydro Ottawa's next five-year rate term.

For electricity distributors, the reforms emanating from Market Renewal may represent a double-edged sword. On the one hand, they may pose certain administrative challenges, especially from a settlements and billing perspective. Concurrently, however, to the extent that Market Renewal serves as a platform for developing new product and service offerings, the initiative could also open the door to new business and revenue opportunities.

5.3. POLICY & REGULATORY ENVIRONMENT

5.3.1. Shifts in Public Policy & Regulation

Over the course of Hydro Ottawa's 2016-2020 rate period, there were numerous policy and regulatory developments which had profound effects on the utility and the sector at large: establishment and subsequent cancellation of a provincial cap-and-trade program; implementation of numerous electricity rate mitigation and assistance programs; changes to the OEB's customer service rules, including the institution of a moratorium on residential disconnections during winter; adoption of the Ontario Cyber Security Framework; issuance of OEB guidance on corporate governance; cancellation of Ontario's conservation framework; and reforms to the OEB's governance structure.

And with respect to the primary vehicle driving provincial energy policy of late – the Long-Term Energy Plan (“LTEP”) – it warrants observation that a total of three LTEPs have been issued over the past seven years. Each iteration of the LTEP left a lasting imprint on the public policy landscape. Assuming the current legislative framework for LTEP development remains in place, two new LTEPs are set to be released over the course of Hydro Ottawa’s 2021-2025 rate term.

A practical effect of these recent trends has been a heightened need for electricity distributors to respond quickly to policy and regulatory actions which significantly impact the operations, activities, investments, and structure of the distribution sector. Hydro Ottawa anticipates that this need for readiness and nimbleness in adapting to shifts in public policy direction will endure throughout the utility’s forthcoming rate period.

5.3.2. Affordability & Cost Reduction

While in recent years the broader policy landscape has been fluid, one aspect has remained firm – an enduring interest on the part of policymakers and regulators in placing downward pressure on customers’ rates and bills. This objective has been pursued in varying forms, whether through rate rebates and mitigation, assistance for customers struggling to pay their bills, dedicated programs for commercial and industrial ratepayers, subsidies for the purchase of energy efficient equipment, or pilot programs to test alternative pricing structures. Depending upon the future direction and constraints of public policy in this regard, rate-regulated utilities may face challenges, such as barriers or resistance to approval for cost recovery of operational and capital expenditures.

5.3.3. GHG Emissions Reduction & Electrification

Across all levels of government, there is a crystallizing consensus that greenhouse gas (“GHG”) emissions ought to be lowered. Where sharp differences in policy prescriptions do exist is in regards to the means for achieving this end. And yet, even in this respect, there are common threads woven by policy actors that are of significant relevance to the electricity distribution sector in Ontario. Foremost among these is growing policy interest in the electrification of various economic sectors, especially transportation. This enthusiasm can be observed in a

range of federal government climate change initiatives as well as in the province's projections for a steady uptick in the deployment of electric vehicles. Hydro Ottawa is also in the unique vantage point of having a shareholder, the City of Ottawa, which views electrification as a critical means of supporting its "Energy Evolution" strategy for reducing GHGs and boosting renewable energy use.

With the arc of GHG reduction policy bending in a direction that is increasingly favourable to enhanced electrification, both the implications and opportunities for distributors are numerous. In the former context, localized impacts on distribution infrastructure could be significant, depending upon the scale and pace of electrification. As for the latter, the embrace of electrification is advantageous to distributors, insofar as it bolsters their position to serve as a trusted energy advisor for customers and as an enabler of smart energy solutions.

5.3.4. Policy Action on Utility Revenue & Ratemaking

Looking ahead to the next five-year rate term for Hydro Ottawa, the outlook is decidedly mixed with respect to the revenue and ratemaking models for Ontario distributors. Grounds for optimism, in relation to the prospect of expanded business interests and opportunities, include provisions of the *Ontario Energy Board Act, 1998* which have relaxed restrictions on permissible business activity for distributors, as well as signals from the regulator that it is open to reducing barriers to new utility business models and examining approaches to remuneration that incent cost-effective innovation. At the same time, however, any conversation around utility remuneration will feature some degree of risk that other actors may seek outcomes that are at odds with the goal of enlarging the playing field in which distributors can compete. What's more, the prospect lingers of policy action on electricity pricing and bill reduction that may have adverse consequences for distributors from a financial viability perspective.

6. STRATEGIC OBJECTIVES & CORPORATE PERFORMANCE GOALS

6.1. STRATEGIC OBJECTIVES

Hydro Ottawa's vision is to be a leading partner in a smart energy future and to serve as the trusted energy advisor for customers. To achieve this vision, the utility has organized its

business strategy around four critical areas of performance and supporting strategic objectives for several years – as represented in the figure below.

Hydro Ottawa will maintain continuity in its core objectives heading into the 2021-2025 period. Consistent with past years, the renewed strategic objectives are being formally adopted at the holding company level and will cascade across the enterprise. They will therefore serve to guide the business and operations of the regulated distribution utility.

The rationale underlying this approach includes such key factors as the level of success achieved during the preceding five-year rate term, the trajectory of the business and policy landscape in which Hydro Ottawa operates (as described in the preceding section on Strategic Context), and the input received from customers regarding the utility's performance and direction.

Figure 1 – Corporate Strategic Objectives



- **Customer Value:** we will deliver value across the entire customer experience by providing reliable, responsive and innovative services at competitive rates.

- **Organizational Effectiveness:** we will achieve performance excellence by cultivating a culture of innovation and continuous improvement.
- **Financial Strength:** we will create sustainable growth in our business and our earnings by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people.
- **Corporate Citizenship:** we will contribute to the well-being of the community by acting at all times as a responsible and engaged corporate citizen.

Of these objectives, the most important driver of Hydro Ottawa's business strategy will remain Customer Value, with the utility striving to put the customer at the centre of everything it does.

6.2. CORPORATE PERFORMANCE GOALS

Customer Value, Financial Strength, Organizational Effectiveness, and Corporate Citizenship serve as the overarching four key areas of focus around which Hydro Ottawa anchors and organizes its business activity. With respect to the design and execution of plans to achieve strategic objectives in each of these areas of performance, a critical step is the establishment of a corporate performance scorecard. This scorecard establishes qualitative performance goals and priorities, along with quantitative measures and targets, in each of the four strategic areas of focus. Similar to the adoption of the strategic objectives, the corporate performance goals are established by the holding company, and in turn, are cascaded across the enterprise.

The table below depicts the planned alignment between the strategic objectives and corporate performance goals for Hydro Ottawa's regulated electricity distribution business for the 2021-2025 rate term.

Table 1 – Alignment of Corporate Strategic Objectives & Corporate Performance Goals

5-Year Enterprise Strategic Objectives and Outcomes (2021-2025)		Corporate Performance Goals
Customer Value	<p><u>Enterprise Strategic Objective:</u> We will deliver value across the entire customer experience <i>By providing reliable, responsive and innovative services at competitive rates</i></p> <p><u>Enterprise Strategic Outcome:</u> <i>Customer loyalty</i></p>	<ul style="list-style-type: none"> • Assist customers in managing their energy consumption and electricity costs • Deliver on customer expectations for service quality and responsiveness • Maintain overall distribution system reliability
Organizational Effectiveness	<p><u>Enterprise Strategic Objective:</u> We will achieve performance excellence <i>By cultivating a culture of innovation and continuous improvement</i></p> <p><u>Enterprise Strategic Outcomes:</u> <i>Efficient and effective operations</i> <i>Safe and healthy work environment</i> <i>Engaged, aligned and prepared workforce</i></p>	<ul style="list-style-type: none"> • Continue to enhance operational performance and productivity • Maintain leading health and safety record • Enhance organizational and employee capability
Financial Strength	<p><u>Enterprise Strategic Objective:</u> We will create sustainable growth in our business and our earnings <i>By improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people</i></p> <p><u>Enterprise Strategic Outcome:</u> <i>Growth in shareholder value</i></p>	<ul style="list-style-type: none"> • Grow revenues from new sources • Enhance / protect revenues from existing business lines
Corporate Citizenship	<p><u>Enterprise Strategic Objective:</u> We will contribute to the well-being of the community <i>By acting at all times as a responsible and engaged corporate citizen</i></p> <p><u>Enterprise Strategic Outcomes:</u> <i>Leading governance and business practices</i> <i>Engaged stakeholders</i> <i>Safe, secure and environmentally responsible services</i> <i>Positive community impact</i></p>	<ul style="list-style-type: none"> • Enhance our brand image in the community and the industry • Continue to improve our environmental performance and reduce our impact on the environment

7. CAPITAL & OPERATIONAL PLANS

This business strategy's centre of gravity is the set of plans which will organize and govern Hydro Ottawa's proposed investments in capital and operational programs over the 2021-2025 period.

Capital expenditures relate to items that, once purchased, have lasting benefits over many years. These include the overhead and underground infrastructure (stations, poles, wires) that serve as the backbone of the distribution system, as well as supporting assets and equipment, such as facilities, vehicles, and computer systems. Operating expenditures pertain to recurring expenses that are incurred in the day-to-day management of Hydro Ottawa's activities, like maintenance of assets and equipment, tree trimming, customer billing, workforce training, and employee payroll.

Based upon customer feedback, Hydro Ottawa has crafted capital and operational plans that emphasize the following four core principles:

1. Minimize rate increases
2. Maintain reliability and service quality
3. Address key pressures to the system, including:
 - Aging infrastructure
 - An expanding customer base and continued population growth
 - The effects of severe weather events
4. Make prudent investments in emerging technologies to enhance service offerings and/or reduce operation costs.

7.1. CAPITAL PLAN

Hydro Ottawa's assessments of its capital needs, and its proposed expenditures for meeting them, are captured in the utility's Distribution System Plan ("DSP"). The DSP details how capital investments will be prioritized, paced, and optimized, while minimizing rate impacts for customers and facilitating continuous improvement and productivity. The DSP is a core

deliverable emerging from multiple internal and external planning processes related to capital investment, asset management, regional planning, customer engagement, and business strategy.

The investment proposals set forth in the DSP are organized into four categories – System Access, System Renewal, System Service, and General Plant. Projected expenditures, as well as the breakdown of programs, within each of these categories are outlined in the table below.

Table 2 – Annual Capital Investments (\$'000,000s)

Investment Category	2021	2022	2023	2024	2025
System Access	\$56.7	\$41.0	\$37.4	\$34.5	\$34.0
System Renewal	\$43.3	\$44.0	\$40.2	\$39.4	\$40.5
System Service	\$31.0	\$27.4	\$24.3	\$25.2	\$23.9
General Plant	\$32.0	\$11.7	\$7.6	\$17.4	\$16.9
Capital Contributions	\$(41.3)	\$(25.2)	\$(19.9)	\$(19.2)	\$(19.3)
TOTAL	\$121.8	\$98.9	\$89.6	\$97.2	\$96.0

7.1.1. System Access

This category encompasses those investments that allow Hydro Ottawa to meet its obligation to connect customers to the grid. These expenditures are subdivided into specific programs focused on connecting customers (e.g. new residential and commercial developments, and customer-driven electric generation projects), relocating equipment to accommodate municipal infrastructure needs like road widening, and installing meters.

System Access – Capital Programs

- Plant Relocation & Upgrade
- Residential Subdivision
- Commercial Development
- System Expansion
- Embedded Generation
- Infill Service (Residential & Small Commercial)
- Metering

Major projects expected in this investment category during 2021-2025 include residential and commercial connections consistent with recent historical expenditures, system expansion, plant relocation (especially in relation to Stage 2 of Light Rail Transit in the City of Ottawa), and retrofits of bulk metered buildings to unit metering.

With the City of Ottawa continuing to experience a steady level of growth, and with the utility having recently averaged upwards of 4,000-5,000 new connections every year, System Access expenditures remain crucial to achieving positive outcomes in relation to customer expectations for service quality and responsiveness. Likewise, they will be critical to the success of flagship local infrastructure projects over the 2021-2025 period. There is also a nexus between this category of investment and the environmental benefits that accrue to customers and the community from increased deployment of distributed renewable generation, including net metered projects.

7.1.2. System Renewal

Included under the scope of this category is the replacement and refurbishment of system assets, in order to extend their original service life or replace them on an emergency basis. Of note, this activity touches the parts of Hydro Ottawa's grid that

System Renewal – Capital Programs

- Station Assets Renewal
- Overhead Distribution Assets Renewal
- Underground Distribution Assets Renewal
- Corrective Renewal
- Damage to Plant

are either most visible (poles, wires, transformers, and stations) or least visible (underground cable and vaults) to the public. Together, these programs are aimed at alleviating one of the most significant pressures on the system – namely, mitigating the risk of the potential failure of end-of-life assets and equipment. The primacy of System Renewal is underscored by the fact that this grouping represents the largest share of the broader capital funding envelope.

Planned projects of note under this investment category include renewal of distribution poles, transformers, and stations, emergency replacement of overhead assets following severe

weather events, rehabilitation of underground chamber assets, replacement of underground cable, and upgrades of various types of metering equipment that have reached end of life.

Key outcomes associated with System Renewal expenditures are improvements to overall system reliability, as well as reductions in the average duration and frequency of outages.

7.1.3. System Service

The purpose of these infrastructure upgrades and modifications is to enhance reliability and capacity on the grid, and ensure that the system continues to meet operational objectives while addressing future customer needs. Similar to the foregoing categories, System Service is comprised of its

own unique set of programs. Expenditures revolve around capacity upgrades that are intended to relieve constraints caused by load growth; system and station enhancements that improve operating characteristics, add redundancy, and strengthen the resilience against severe weather events; and deployment of grid technologies that augment the technological and communication capabilities of the system.

System Service – Capital Programs

- Capacity Upgrades
- Distribution Enhancements
- Station Enhancements
- Grid Technologies
- Metering

Major station projects in this category will be the development of new stations in the south Nepean and east Leitrim regions of the City of Ottawa, which are needed to accommodate customer load growth and to increase supply capacity in growing suburbs that have already reached the limits of local transformation capacity. Other major projects include upgrades to the functionality of Hydro Ottawa's Supervisory Control and Data Acquisition ("SCADA") system, enhancements to the Outage Management System, the installation of field area network infrastructure to enable greater automation in communications, roll-out of the next phase of the utility's MiGen smart energy project, deployment of cyber security and monitoring equipment at stations, and upgrades to customer meters to enable remote disconnections.

Maintaining current levels of reliability, while targeting those pockets of the system in which reliability performance is below average, are principal objectives driving this basket of investments.

7.1.4. General Plant

Whereas the three system-related categories discussed above relate to investments in the core components of Hydro Ottawa's distribution grid, General Plant covers expenditures on assets that are not part of the system. These include facilities, land, fleet, tools, equipment, information technology hardware and software, and other rolling stock that is used to support essential business activities.

General Plant – Capital Programs

- Buildings - Facilities
- Customer Service
- Enterprise Resource Planning System
- Fleet Replacement
- IT New Initiatives
- IT Life Cycle & Enhancements
- Operation Initiatives
- Tools Replacement
- Facilities Implementation

Successful completion of General Plant projects is a key determinant of the efficiency and effectiveness of the utility's overall business performance. In many instances, the ability to follow through on commitments to customers and to safeguard employee health and safety hinges upon program expenditures in this category.

Key projects planned in this investment category for 2021-2025 include deployment of a digital Customer Relationship Management system enabling a 360-degree view of customer activity, migration of the enterprise resource planning system to a cloud-based platform, adoption of enhanced equipment and software to support crews in the field, replacement of critical IT infrastructure, implementation of cyber security safeguards, and upgrades to the numerous business systems responsible for collecting, processing, and validating incoming meter data.

Similarly, several of these investments will have multi-faceted value streams, insofar as they will enable Hydro Ottawa to achieve multiple performance outcomes at the same time. For example, enhancements to the Customer Care & Billing ("CC&B") system will better position

Hydro Ottawa to assist customers in managing their energy needs, offer a more personalized experience, and ensure satisfaction with the utility's services. Beyond this, however, upgraded CC&B functionality will also introduce new options to customers for obtaining value-added products or services (e.g. direct deposit of credits into customers' bank accounts, and a wider range of options for payment methods and bill due dates), while simultaneously opening doors to opportunities for shared services with other utilities and services to third parties. The availability of this solution will expand customer choice and convenience as well as carve out space for growing revenue from new sources.

Finally, certain projects in this portfolio are set to serve as unique illustrations of the best-in-class innovation culture which Hydro Ottawa continuously seeks to foster. Examples include the deployment of artificial intelligence solutions in order to automate a number of business processes and enhance their efficiency and accuracy.

7.2. OPERATIONAL PLAN

Hydro Ottawa's responsibility to manage a safe and reliable distribution system, serve customers in a manner that is responsive to their needs and preferences, and maintain compliance with a broad range of legislative and regulatory requirements compel the utility to incur a level of costs that is proportionate to the magnitude of its operational obligations. These costs are spread across 14 different operations, maintenance and administration ("OM&A") program categories that serve to structure the myriad of activities which are part and parcel of keeping the lights on. Annual OM&A expenditures for the 2021-2025 rate term are outlined in the table below.

Table 3 – Annual OM&A Program Expenditures (\$'000,000s)

2021	2022	2023	2024	2025
\$93.9	\$96.3	\$98.7	\$101.2	\$103.7

The principal cost drivers underlying Hydro Ottawa's forecasted OM&A expenses include costs associated with legislative and regulatory compliance; operational investments needed for safety and reliability; employee compensation and training; ongoing support, maintenance, licensing, and protection of the company's IT systems; fuel; market priced contracts; and inflation.

Of note, during the internal budgeting process, the initial levels of OM&A submitted by the various divisions within the utility resulted in an overall OM&A Compound Annual Growth Rate ("CAGR") of 3.5% over the 2021-2025 period. In step with its commitment to continuous improvement and customer preferences for minimizing rate increases, Hydro Ottawa then applied a custom OM&A escalation factor to contain upward pressure on operational expenses and to embed productivity expectations throughout the 2021-2025 period. This lowered the overall OM&A CAGR to 2.51% and achieved a reduction of \$13.1 million in OM&A spending over the course of the rate term.

Moreover, Hydro Ottawa staff levels will not increase between 2021 and 2025, relative to staffing levels from 2019. Similarly, heading into this next Custom IR period, Hydro Ottawa is set to serve a larger number of customers than at the outset of its previous five-year rate plan (~323,000 as of the end of 2015 vs. ~340,000 as of the end of 2019 – an increase of over 5%). Both of these data points attest to the effectiveness of the utility's ongoing productivity and efficiency initiatives.

Hydro Ottawa's total operating costs are reported every year to the OEB and benchmarked against other distribution companies in Ontario. In the last year of publicly available data collected by the OEB, Hydro Ottawa's total operating cost per customer was \$260. Consistent with the pattern of recent years, this result compared favourably to the average cost per customer across all electricity distributors in the province (\$316).

7.3. INCORPORATING CUSTOMER FEEDBACK & PREFERENCES

Hydro Ottawa has designed its capital and operational plans to reflect the needs and priorities of customers, in both general and specific ways. Examples of how the utility has sought to incorporate the insights gleaned from extensive engagement with customers include the following:

- Certain proposals for capital spending have been deferred, as part of an asset needs rationalization process which was undertaken in order to prioritize the most critical projects for system reliability and maintenance and to identify opportunities for minimizing rate impacts.
- To further support efforts to defer capital spending and lower costs for customers, the use of non-wire alternatives is planned. In the Kanata North area, for example, a mix of conservation, load transfers, and voltage reductions solutions will be deployed to enable the deferral of a transmission-connected substation that had originally been identified as a need through the latest regional planning cycle.
- Critical investments in reliability-related projects are being paced in accordance with customer expectations for an appropriate level of service. One illustration in this regard is the prioritization of the construction of the new Cambrian Municipal Transformer Station in the early years of the rate period. This reflects the imperative to ensure sufficient capacity is available in an area which is forecasted to continue experiencing significant load growth over the next decade.
- A selective portfolio of prudent investments is planned in new technologies and solutions that will enhance the menu of service offerings available to customers and, in many cases, lead to reduced operational costs. These will open up new channels for customers to engage and transact with Hydro Ottawa, and continue the utility's movement to digital and cloud-based platforms which help eliminate the need for costly, on-premise IT infrastructure.
- Several steps are being taken to more formally incorporate climate change risk management into system planning processes and decision-making practices. The range of actions will include augmenting vegetation management practices, developing new

anti-cascade standards for utility poles, and investing in greater automation capability for remote isolation and restoration of faulted system components.

Alongside the aforementioned examples, the ongoing implementation of productivity and efficiency initiatives will play a crucial role in minimizing operating costs. Specific examples of productivity are discussed in the ensuing section.

8. PRODUCTIVITY AND CONTINUOUS IMPROVEMENT

Responsibly controlling costs and focusing on cost-effective delivery of outcomes that matter to customers remain core priorities for Hydro Ottawa. Amidst the unique confluence of demands, pressures, and constraints on operations, the utility is placing increased emphasis on incorporating productivity and continuous improvement gains, so as to offset increasing expenditures and boost organizational capacity. Hydro Ottawa is therefore committed to ensuring that productivity and continuous improvement serve as hallmarks of its 2021-2025 rate plan.

8.1. 2016-2020 INITIATIVES

A retrospective glance at the outcomes and efficiencies derived from productivity initiatives during the preceding five-year rate period demonstrates that there is a firm foundation upon which to build. During the 2016-2020 period, Hydro Ottawa successfully executed a wide spectrum of initiatives which resulted in tangible savings to customers – and at no expense to service quality or system reliability. Headlining this deep pool of initiatives were the following:

- Enhancements to the customer contact centre, giving customers an improved experience through access to more efficient service and a broad range of options for communicating with Hydro Ottawa through the channel of their choice;
- Introduction of new digital tools, such as a mobile application and Smart Speaker skills (a first in the Canadian electric utility sector), to take customer service to the next level of convenience and sophistication;

- Movement away from manual, paper-based processes and adoption of electronic solutions to support core business systems and practices, including the enterprise resource planning platform, field crew scheduling, fleet management, and planned outage communications;
- Consolidation and modernization of administrative and operational facilities; and
- Workforce stabilization and optimization, through such measures as reallocation of vacant positions to trades hiring and reduction of both on-call and overtime costs.

8.2. 2021-2025 INITIATIVES

Whether through harnessing the potential of new technologies and solutions to better serve customers, elevating standards of business performance and excellence, or rationalizing and re-purposing resources, Hydro Ottawa is set to continue strengthening its culture of continuous improvement over the course of its next five-year rate term.

In accordance with internal guidelines for the preparation of plans and budgets for the 2021-2025 period, each administrative division within the utility was mandated to demonstrate productivity savings in a quantitative and/or qualitative fashion, and to identify initiatives dedicated to continuous improvement. This provides assurance that productivity and cost control objectives are firmly integrated into the business planning process.

A survey of the productivity initiatives planned over the next rate plan horizon reveals the following highlights:

- Movement of enterprise resource planning system to a cloud-based solution, thereby enabling greater administrative efficiency, reduced system maintenance costs, and timely access to new functionality;
- Integration of the recent SCADA system upgrade with the existing Outage Management System and a new Distribution Management System, enabling superior functionality and automation, and providing control room operators with line of sight and situational awareness through a single interface;

- Deployment of a digital platform for Customer Relationship Management, enabling a 360-degree view of customer activity across the utility;
- Increased deployment and further innovation in voice-activated digital assistance technology, for use in customer service and experience applications;
- Implementation of robotic process automation capabilities across multiple business units and programs, in order to more efficiently and expeditiously execute highly transactional activities;
- Renegotiation of contracts with external service providers for underground cable locates and vegetation management;
- Replacement of outdated phone lines for advanced metering infrastructure systems with modernized data collection nodes, which offer more extensive communications reach and enhanced resiliency against power interruptions;
- Deployment of a cloud-based platform to optimize the use and value of advanced metering infrastructure data analytics, as a means of driving operational efficiencies across a wide range of core business functions;
- Increase in the number of Alternate Locate Agreements;
- Enhanced productivity and reduced overtime costs for crews, on account of the implementation of seasonal construction schedules which aim to shift work away from the winter season, during which construction is more costly and inefficient due to environmental and operational constraints;
- Rationalizing and right-sizing of the utility's vehicle fleet through analytics of vehicle utilization;
- Achievement of 4% increase in daily available wrench time for crews; and
- Administration of internal programs dedicated to optimizing the lifecycle management and enhancement of IT assets.

8.3. BENCHMARKING

The preparation of this Business Plan was supported by year-over-year comparisons of Hydro Ottawa's costs and outcomes, along with evaluations of the utility's performance against its peers. Tracking and analysis of trends in the achievement of system reliability, customer value,

and financial strength outcomes have informed the scope and substance of particular capital and OM&A programs. Similarly, the benchmarking of Hydro Ottawa's expenditures and performance relative to samples of utilities across Ontario, Canada, and the United States has yielded valuable insights into areas in which the utility performs well and those in which there is room for improvement. These findings have been internalized and incorporated into specific work programs, and will serve as important baselines and points of reference against which to measure the utility's progress.

As the implementation of Hydro Ottawa's capital and operational plans unfolds over the 2021-2025 period, the use of internal and external benchmarking will remain a vital tool for monitoring and measuring performance. The utility fully anticipates undertaking additional benchmarking analysis during the rate term, as a means of supporting its broader performance management and business planning framework, as well as its system and asset management planning processes.

9. ALIGNMENT WITH THE RENEWED REGULATORY FRAMEWORK

The primary objectives animating Hydro Ottawa's corporate vision are wholly consistent with the main performance outcomes promoted under the OEB's Renewed Regulatory Framework ("RRF"). Hydro Ottawa views this broad alignment as a competitive advantage and remains committed to firmly entrenching RRF principles and objectives throughout its operations and business.

Table 4 below illustrates the alignment between the utility's overarching objectives and the key categories of performance outcomes under the RRF. For additional context, the table also shows the congruence of Hydro Ottawa's high-level performance goals and strategic outcomes – which are utilized to measure progress in achieving the strategic objectives – with the RRF's areas of focus.

Table 4 – Alignment of Corporate Strategic Objectives with RRF Performance Outcomes

OEB RRF Performance Outcomes	Key Area of Focus	Corporate Performance Goal	Strategic Outcome
Customer Focus	Customer Value	<ul style="list-style-type: none"> Assist customers in managing their energy consumption and electricity costs Deliver on customer expectations for service quality and responsiveness Maintain overall distribution system reliability 	<ul style="list-style-type: none"> Customer loyalty and satisfaction
Operational Effectiveness	Organizational Effectiveness	<ul style="list-style-type: none"> Continue to enhance operational performance and productivity Maintain leading health and safety record Enhance organizational and employee capability 	<ul style="list-style-type: none"> Efficient and effective operations Safe and healthy work environment Engaged, aligned and prepared workforce
Public Policy Responsiveness	Corporate Citizenship	<ul style="list-style-type: none"> Enhance our brand image in the community and the industry Continue to improve our environmental performance and reduce our impact on the environment 	<ul style="list-style-type: none"> Leading governance and business practices Engaged stakeholders Safe, secure and environmentally responsible services Positive community impact
Financial Performance	Financial Strength	<ul style="list-style-type: none"> Grow revenues from new sources Enhance / protect revenues from existing business lines 	<ul style="list-style-type: none"> Growth in shareholder value

9.1. PERFORMANCE MEASUREMENTS

In accordance with the RRF's emphasis on achieving outcomes that provide value to customers, Hydro Ottawa is committing to a robust performance measurement and reporting framework for the upcoming five-year rate period. This framework expands and builds upon the success of the one that was in place for 2016-2020, and will maintain the approach of combining standard OEB performance measures with others that are customized for Hydro Ottawa's unique use.

As displayed in the table below, an integral component of this framework is the set of measures that will form the basis of Hydro Ottawa's 2021-2025 Custom Performance Scorecard. These

measures have been selected based upon a variety of factors and drivers, including responsiveness to customer preferences, alignment with core RRF and corporate strategic objectives, and correlation to key findings from the benchmarking analyses performed in support of this Business Plan.

Table 5 – Custom Performance Scorecard Measures

Outcome	OEB Reporting Category	Hydro Ottawa Custom Measures	New/Existing	Target
Customer Focus	Customer Satisfaction	Contact Centre Satisfaction – Transactional Feedback	New	Maintain
		Number of MyAccount Customers	New	Increase
		Number of Online Billing Accounts	New	Increase
Operational Effectiveness	Safety	All Injury/Illness Frequency Rate	New	Reduce
		Lost Workday Severity Rate	New	Reduce
	System Reliability	Customer Average Interruption Duration Index	Existing	Monitor
		Feeders Experiencing Multiple Sustained Interruptions	Existing	Maintain
		Worst Feeder Analysis – Number of Feeders with Very Poor Performance	Existing	Reduce
		Stations Exceeding Planning Capacity	Existing	≤5%
		Feeders Exceeding Planning Capacity	Existing	≤10%
		Stations Approaching Rated Capacity	Existing	0%
		Feeders Approaching Rated Capacity	Existing	0%
	Cost Control	Productive Time	Existing	Maintain
		Labour Allocation	Modified	Maintain
		3-Year Average Cost per Pole – Wood Pole Replacement	New	Monitor
		3-Year Average Cost per Meter – Underground Cable	New	Monitor
		Average Cost per Kilometer – Vegetation Management	New	Monitor
		Average Cost per Pole – Pole Test and Inspection	New	Monitor
	Asset Efficiency	Technology Infrastructure Cost per Employee	New	Monitor
Public Policy Responsiveness	Environment	Annual Oil Spills & Costs of Remediation	Existing	Reduce
		Non-Hazardous Waste Diversion Rate	New	Maintain
		Percentage of Green Suppliers	New	Maintain
Financial Performance	Financial Metrics	OM&A per Customer	New	Monitor
		Bad Debt as a Percentage of Total Electricity Revenue	New	Monitor
		Cumulative Capital Additions per Investment Category	New	Monitor
		Annual Capital Spending per Investment Category	New	Monitor

Consistent with the prescriptions of the RRF, this proposed reporting regime is intended to equip the OEB, customers, and other stakeholders with the ability to better monitor and understand diverse aspects of Hydro Ottawa's performance, and to demonstrate the utility's accountability in transparently communicating the outcomes achieved under its performance management framework.

10. REVENUE REQUIREMENT & BILL IMPACTS

The Revenue Requirement and Bill Impacts associated with Hydro Ottawa's proposed 2021-2025 capital and operational plans are summarized in the tables below.

Table 6 – Revenue Sufficiency/Deficiency (\$'000s)

	2021	2022	2023	2024	2025
Return on Rate Base	\$67,489	\$73,588	\$77,441	\$79,860	\$84,624
Distribution Expenses (not including amortization)	\$93,923	\$96,280	\$98,697	\$101,174	\$103,714
Amortization	\$52,450	\$56,860	\$59,142	\$60,711	\$64,027
Payment in Lieu of Taxes	\$1,024	\$5,211	\$8,766	\$11,660	\$7,689
Service Revenue Requirement	\$214,886	\$231,939	\$244,045	\$253,405	\$260,053
Less Revenue Offsets: Per Approved Settlement Agreement ¹ Adjustment per Pole Attachment Decision ²	\$10,977	\$11,013	\$11,667	\$12,151	\$12,457
Base Revenue Requirement	\$203,909	\$220,926	\$232,378	\$241,254	\$247,596
Transformer Ownership Allowance	\$1,056	\$1,056	\$1,056	\$1,059	\$886
Revenue Requirement from Rates	\$204,965	\$221,982	\$233,434	\$242,312	\$248,483
Forecasted Load at 2020 Rates	\$187,905	\$188,833	\$189,716	\$190,703	\$191,468
Cumulative Revenue Deficiency (over 2020)	\$(17,060)	\$(33,149)	\$(43,719)	\$(51,609)	\$(57,014)
Yearly Revenue Deficiency over 2020	\$(17,060)	\$(16,089)	\$(10,570)	\$(7,891)	\$(5,405)

¹ This refers to the Approved Settlement Agreement governing Hydro Ottawa's 2016-2020 rate term, which was approved by the OEB in 2015.

² This refers to an OEB decision from 2016 which authorized Hydro Ottawa to use a utility-specific rate for pole attachments.

Table 7 – Distribution Bill Impacts by Customer Class

Rate Class	Year-over-Year Distribution % Change					
	2021	2022	2023	2024	2025	Average
Residential	4.57%	7.28%	5.73%	2.88%	1.75%	4.44%
GS < 50 kW	2.44%	6.94%	6.59%	3.66%	2.61%	4.45%
GS > 50 to 1,499 kW	5.20%	8.55%	6.93%	3.80%	2.83%	5.46%
GS > 1,500 to 4,999 kW	4.22%	8.43%	6.93%	3.80%	2.30%	5.13%
Large Use	11.36%	8.09%	6.53%	3.54%	2.20%	6.35%
Street Lighting	(9.98)%	14.07%	8.92%	3.46%	2.91%	3.87%
Sentinel Lighting	14.46%	20.46%	16.54%	12.33%	10.44%	14.84%
Unmetered Scattered Load	2.42%	11.76%	9.33%	6.10%	5.07%	6.93%

11. CONCLUSION

The 2021-2025 period represents a unique moment in time for Hydro Ottawa. It follows on the heels of what was, by numerous measures, a highly successful five-year window in which the utility executed its first-ever Custom IR rate plan. With the benefit of the outcomes and knowledge gained over the course of 2016-2020, the utility is poised to enter the next chapter of its journey towards a smart energy future in a position of strength and with a positive track record.

However, the landscape has shifted appreciably since the OEB last approved a rebasing application from Hydro Ottawa. Despite the robust progress made in replacing aging infrastructure, continued investment to mitigate the risk of asset failure remains a critical priority, with over 19% of assets having reached the end of their useful lives. At the same time, the steady level of growth which the City of Ottawa is experiencing means that expanding the distribution grid and ensuring access for new customers are urgent imperatives as well. Together with the demands posed by more frequent and more acute severe weather events, heightened customer expectations for greater convenience and choice, and the rapid evolution

of operational technologies and threats, these pressures present an immensely challenging landscape for Hydro Ottawa to navigate. Against the backdrop of an increasingly complex and fluid policy environment, these pressures are magnified even further.

Accordingly, the utility requires a comprehensive, data-driven, customer-sanctioned roadmap through which it can chart its course for the next five years. Hydro Ottawa is confident that this Business Plan will effectively fulfill this need. The utility welcomes the opportunity to move this strategy forward and to deliver the attendant benefits to its customers and community.

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To: Executive Management Team (EMT)

Date: January 31, 2019

Subject: 2020-2025 Priorities and Budget Guidelines

Background:

The purpose of this memorandum is to set guidelines to be used in preparation of the Hydro Ottawa Limited (HOL) 2020 to 2025 Priorities and Budgets. These guidelines and high-level timelines were presented to the Executive Management Team on June 28, 2018 and to your divisional senior management team in a series of meetings last July along with wider audience rate application updates since then.

Overview:

As you are aware, HOL will file its 2021 - 2025 rate application in December 2019 in order to have new distribution rates in place on January 1, 2021. Following are the specifics.

- This will be a Custom Incentive Regulation application covering rates for 2021-2025.
- The filing will include the 2020 Budget (referred to as the Bridge year) and budgeted data for the 2021 to 2025 period (referred to as the Test years).
- The filing will also include Actuals for 2015, 2016, 2017 and 2018 as compared to the OEB Approved Rate Application levels.
- The 2019 Budget will also be filed in December 2019 with an update to 2019 Actuals filed with the OEB at the end of April 2020 subsequent to the HOL Board approval of the audited 2019 Actuals.
- The information submitted by each business unit for the 2021 to 2025 period will need to be at a detailed level (i.e. consistent with the level of detail required for a normal budget year).
- Each of the business unit plans will need to outline the major projects and programs being undertaken and their tie to the company's strategic direction with particular focus on the alignment with our customers' interests. There will also need to be a discussion of all of the major projects and programs and the outcomes that are expected from them.
- The Budget for 2020 to 2025 will be entered into our financial system at the detailed Business Unit (BU) level.
- Please keep in mind that there will need to be detailed variance explanations for year over year changes from 2015 through to 2025 for major projects and programs.

Key Milestones:

- Compensation Assumptions are due February 22, 2019.
- High-level position approach by division is due by March 29, 2019 – subject to outcome of discussions at EMT meeting of February 20, 2019.
- The first draft of the 2020 and the 2021 to 2025 budgets is due March 29, 2019 (both OPEX and CAPEX).
- The first draft of the Distribution System Plan (DSP) write-up is also due March 29, 2019.
- The Rate Application Working Group and Steering Committee will review the draft budgets on April 2019.
- The second draft of the budgets (up to EBITDA) is due May 31, 2019 (CAPEX and OPEX numbers will be locked as of this date).
- The final budgets - Full P&L and Capex – are due June 28, 2019 (All numbers will be locked as of this date).
- The Regulatory Affairs Group will release the detailed schedule of due dates on evidence writing under separate cover.
- Revenue requirement and rate impacts are due July 31, 2019.
- Final HOL Board approval will occur in November 2019.
- Filing of the 2021 to 2025 Rate Application will occur in December 2019.

Alignment of Spending to Company Priorities

All spending must align to our enterprise strategic objectives, outcomes and performance goals for each of our four key areas of focus as summarized in Appendix A. It should be noted that the company's current four key areas of focus and associated strategic objectives, outcomes and performance goals will carry forward to 2025. It should also be noted that Hydro Ottawa's four key areas of focus align closely to the Ontario Energy Board's (OEB) policy and direction established under the Handbook and the Renewed Regulatory Framework (RRF) as described in Appendix B.

Productivity, Continuous Improvement and Cost Control

Productivity, continuous improvement and cost control remain a key corporate priority. Each program area should consider a focus on cost effective delivery of outcomes that matter to customers, with appropriate pacing and prioritization to control costs and manage risks. All divisions must show productivity savings in a quantitative and / or qualitative manner and identify continuous improvement initiatives.

Compensation & Positions

Compensation and benefit estimates will be provided by the Chief Human Resources Officer Division and will be based on the renewed collective agreement and anticipated increases beyond the existing term.

All requests for permanent/regular trades hiring are subject to workforce modelling. All other permanent/regular position requests must be supported by a business case (Appendix C).

Technology

Divisions are responsible for liaising with the CITO Division (IT) through their IT Prime Contacts to communicate and coordinate technology requirements to ensure alignment with company priorities. All new technology requirements must first be supported by an IT Project Request (Appendix D) and for any project greater than \$750K, the Material Investment Plan documentation (Appendix E) must also be completed – this is a joint responsibility between the Division requesting the IT Project and the IT Prime Contact. The first draft of the Material Investment Plan is due by March 29, 2019. IT will consolidate all requests from each Division and will prioritize which projects are to move forward for EMT approval prior to inclusion in the budgets.

Inflation Rate

The inflation rate will be applied corporately. No automatic inflationary factors are to be applied until the review is completed by April 2019, therefore please budget in constant dollars.

Non-Compensation OM&A

Non-compensation OM&A spending should be split into two groups: one group that remains relatively flat and generally would only increase with the rate of inflation (to be applied corporately as noted above); and the second group that is based on anticipated changes in programs, volume or contract pricing negotiated / anticipated to be higher than inflation with supporting evidence.

All new or expansion of existing funding must be supported and approved by EMT.

Capital

Capital investment should provide for customer growth and the replacement of aging infrastructure to maintain plant reliability as per the needs analysis documented in the Distribution System Plan.

Capital investment key considerations include but are not restricted to the following:

- Affordability;
- Maintaining reliability;
- Efficient, reliable and cost effective and more prepared for technological changes;
- Planned investments related to accommodating the connection of renewable energy generation;
- Planned investments for the development and implementation of the smart grid to support grid modernization and expenditures as required by legislation;
- Provide more customer choice and address customers' preferences and expectations;
- Coordination of infrastructure planning with customers, the transmitter, other distributors, and the Independent Electric System Operator (IESO) or other third parties where appropriate.

In Q3 /Q4 2018, high-level capital expenditure levels for the period 2021 to 2025 were developed by each division. Subsequently an exercise was followed using the following criteria for rationalization of the submitted forecasts:

- Requirements for typical asset operation;
- Spending levels taking into account financing structure (D/E ratio);
- Rate impacts;



- Safety;
- Reliability; and
- Customer Growth.

An average forecast of CAPEX of \$95M per year for years 2021 to 2025 resulted from this process, as such the CAPEX that is to be uploaded in the financial system by March 29, 2019 should be at this rationalized level per each of the categories noted below:

	Average
System Renewal and Service excl CCRAs	68.1
System Access Net	14.8
IT General Plant	8.0
Other General Plant excl CCRAs	4.1
TOTAL	95.0

For any capital projects exceeding \$750K, the first draft of the Material Investment Plan documentation must also be completed by March 29, 2019 (Appendix E).

Thank you.



Geoff Simpson
 Chief Financial Officer

cc: Tina Tardioli – Director, Corporate Planning & Governance
 Angela Collier – Director, Finance
 Louisa Yeung – Manager, Corporate Financial Planning and Analysis
 Greg Van Dusen – Director, Regulatory Affairs
 April Barrie – Manager, Rates and Revenue
 Laurie Elliott - Manager, Regulatory Compliance and Reporting
 Patrick Brown – Manager, Regulatory Policy and Research
 Jeannine Ladouceur – Director, Human Resources Services
 Audrey Lizotte – Director, Labour Relations and Compensation
 Sarah Green – Director, Planning and Program Management for IM & IT
 Management Accountants ¹
 HR Partners ¹
 IT Prime Contacts ¹

¹ Refer to Appendix F for divisional partner list

Appendix A

Enterprise Strategic Objectives, Outcomes and Performance Goals

Enterprise Strategic Objectives and Outcomes		Corporate Performance Goals
Financial Strength	<p>Enterprise Strategic Objective: We will create sustainable growth in our business and our earnings <i>By improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people</i></p> <p>Enterprise Strategic Outcome: <i>Growth in shareholder value</i></p>	<ol style="list-style-type: none"> 1. Grow revenues from new sources 2. Enhance / protect revenues from existing business lines
Customer Value	<p>Enterprise Strategic Objective: We will deliver value across the entire customer experience <i>By providing reliable, responsive and innovative services at competitive rates</i></p> <p>Enterprise Strategic Outcome: <i>Customer loyalty</i></p>	<ol style="list-style-type: none"> 3. Assist customers in managing their energy consumption and electricity costs 4. Deliver on customer expectations for service quality and responsiveness 5. Maintain overall distribution system reliability
Organizational Effectiveness	<p>Enterprise Strategic Objective: We will achieve performance excellence <i>By cultivating a culture of innovation and continuous improvement</i></p> <p>Enterprise Strategic Outcomes: <i>Efficient and effective operations Safe and healthy work environment Engaged, aligned and prepared workforce</i></p>	<ol style="list-style-type: none"> 6. Continue to enhance operational performance and productivity 7. Maintain leading health and safety record 8. Enhance organizational and employee capability
Corporate Citizenship	<p>Enterprise Strategic Objective: We will contribute to the well being of the community <i>By acting at all times as a responsible and engaged corporate citizen</i></p> <p>Enterprise Strategic Outcomes: <i>Leading governance and business practices Engaged stakeholders Safe, secure and environmentally responsible services Positive community impact</i></p>	<ol style="list-style-type: none"> 9. Enhance our brand image in the community and the industry 10. Continue to improve our environmental performance and reduce our impact on the environment

Appendix B

The OEB established a new framework for electricity distribution rate regulation in 2012. The Renewed Regulatory Framework for Electricity is a foundational policy: it articulates the OEB's goal for an outcomes-based approach to regulation which aligns the interests of customers and utilities. Key principles of the RRFE include the expectation for continuous improvement, robust integrated planning and asset management that paces and prioritizes investments, strong incentives to enhance utility performance, ongoing monitoring of performance against targets, and customer engagement to ensure utility plans are informed by customer expectations.

The OEB set out its goals for the RRFE as follows:

The Board's renewed regulatory framework for electricity is designed to support the cost-effective planning and operation of the electricity distribution network – a network that is efficient, reliable, sustainable, and provides value for customers. Through taking a longer term view, the new framework will provide an appropriate alignment between a sustainable, financially viable electricity sector and the expectations of customers for reliable service at a reasonable price. The performance-based approach described in this Report is an important step in the continued evolution of electricity regulation in Ontario.

An important aspect of the RRFE is the evolution to an outcomes-based approach. The OEB “believes that emphasizing results rather than activities, will better respond to customer preferences, enhance distributor productivity and promote innovation. **There are four categories of outcomes under the RRFE: customer focus, operational effectiveness, financial performance and public policy responsiveness:**

- **Customer Focus:** Customer engagement is now an explicit and important component of the regulatory framework. Utilities are expected to develop a genuine understanding of their customers' interests and preferences and reflect those interests and preferences in their business plans. Utilities are expected to demonstrate value for money by delivering genuine benefits to customers and by providing services in a manner which is responsive to customer preferences.
- **Operational Effectiveness:** Utilities are expected to demonstrate ongoing continuous improvement in their productivity and cost performance while delivering on system reliability and quality objectives. The OEB will assess performance trends and look for evidence of strong system planning and good corporate governance. The OEB will use benchmarking to assess a utility's performance over time and to compare its performance against other utilities. Utilities are expected to demonstrate value for money by presenting plans for delivering services that meet the needs of their customers while controlling their costs.
- **Public Policy Responsiveness:** Utilities are expected to consider public policy objectives in their business planning and to deliver on the obligations required of regulated utilities. These obligations may evolve over time and therefore this Handbook does not provide a comprehensive list of all requirements. Utilities are expected to demonstrate that they have considered Conservation First in their investment decisions. The OEB will expect to see proposals for how distributors are supporting low income customers through programs such as LEAP and/or OESP, or through other distributor-specific programs. Electricity distributors and transmitters are expected to expand or reinforce their systems to accommodate the connection to their system for renewable energy generation facilities and the OEB expects their system plans to include details on how they will meet this requirement.

• **Financial Performance:** Utilities are expected to demonstrate sustainable improvements in their efficiency and in doing so will have the opportunity to earn a fair return. The OEB will monitor the financial performance of each utility to assess continuing financial viability and to determine whether returns are excessive. Utilities have a choice of rate-setting methods to meet their particular needs. Additional tools are available to support infrastructure investment. Utilities must report comprehensive and consistent information, allowing for comparisons over time and across utilities. The OEB will act on its obligations to ensure a financially viable sector where performance indicates that a regulatory response is needed.ⁱ

ⁱ Handbook to Utility Rate Applications, October 13, 2016, Section 2

Business Case for Additional Headcount/Position*

*Full-time regular non-trades only

TITLE OF POSITION REQUESTED:

1. ISSUE STATEMENT

Describe the business issue that this staffing action(s) will address. The issue may be process, technology, or product/service oriented. This section should not include any discussion related to the recommendation.

2. RECOMMENDATION

Summarize the approach for how the staffing action(s) will address the business issue. This section should also describe how desirable results will be achieved by moving forward with the staffing action(s).

3. ORGANIZATIONAL IMPACT

Describe how the proposed recommendation and associated staffing action(s) will support business goals and objectives and explain how existing roles may change as a result of the staffing action(s), if applicable.

Also describe how the staffing action(s) will modify or affect the organizational processes, tools, hardware, and/or software.

4. ANTICIPATED OUTCOMES

Describe the anticipated outcome(s) if the proposed staffing action(s) is/are approved. It should include how the staffing action(s) will benefit the business and describe the expected end state.

5. STRATEGIC ALIGNMENT

All proposals should support Hydro Ottawa's 2016-2020 Strategic Direction in order to add value and maintain executive and organizational support. Provide an overview of the related roadmap(s) and how the staffing action(s) supports delivery against the roadmap and the 2016-2020 Strategic Direction.

6. COST BENEFIT ANALYSIS

Quantify the financial benefits of the staffing action(s) as much as possible by completing a cost benefit analysis to illustrate the costs of the staffing action(s) and compare it with the benefits and savings to determine if it is worth pursuing.

7. ALTERNATIVES ANALYSIS

Business issues may be addressed by any number of alternatives. Provide a brief summary of the alternatives that were considered, one of which should be the status quo or doing nothing. The reasons for not selecting the alternatives should also be included.

8. JUSTIFICATION

Justify why the recommended staffing action(s) should be approved and why the recommendation was selected over other alternatives. Where applicable, quantitative support should be provided and the impact of not approving the staffing action(s) should also be included.

Signature of Executive


Name	Title	Signature	Date

Appendix D

IT Project Request Template

Please input the data using the electronic template (see link below)

<https://eod2.ecl.eclipseppm.com/api/projectrequest/form?environmentid=1109&formuniqueid=008b4e41-7f8d-480d-b53b-00177970de3b>



Hydro Ottawa

Project Request Form (2019 - Technology Initiative Request Form Template)

Requested By: *required*
Please enter an email address that belongs to a user or a resource in your Eclipse environment. Only active users and resources can request projects.

Project Values Tell us about your project.
Project Name: *required*
Provide very brief and concise project name. The details are to be included in the "Description" field.

Description: *required*
Provide brief description of the requested project aka IDEA For the initial IDEA request form the following fields need to be completed and are identified as "required" on the request form: 1. Project Name 2. Description 3. Pain Points 4. Expected Business Benefits

Description on projects

Pain Points: *required*
What are some of the main issues/problems that this project is addressing/resolving?

Expected - DIRECT Business Benefits: *required*
Requests are being assessed in terms of which of the 8 HOHI "Strategic Plan Actions" the projects will have "Direct" impact on, and the impact should be quantifiable. Avoid selecting items for which the impact is weak or convoluted. - Grow revenues from new sources: - Enhance / protect revenues from existing business lines: - Assist customers in managing their energy consumption and electricity costs: - Deliver on customer expectations for service quality and responsiveness: - Maintain overall distribution system reliability: - Continue to enhance operational performance and productivity: - Maintain leading health and safety record: - Enhance organizational and employee capability: - Enhance our brand image in the community and the industry: - Continue to improve our environmental performance and reduce our impact on the environment:

Grow revenues from new sources
Enhance / protect revenues from existing business lines
Assist cust. in mg'g their energy consump. and electricity costs
Deliver on cust. expect'n for service quality and responsiveness

Justification for identified Expected (Direct) Business Benefit: *required*
Provide the justification for each of the identified Expected (Direct) Business Benefits for this project

Benefit: Grow revenues from new sources:

Benefit: Enhance / protect revenues from existing business lines:

Appendix E

Enter Project/Program Name

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1 Project/Program Summary

Summary is a snapshot of the information that will be explained in further details throughout the business case.

2 Project/Program Description

2.1 Current Issues

Describe the current situation and the existing issues in current system that will be addressed by this program. (For example, capacity limitations, load growth, etc.)

2.2 Program/Project Scope

Describe the scope of the project/program.

Where applicable, describe HOL's participation in the regional planning process and any regional electricity infrastructure requirements identified in this process that affected the initiation or final configuration of this program/project.; also provide information on the corresponding distribution of the benefits and responsibility for project costs.

If applicable, describe how advanced technology has been incorporated into the project.

2.3 Main and Secondary Drivers

Please identify the main and secondary (if applicable) drivers for this project. Make sure to align these definitions with examples provided by the OEB (see Table1 in Ch5 Filing Requirements).

2.4 Performance Targets and Objectives

Please define the objectives to be achieved by implementing the project. This should also include a discussion on any additional planning objectives that are met by the project have intentionally been combined into the project, and if so, what objectives and why. For instance, a system upgrades project meeting system renewal objectives.

3 Project/Program Justification

3.1 Alternatives Evaluation

3.1.1 Alternatives Considered

Please provide description of alternatives considered to address the drivers and achieve the objectives, including the “Do-Nothing” option, the preferred option, and other technically feasible alternatives that will meet the same objectives as the proposed project.

3.1.2 Evaluation Criteria

Provide a description of evaluation criteria that were used to compare alternatives.

3.1.3 Preferred Alternative

- *Restate what the preferred alternative is*
- *What was the ranking of the preferred alternative relative to other alternatives?*
- *Explain why the proposed project was given this ranking?*
- *Using the tools and methods described in 5.4.2© of the DSP, analyze project benefits and costs comparing the preferred alternative to other feasible alternatives*
- *Where the ranking of the proposed project relative to alternatives has been adjusted to account for significant benefits and costs the value of which cannot readily be quantified, information should be provided that describes these ‘qualitative’ factors in relation to the proposed project and all alternatives, and that explains whether and how these factors affected the selection of the proposed project*

3.2 Project/Program Timing & Expenditure

Please provide a description that addresses the following:

- What were the expenditures for projects in the historical period that were equivalent to this project? Briefly describe the scope of these projects.
- What are the future expenditures for the project?
- How has HOL minimized the controllable costs in this project?

	Historical (\$M)					Future (\$M)				
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Expenditure										
Units										

3.3 Benefits

Please describe the benefits of the project using, where applicable, quantitative and/or qualitative analyses of the project.

Benefits	Description
System Operation Efficiency and Cost Effectiveness	Please describe the effect of the investment on system operation efficiency and cost-effectiveness, as well as identify and set targets for key performance indicators that will be affected by the investment. Describe how the investment potentially enables future technological functionality and/or addresses future operational requirements.
Customer	Please describe here the net benefits accruing to customers as a result of the investment, and the impact of the investment on reliability performance including on the frequency and duration of outages. This can be done by identifying and setting targets for key performance indicators that will be affected by the investment. Where measurable, include an assessment of the benefits of the project for customers in relation to the achievement of the objectives of the investment; express the result (including where value is in the form of an avoided cost) in terms of cost impact to customers where practicable.
Safety	Please describe the effect of the investment on health and safety protections and performance.
Cyber-Security, Privacy	Please provide, where applicable, information showing that the investment conforms to all applicable laws, standards and best utility practices pertaining to customer privacy, cyber-security and grid protection.
Co-ordination,	If applicable, please explain how the investment applies recognized standards,

Interoperability	referencing co-ordination with utilities, regional planning, and/or links with 3rd party providers and/or industry
Economic Development	If applicable, please describe the effect of the investment on Ontario economic growth and job creation.
Environment	If applicable, please describe the effect of the investment on the use of clean technology, conservation and more efficient use of existing technologies.

4 Prioritization

4.1 Consequences of Deferral

If applicable, please identify and describe the consequences / risks of deferring the project, including implication on O&M costs and system operations, customer impact, safety, cyber-security, coordination / interoperability, economic development and environment.

4.2 Priority

Please provide a description of the priority level of the project that addresses the following:

- *What is the priority level of the project compared to other projects in this and other categories? (i.e. High, Medium, Low)*
- *What are the reasons for its priority? (Make sure this discussion is tie to section 5.4.2c of the DSP on HOL's approach for identifying, selecting, prioritizing, and pacing projects in each investment category)*

5 Execution Path

5.1 Implementation Plan

Please describe the implementation strategy for the project/program, for instance, the order in which stations/feeders/geographic areas will be addressed, and the rationale for this decision.

5.2 Risks to Completion and Risk Mitigation Strategies

Please identify any risks that might prevent HOL from completing the project as planned and describe HOL's risk mitigation strategy for each.

5.3 Timing Factors

Please identify and describe factors that might affect the timing/priority of the project.

5.4 Cost Factors

Please identify and describe factors that might affect the final cost of the project.

Include any capital contributions made or forecast to be made to a transmitter with respect to a Connection and Cost Recovery Agreement. Details to be provided include: initial forecast used to calculate contribution, amount of contribution (if any), true-up dates and potential true-up payments.

5.5 Other Factors

Please identify and describe any other factors that might have an impact on the project, such as factors relating to customer preferences or input from customers and other third parties.

6 Renewable Energy Generation (if applicable)

If applicable, please provide in this section information on the following where applicable:

- Total capital and O&M costs associated with REG investment*
- How is the REG investment expected to improve the system's ability to accommodate the connection of REG facilities?*
- The nature and magnitude of the system impacts of the project, the costs of any system modifications required to accommodate these impacts and the means by which these costs are to be recovered.*

7 Leave-To-Construct (if applicable)

Where a proposed project requires Leave to Construct approval under Section 92 of the OEB Act, with construction commencing in the test year, the applicant must provide a summary of the evidence for that project consistent with the requirements set out in Chapter 4 of the filing requirements (sections 4.3 and 4.4 in particular).

If not applicable, enter "N/A".

8 Project Details and Justification

(For each project in the program, please fill out information in the following table)

Project Name:	<i>Enter Project Name</i>
Capital Cost:	<i>Enter Project Capital</i>
O&M:	<i>Enter Project O&M</i>
Start Date:	<i>Enter Project Start Date</i>
In-Service Date:	<i>Enter Project In-Service Date</i>
Investment Category:	<i>Enter Investment Category</i>
Main Driver:	<i>Enter Main Driver</i>
Secondary Driver(s):	<i>Enter Secondary Driver(s)</i>
Customer/Load Attachment	<i>Enter Number of Customers/Load Attached</i>
Project Scope	
<i>Enter Description of Project Scope</i>	
Work Plan	
<i>Enter Description of Work Plan</i>	
Customer Impact	
<i>Enter Description of Customer Impact, including where measurable, an assessment of the benefits of the project for customers in relation to the achievement of the objectives of the investment; express the result (including where value is in the form of an avoided cost) in terms of cost impact to customers where applicable.</i>	

Appendix F

Divisional Partners

Portfolio	HR Partner	Safety Partner	Management Accountant	Information Technology Prime Contact
Distribution Engineering and Asset Management Group	Judy Muldoon	Shawn Diceman	Kirk Thomson	Sally Barakat for Metering Charles Berndt for all other inquiries
Chief Customer Officer Division	Judy Muldoon	Sylvain Pinard	Tressa Valdivia	Sally Barakat for Billing, Collections and Meter Data Services David Ricottone for all other inquiries
Distribution Operations Group	Maureen Daly	Dave Stephens	Kirk Thomson	Sally Barakat for Business Performance & Scheduling Charles Berndt for all other inquiries
Chief Financial Officer Division	Shannon Nicholson	Jean Belanger	Lauren Blake	Andrew Willis for Internal Audit Sally Barakat for Regulatory Michelle Pharand for all other inquiries

Portfolio	HR Partner	Safety Partner	Management Accountant	Information Technology Prime Contact
Chief Information and Technology Officer Division	Shannon Nicholson	Jean Belanger	Lauren Blake	N/A
Chief Human Resources Officer Division	Shannon Nicholson	Jean Belanger	Tressa Valdivia	Michelle Pharand
Chief Electricity Generation Officer Division	Cathy DeMelo	Sylvain Pinard	Liza Kheirallah	Jojo Maalouf
Chief Energy and Infrastructure Services Officer Division	Cathy DeMelo	Sylvain Pinard	Andrea Brennan	Andrew Willis
Chief Executive Officer, Legal Counsel and Governance and Planning Groups	Cathy DeMelo	Sylvain Pinard	Lauren Blake	Sarah Green



ALIGNMENT WITH THE RENEWED REGULATORY FRAMEWORK

1. INTRODUCTION

In 2012, the OEB adopted its current performance-based approach to regulation, through the release of its report entitled *Renewed Regulatory Framework for Electricity Distributors: A Performance Based Approach* (hereafter referred to as the “RRFE Report”).¹ This paradigm, which the OEB has since applied to all rate-regulated utilities under its jurisdiction and has captioned as the “Renewed Regulatory Framework” (“RRF”), is intended to serve several key purposes: act as a more consumer-centric approach to utility regulation; better align the interests of customers and utilities; facilitate the achievement of distinct performance outcomes by utilities; and place a greater focus on delivering value for money.²

A cornerstone of the RRF is a set of outcomes, against which utilities are measured as a means of gauging the strength of their overall performance in delivering results that are valued by customers. The categories of RRF performance outcomes are as follows: Customer Focus, Operational Effectiveness, Public Policy Responsiveness, and Financial Performance. Complementing these outcome categories are core principles that underpin the RRF, including “the expectation for continuous improvement, robust integrated planning and asset management that paces and prioritizes investments, strong incentives to enhance utility performance, ongoing monitoring of performance against targets, and customer engagement to ensure utility plans are informed by customer expectations.”³ Rounding out the key components of the RRF is a three-pronged policy platform aimed at facilitating the achievement of performance outcomes: availability of three rate-setting methods, the individual selection of which is at the discretion of the utility, based upon its unique needs and circumstances; formalized requirements for distribution system planning and regional planning; and standards to measure utility performance.

¹ Ontario Energy Board, *Report of the Board - Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* (October 18, 2012).

² *Ibid*, page 1.

³ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 2.



1 Since the inception of the RRF, Hydro Ottawa has endeavoured to incorporate RRF principles
2 across its business operations, execute its corporate plans and capital investment programs in
3 accordance with RRF objectives, and continually align its interests with those of its customers.
4 In particular, Hydro Ottawa believes that this commitment has been on full display throughout its
5 2016-2020 rate term.

6
7 The establishment of the utility's 2016-2020 rate term was enabled by a finding from the OEB
8 that Hydro Ottawa's 2016-2020 Custom Incentive Rate-setting ("Custom IR") application, and
9 the subsequent settlement proposal prepared by parties to the proceeding, met the expectations
10 of the RRF for a Custom IR.⁴

11
12 Moreover, in step with the RRF's emphasis on the achievement of performance outcomes, the
13 utility has closely tracked the achievement of RRF performance outcomes over the course of its
14 rate term. This monitoring has taken the form not only of the Electricity Utility Scorecard that is
15 issued annually for all local distribution companies ("LDCs"), but of additional measures and
16 methods as well. Chief among these has been the preparation and filing of an annual report
17 ("CIR Annual Report") to the OEB and parties to the Approved Settlement Agreement governing
18 Hydro Ottawa's 2016-2020 Custom IR rate plan. These CIR Annual Reports have provided
19 updates on actual capital expenditures by program type (i.e. System Access, System Service
20 and System Renewal, and General Plant) vs. budgeted capital expenditures by program type
21 and appropriate variance analysis. In addition, the CIR Annual Reports have tracked the utility's
22 continuous improvement using a series of Key Performance Indicators ("KPIs") that were
23 incorporated into Hydro Ottawa's 2016-2020 Distribution System Plan ("DSP"). For additional
24 information on these CIR Annual Reports, please see Exhibit 1-1-11: Proposed Annual
25 Reporting - 2021-2025.⁵

⁴ Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015), page 1.

⁵ These reports are available on Hydro Ottawa's website:
<https://hydroottawa.com/about-us/regulatory-affairs/custom-incentive-reports>.



1 In addition, Hydro Ottawa has annually prepared a summary of initiatives and outcomes
2 emanating from the 2016-2020 rate plan which align with the outcome categories enshrined in
3 the RRF. These summaries – which have been pro-actively developed on a voluntary basis –
4 have helped support the fostering of a culture of continuous improvement across the utility.
5 Copies of these summaries for the years 2016, 2017, and 2018 have been appended to this
6 Schedule as Attachments 1-1-10(A), (B), and (C), respectively.

7
8 This Schedule outlines how the Application aligns with the hallmark precepts, objectives, and
9 expectations of the RRF. Specific matters that will be addressed are as follows: broader
10 alignment between Hydro Ottawa's corporate strategic objectives and RRF performance
11 outcomes; customer engagement; rate-setting elements, including selection of the Custom IR
12 option; performance measurement, continuous improvement, and benchmarking; and
13 distribution system planning.

14 15 **2. ALIGNMENT BETWEEN CORPORATE STRATEGY & RRF OUTCOMES**

16 Before highlighting the specific ways in which this Application aligns with essential features of
17 the RRF, Hydro Ottawa wishes to establish some broader context. Namely, it seems appropriate
18 to first draw attention to the more fundamental alignment between the categories of
19 performance outcomes under the RRF and the principal areas of focus in the utility's business
20 strategy.

21
22 Hydro Ottawa's vision is to serve as the trusted energy advisor for its customers and as a
23 leading partner in a smart energy future. To achieve this vision, the utility has organized its
24 business strategy around four strategic objectives and areas of performance for several years –
25 as represented in Figure 1 below. Hydro Ottawa will maintain continuity in its core objectives
26 heading into the 2021-2025 period. Consistent with past years, the renewed strategic objectives
27 are being formally adopted at the holding company level and will cascade across the enterprise,
28 thereby guiding the business and operations of the regulated distribution utility.



Figure 1 – Corporate Strategic Objectives



- **Customer Value:** we will deliver value across the entire customer experience by providing reliable, responsive, and innovative services at competitive rates.
- **Organizational Effectiveness:** we will achieve performance excellence by cultivating a culture of innovation and continuous improvement.
- **Financial Strength:** we will create sustainable growth in our business and our earnings by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets, and our people.
- **Corporate Citizenship:** we will contribute to the well-being of the community by acting at all times as a responsible and engaged corporate citizen.

Of these objectives, the most important driver of Hydro Ottawa’s business strategy will remain Customer Value, with the utility striving to put the customer at the centre of everything it does.

The primary objectives animating Hydro Ottawa’s corporate vision are wholly consistent with the main performance outcomes promoted under the RRF, as illustrated in Table 1 below. For



additional context, the table also shows the congruence of Hydro Ottawa's high-level performance goals and strategic outcomes – which are utilized to measure progress in achieving the strategic objectives – with the RRF's areas of focus.

Table 1 – Alignment of Hydro Ottawa's Corporate Strategic Objectives with RRF Performance Outcomes

RRF Performance Outcomes	Hydro Ottawa Strategic Objective	Hydro Ottawa Corporate Performance Goal	Hydro Ottawa Strategic Outcome
Customer Focus	Customer Value	<ul style="list-style-type: none"> Assist customers in managing their energy consumption and electricity costs Deliver on customer expectations for service quality and responsiveness Maintain overall distribution system reliability 	<ul style="list-style-type: none"> Customer loyalty and satisfaction
Operational Effectiveness	Organizational Effectiveness	<ul style="list-style-type: none"> Continue to enhance operational performance and productivity Maintain leading health and safety record Enhance organizational and employee capability 	<ul style="list-style-type: none"> Efficient and effective operations Safe and healthy work environment Engaged, aligned, and prepared workforce
Public Policy Responsiveness	Corporate Citizenship	<ul style="list-style-type: none"> Enhance our brand image in the community and the industry Continue to improve our environmental performance and reduce our impact on the environment 	<ul style="list-style-type: none"> Leading governance and business practices Engaged stakeholders Safe, secure and environmentally responsible services Positive community impact
Financial Performance	Financial Strength	<ul style="list-style-type: none"> Grow revenues from new sources Enhance / protect revenues from existing business lines 	<ul style="list-style-type: none"> Growth in shareholder value



Hydro Ottawa views this broad alignment as a competitive advantage and as further reinforcement of the imperative – as well as the value – of remaining firmly committed to entrenching RRF principles and objectives throughout its business and operations.

Against the backdrop of this high-level alignment between its corporate objectives and RRF performance outcomes, Hydro Ottawa will focus the subsequent sections of this Schedule on the alignment of this Application with more specific elements of the RRF.

3. CUSTOMER ENGAGEMENT

The OEB's *Handbook for Utility Rate Applications* states the following:

*"Customer engagement is foundational to the RRF. Enhanced engagement between utilities and their customers provides better alignment between utility plans and customers' needs and expectations...Utilities are expected to demonstrate value for money by delivering genuine benefits to customers and providing services in a manner which is responsive to customer preferences. Customer engagement is expected to inform the development of utility plans, and utilities are expected to demonstrate in their proposals how customer expectations have been integrated into their plans, including the trade-offs between outcomes and costs."*⁶

Providing customers with value for money and facilitating a customer experience that is driven by choice are cornerstones of Hydro Ottawa's business planning. In step with its overall business strategy to put the customer at the centre of everything it does, the utility endeavours to ensure that its capital and operational investment plans are guided and informed by customer needs, preferences, and priorities. In order to identify and learn about customers' expectations, Hydro Ottawa avails itself of numerous tools and interactions to engage customers on an ongoing basis. Moreover, for the purposes of informing the development of the specific plans and proposals set forth in this Application, Hydro Ottawa undertook targeted outreach to customers as well.

⁶ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 11.



1 For more details on the utility's customer engagement activities, and their consistency with RRF
2 expectations for responsiveness to customer priorities and needs, please see Exhibit 1-2-1:
3 Customer Engagement Overview and Exhibit 1-2-2: Customer Engagement on the 2021-2025
4 Application.

6 **4. RATE-SETTING FRAMEWORK**

7 The OEB has developed and continues to administer a trio of related policies that are intended
8 to facilitate the achievement of the core performance outcomes embedded in the RRF.⁷ These
9 policies are rate-setting, planning, and measuring performance. The remainder of this Schedule
10 describes how this Application fulfills the expectations of each of these policies.

12 **4.1. SELECTION OF CUSTOM INCENTIVE RATE-SETTING OPTION**

13 The RRF makes three distinct rate-setting methods available to electricity distributors. The
14 RRFE Report describes them, and their corresponding fitness for the differing circumstances
15 and needs of distributors, as follows: 4th Generation Incentive Rate-setting (suitable for most
16 distributors); Custom Incentive Rate-Setting (suitable for those distributors with large or highly
17 variable capital requirements); and the Annual Incentive Rate-Setting Index (suitable for
18 distributors with limited incremental capital requirements).⁸

19
20 In this Application, Hydro Ottawa has opted to avail itself of the Custom IR method. A principal
21 justification for this decision is the sustained need on the horizon for significant levels of capital
22 investment in the utility's distribution system, in order to maintain overall system performance
23 and meet customer preferences – all while safeguarding rates at a reasonable level. This need
24 is the result of several factors, including aging infrastructure, an expanding customer base,
25 continued growth across the City of Ottawa, and the effects of severe weather events. Major
26 capital initiatives that are required over the course of the upcoming rate term include the
27 construction of new distribution stations in growing areas of the city, the connection of
28 thousands of new customers every year, infrastructure upgrades and modifications to enhance

⁷ RRFE Report, page 3.

⁸ *Ibid.*



reliability and capacity on the grid, replacement of equipment that has reached the end of its useful life, strengthening the grid's ability to withstand severe weather events, support for local infrastructure projects like Ottawa's Light Rail Transit, and renewal of the utility's vehicle fleet. Table 2 below summarizes the projected breakdown of total capital investments during each year of the 2021-2025 period.

Table 2 – 2021-2025 Annual Capital Expenditures (\$'000,000s)

Investment Category	2021	2022	2023	2024	2025	Average 2021-2025
System Access	\$56.7	\$41.0	\$37.4	\$34.5	\$34.0	\$40.7
System Renewal	\$43.3	\$44.0	\$40.2	\$39.4	\$40.5	\$41.5
System Service	\$31.0	\$27.4	\$24.3	\$25.2	\$23.9	\$26.4
General Plant	\$32.0	\$11.7	\$7.6	\$17.4	\$16.9	\$17.1
Capital Contributions	\$(41.3)	\$(25.2)	\$(19.9)	\$(19.2)	\$(19.3)	\$(25.0)
TOTAL	\$121.8	\$98.9	\$89.6	\$97.2	\$96.0	\$100.7

This five-year envelope for capital investment translates into an annual average expenditure requirement of \$100.7M. This figure mirrors (but falls short of) the annual average of capital expenditures budgeted for in Hydro Ottawa's 2016-2020 Custom IR application, which was \$107.5M. Of note, this latter figure represents the highest annual average from any multi-year rate term in the utility's history.⁹

The close alignment of the annual averages for capital expenditures from the 2016-2020 and 2021-2025 rate terms is wholly consistent with the direction signalled in Hydro Ottawa's 2016-2020 Custom IR application, which articulated the expectation that a historically high level of annual capital expenditures "will be sustained, if not increased, through the decade from 2020-2030."¹⁰

⁹ For additional information on Hydro Ottawa's 2016-2020 capital expenditures, please see Exhibit 2-4-1: Capital Expenditure Summary.

¹⁰ Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-setting Distribution Rate Application*, EB-2015-0004 (April 29, 2015), Exhibit A-2-1, page 10.



1 While Hydro Ottawa's large, multi-year capital investment needs are one of the main drivers
2 behind the decision to select the Custom IR option, considerations with respect to operational
3 funding were likewise germane. In particular, the requirement to embed productivity gains into
4 the annual rate adjustment mechanism helps to ensure greater convergence between Hydro
5 Ottawa's interests and those of its customers, who wish to see continuous improvement on the
6 utility's part in delivering outcomes in an efficient and cost-effective manner.

7
8 Accordingly, Hydro Ottawa maintains that the Custom IR method remains the most suitable
9 rate-setting option for governing the 2021-2025 rate term. The ensuing sub-sections explain in
10 greater detail the specifics of the rate-setting framework that the utility has customized for the
11 purposes of its five-year rate plan.

12 13 **4.2. YEAR ONE – STANDARD REBASING**

14 This Application is based on a Custom IR approach for a five-year period, consistent with the
15 OEB's RRF as set out in the *Handbook for Utility Rate Applications*. The first Test Year of the
16 five-year period (2021) is a standard rebasing approach, consistent with the OEB's 4th
17 Generation Incentive Regulation approach.

18
19 Hydro Ottawa has developed and submitted a forecast of its base revenue requirement for 2021
20 in this Application, as well as detailed forecasts of its costs based on its capital and operational
21 plans for 2021.¹¹ In keeping with the rate adjustment formula used in its 2016-2020 Custom IR
22 rate plan, Hydro Ottawa has assumed the Conference Board of Canada's updated inflation rate
23 of 2.01% for all non-compensation-related costs. The calculated revenue requirement resulting
24 from these projections is detailed in Exhibit 6-1-1: Calculation of Revenue Deficiency or
25 Sufficiency.

26
27 The forecasted costs in this Application were developed with the benefit of information obtained
28 from several external and internal benchmarking studies (see Exhibit 1-1-12: Benchmarking).

¹¹ See Exhibit 1-1-9: Business Plan, Exhibit 2-4-1: Capital Expenditure Summary, Exhibit 2-4-3: Distribution System Plan, and Exhibit 4-1-1: Operations, Maintenance and Administration Summary.



1 These studies helped inform Hydro Ottawa's plans and expenditures. In addition, these plans
2 were developed with the benefit of significant customer engagement including surveys, focus
3 groups, town hall meetings, special studies, and ongoing day-to-day customer interactions. The
4 full extent of Hydro Ottawa's customer engagement is detailed in Exhibit 1-2-1: Customer
5 Engagement Overview and Exhibit 1-2-2: Customer Engagement on the 2021-2025 Application.
6

7 **4.3. YEARS TWO THROUGH FIVE – RATE FRAMEWORK: CUSTOM PRICE** 8 **ESCALATION FACTOR**

9 As established by the RRF, under Price Cap Incentive Rate-Setting, rates are adjusted using a
10 formulaic approach in the years following the first year base rates. This formula consists of a
11 two-component Price Cap Index ("PCI"): inflation and productivity. For electricity distributors, the
12 formula includes an industry-specific inflation factor and two factors for productivity. One
13 productivity factor is a fixed value for industry-wide productivity. The other is a stretch factor
14 which is set each year based on the level of efficiency the distributor has achieved, as evaluated
15 by the Pacific Economics Group's ("PEG") econometric model.
16

17 Under a Custom IR approach, the annual rate adjustment must be based on a custom index
18 supported by empirical evidence that can be tested. The annual adjustment must include explicit
19 financial incentives for continuous improvement and cost control targets. As noted in the OEB's
20 *Handbook for Utility Rate Applications*, "these incentive elements, including a productivity factor,
21 must be incorporated through a custom index or an explicit revenue reduction over the term of
22 the plan (not built into the cost forecast)."¹²
23

24 As a result, Hydro Ottawa is proposing to adopt a **Custom Price Escalation Factor** ("CPEF") rate
25 framework for years two through five, which is based on the approach approved by the OEB in
26 the utility's 2016-2020 Custom IR application.¹³ This framework is aligned with OEB policy and
27 based on sound ratemaking principles. The CPEF incorporates the OEB's key principles and
28 expectations of a Custom IR application, and thus has been structured in a way that:

¹² Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 25.

¹³ Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015), page 1.



- Includes productivity gains as part of the rate adjustment mechanism;
- Constrains operational funding increases going forward at approximately the rate of inflation; and
- Acknowledges the funding requirements to address Hydro Ottawa's significant, multi-year investment needs over the 2021-2025 period.

The OEB has provided specific guidance with respect to Custom IR applications and expectations for the annual rate adjustment index. The *Handbook for Utility Rate Applications* states the following:

“Custom IR: Under this methodology, rates are set for five years considering a five-year forecast of the utility's costs and sales volumes. This method is intended to be customized to fit the specific utility's circumstances, but expected productivity gains will be explicitly included in the rate adjustment mechanism. Utilities adopting this approach will need to demonstrate a high level of competence related to planning and operations.

Index for the Annual Rate Adjustment: The annual rate adjustment must be based on a custom index supported by empirical evidence (using third party and/or internal resources) that can be tested. Custom IR is not a multi-year cost of service; explicit financial incentives for continuous improvement and cost control targets must be included in the application. These incentive elements, including a productivity factor, must be incorporated through a custom index or an explicit revenue reduction over the term of the plan (not built into the cost forecast).

The index must be informed by an analysis of the trade-offs between capital and operating costs, which may be presented through a five-year forecast of operating and capital costs and volumes. If a five-year forecast is provided, it is to be used to inform the derivation of the custom index, not solely to set rates on the basis of multi-year cost of service. An application containing a proposed custom index which lacks the required supporting empirical information may be considered to be incomplete and not processed until that information is provided.

It is insufficient to simply adopt the stretch factor that the OEB has established for electricity distribution IRM applications. Given a utility's ability to customize the approach to rate-setting to meet its specific circumstances, the OEB would generally expect the custom index to be higher, and certainly no lower than the OEB-approved X factor for Price Cap IR (productivity and stretch factors) that is used for electricity



distributors.”¹⁴

The CPEF adheres to this guidance and consists of three main components: a custom inflation factor, a two-component productivity factor and a growth factor. Supplementary evidence is supplied in support of each factor below. As previously noted, year one is a traditional rebasing year, with costs allocated and rates set on the basis of a forecast Test Year. Distribution rates in years two through five are adjusted annually by the CPEF, as follows:

$$\text{CPEF} = I - X + G$$

where

“I” is the inflation factor (see section 4.3.1 below)

“X” is the two-component productivity factor (see section 4.3.2 below)

“G” is the growth factor (see section 4.3.3 below)

As referenced above, this approach is consistent with the OEB’s RRF guidance on Custom IR applications. This formulaic approach with customization reflects Hydro Ottawa’s significantly large, multi-year investments within the 2021-2025 period, while embedding productivity savings for the customer.

4.3.1. “I” Factor: Inflation Factor

In its 2013 report, *Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario’s Electricity Distributors*, the OEB established a methodology for determining its annual inflation factor for use in incentive-based rate adjustment mechanisms.¹⁵

The OEB’s two-factor inflation factor is based on the weighted sum of the following sub-indices:

¹⁴ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), pages 25-26.

¹⁵ Ontario Energy Board, *Report of the Board - Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario’s Electricity Distributors*, EB-2010-0379 (November 21, 2013), pages 5-11.



- Non-Labour: 70% of the annual percentage change in Canada's Gross Domestic Product Implicit Price Index ("GDP-IPI") Final Domestic Demand ("FDD"), as reported by Statistics Canada; and
- Labour: 30% of the annual percentage in the Average Weekly Earnings ("AWE") for workers in Ontario, as reported by Statistics Canada.

The OEB's inflation factor can be calculated as follows:

$$\text{Inflation Factor} = 0.70 \times \Delta \text{GDP-IPI (FDD)} + 0.30 \times \Delta \text{AWE (Ontario)}$$

where

GDP-IPI (FDD) is the annual Implicit Price Index for (national) Gross Domestic Product.

AWE (Ontario) is the annual Average Weekly Earnings for Ontario, all businesses except unclassified, including overtime.

The OEB's inflation factor calculation uses component weights of 30% labour and 70% non-labour. Hydro Ottawa proposes to use an inflation factor consistent with the OEB's approach. However, the utility proposes to use a weighting of the two sub-indices that is more suitable for Hydro Ottawa's historical labour/non-labour split. Hydro Ottawa maintains that a weighting that is more closely aligned with its own labour/non-labour split is more appropriate than the OEB's 70/30 split, as it represents the utility's actual conditions.

After an analysis of both historical and forecast operations, maintenance and administration ("OM&A") expenditure data over the 2016-2020 period, Hydro Ottawa has determined that a unique labour/non-labour weighting of 55.5% labour and 44.5% non-labour is appropriate. Table 3 below provides an overview of Hydro Ottawa's labour and non-labour OM&A components, as a percentage of total OM&A.



Table 3 – Hydro Ottawa’s Labour/Non-Labour Split (2016-2020)

	2016	2017	2018	2019	2020	5-Year Total
Labour (55.5% weight)	\$72,126,923	\$71,938,869	\$75,204,872	\$75,788,503	\$77,366,800	\$372,425,968
Non-Labour (44.5% weight)	\$54,929,916	\$57,241,300	\$59,383,744	\$61,471,941	\$65,067,573	\$298,094,474
Labour as a % of Gross OM&A	56.77%	55.69%	55.88%	55.22%	54.32%	55.5% (average)

Hydro Ottawa thus proposes to calculate its inflation factor as follows:

$$\text{Inflation Factor} = 0.445 \times \Delta \text{GDP-IP} (\text{FDD}) + 0.555 \times \Delta \text{AWE} (\text{Ontario})$$

where

GDP-IP (FDD) is the annual Implicit Price Index for (national) Gross Domestic Product.

AWE (Ontario) is the annual Average Weekly Earnings for Ontario, all businesses except unclassified, including overtime.

Hydro Ottawa proposes to use a static inflation factor for the duration of this Application’s term, and therefore proposes to derive its inflation factor using an average based on historical and forecast data over the 2017-2025 period. Annual GDP-IP data and AWE historical and projection data for the 2017-2025 period from the Conference Board of Canada is presented in Tables 4 and 5 below, alongside Hydro Ottawa’s adjusted labour/non-labour weighting.¹⁶

¹⁶ Note that projection data for GDP-IP and AWE is available up to 2023 only. Consistent with the inflation indices used in Clearspring Energy Advisors’ *Econometric Benchmarking Study of Hydro Ottawa’s Total Cost and Reliability* (Attachment 1-1-12(A)), the 2023 inflation rate was applied to 2024 and 2025.



Table 4 – 2017-2025 GDP-IPI (FDD) Index

Year	GDP-IPI	Hydro Ottawa Non-Labour Weighting	Adjusted GDP-IPI
2017	2.50%	44.46%	2.78%
2018	1.67%	44.46%	1.86%
2019	1.19%	44.46%	1.32%
2020	2.33%	44.46%	2.59%
2021	2.11%	44.46%	2.34%
2022	2.10%	44.46%	2.33%
2023	2.07%	44.46%	2.30%
2024	2.07%	44.46%	2.30%
2025	2.07%	44.46%	2.30%

Source: Conference Board of Canada

Table 5 – 2017-2025 AWE (Ontario) Index

Year	AWE	Hydro Ottawa Labour Weighting	Adjusted AWE
2017	0.82%	55.54%	0.73%
2018	3.40%	55.54%	3.02%
2019	2.61%	55.54%	2.32%
2020	2.77%	55.54%	2.46%
2021	2.75%	55.54%	2.45%
2022	2.72%	55.54%	2.42%
2023	2.71%	55.54%	2.41%
2024	2.71%	55.54%	2.41%
2025	2.71%	55.54%	2.41%

Source: Conference Board of Canada

Table 6 below presents an annual breakdown of Hydro Ottawa's adjusted weightings for both GDP-IPI and AWE over the 2017-2025 period.



Table 6 – Hydro Ottawa’s Labour/Non-Labour Split (2017-2025)

Year	GDP-IPI (Non-Labour)	AWE (Labour)	Average
2017	2.78%	0.73%	1.75%
2018	1.86%	3.02%	2.44%
2019	1.32%	2.32%	1.82%
2020	2.59%	2.46%	2.53%
2021	2.34%	2.45%	2.39%
2022	2.33%	2.42%	2.38%
2023	2.30%	2.41%	2.35%
2024	2.30%	2.41%	2.35%
2025	2.30%	2.41%	2.35%
2017-2025 Average	2.23%	2.29%	2.26%

As shown in Table 6, applying Hydro Ottawa’s specific labour/non-labour weighting factors to the AWE and GDP-IPI indices, and averaging over the 2017-2025 period, yields an inflation factor of 2.26%. Hydro Ottawa does not intend to update the inflation factor over the course of its 2021-2025 rate term.

4.3.2. “X” Factor: Productivity and Stretch Factors

4.3.2.1. Productivity Factor

There are two components to the X factor: an industry Total Factor Productivity (“TFP”) component and a stretch factor component. The productivity component is intended to be an estimate of industry TFP growth in Ontario’s electricity distribution sector. In its 2013 report, *Productivity and Benchmarking Research in Support of Incentive Rate Setting in Ontario*, PEG defines TFP growth “as the change in total output quantity minus the change in total input quantity.”¹⁷ PEG’s analysis yielded a TFP growth factor of -0.33%, and ultimately, PEG recommended a zero TFP factor.¹⁸ In turn, the OEB adopted PEG’s recommendation.¹⁹

¹⁷ Pacific Economics Group, *Productivity and Benchmarking Research in Support of Incentive Rate Setting in Ontario* (November 2013), page 25.

¹⁸ *Ibid*, pages 51-53.



1 More recently, the OEB re-affirmed a zero TFP factor in the context of a Custom IR rate filing
2 from Hydro One Networks Inc. ("HONI"). During this proceeding, separate reports submitted by
3 PEG and another independent third-party expert (Power System Engineering ["PSE"]) both
4 recommended a TFP factor of 0.0%. Of note, PSE had updated Ontario industry TFP research
5 to 2015 and concluded that TFP continues to decline. The OEB ultimately accepted a TFP of
6 0% in its Decision and Order.²⁰

7
8 Consistent with the RRFE Report²¹ and the foregoing OEB rulings, Hydro Ottawa proposes to
9 adopt the OEB's TFP factor of zero in its CPEF.

10 11 **4.3.2.2. Stretch Factor**

12 The second component to the X factor is the stretch factor, which is intended to reflect the
13 incremental productivity gains that distributors are expected to achieve under Incentive
14 Regulation. The OEB has concluded that stretch factors play an important role in Incentive
15 Regulation and "promote, recognize and reward distributors for efficiency improvements relative
16 to the expected sector productivity trend."²²

17
18 Under the current methodology, stretch factors are determined based on a distributor's
19 assignment in one of five efficiency assessment rankings. Efficiency assessments are
20 determined using a total cost econometric model developed by PEG, which is updated annually.

21
22 The PEG model renders a comparison of each distributor's "actual" total costs relative to their
23 predicted costs. Distributors are then placed into one of five cohorts and assigned a
24 corresponding stretch factor based on the percentage difference between actual and predicted
25 costs. Stretch factors range from 0.0% to 0.60%, with lower stretch factors indicating higher

¹⁹ Ontario Energy Board, *Report of the Board - Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario's Electricity Distributors* (November 21, 2013, corrected December 4, 2013), page 17.

²⁰ Ontario Energy Board, *Decision and Order*, EB-2017-0049 (March 7, 2019).

²¹ RRFE Report, page 17.

²² Ontario Energy Board, *Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario's Electricity Distributors* (November 21, 2013, corrected December 4, 2013), page 19.



1 efficiency. Since 2015, Hydro Ottawa has been placed in Cohort 4 and assigned a stretch factor
2 of 0.45% in accordance with the PEG model's finding that actual costs have been between
3 10%-25% above predicted costs.

4
5 While Hydro Ottawa acknowledges and accepts the value of total cost benchmarking as a
6 measure of productivity and efficiency, as well as the merit of incorporating a productivity factor
7 into its CPEF, the utility is concerned by some of the inherent limitations in the PEG model.
8 These limitations have induced Hydro Ottawa to submit alternative total cost benchmarking
9 analysis as part of this Application. More detailed rationale in support of the utility's approach is
10 outlined in Attachment 1-1-12(E): PEG Benchmarking Forecast.

11
12 The total cost benchmarking study included in this Application as Attachment 1-1-12(A) is
13 econometric in nature, similar to the PEG model. The study has been prepared by Clearspring
14 Energy Advisors ("Clearspring"). Clearspring's analysis provides an appropriate and empirical
15 basis for setting Hydro Ottawa's stretch factor. As noted in the report, Clearspring's total cost
16 findings for Hydro Ottawa during the Custom IR period demonstrate a total cost benchmarking
17 score of -7.1% below predicted costs, which corresponds to a stretch factor of 0.30%. However,
18 when normalized for two once-in-a-generation expenditures, the value of this factor decreases
19 to 0.15%, with a total cost benchmarking score of -12.5%. This normalization entails the
20 removal of the expenditures and in-service additions for the Facilities Renewal Program ("FRP")
21 and the Cambrian Municipal Transformer Station ("MTS"). These projects are described in
22 Clearspring's report, as follows:

- 23
24 • **Facilities Renewal Program:** The purpose of this program is to (a) consolidate
25 operations and administrative staff; (b) move Hydro Ottawa's operational centers out
26 of high-traffic residential areas to sites with easy access to major highways within the
27 Ottawa area; (c) replace aging buildings; and (d) upgrade operational centers in order
28 to provide better response to customers. Under the program, two parcels of land
29 were purchased, upon which Hydro Ottawa has constructed two regional campuses –
30 namely, the Eastern Operations and Administrative Campus, and the Southern
31 Operations & Warehouse.



This program is a “once in a generation” modernization and operational efficiency initiative. Most of the capital additions for the FRP occur in 2019. This large investment worsens the total cost benchmarking scores throughout the entire Custom IR period.

- **Cambrian MTS²³**: This project consists of two key components: (1) a new municipal transformer station to be constructed by Hydro Ottawa; and (2) upgrades to existing transmission facilities, as well as construction of a segment of new transmission line by Hydro One. These facilities are required to accommodate customer load growth and increase supply capacity in the South Nepean area of Ottawa, which has already reached the limits of local transformation capacity.

The capital additions for the Cambrian MTS project occur in 2021 and 2022. Therefore, this large investment will worsen the total cost benchmarking scores beginning in 2021 and then throughout the Custom IR period.

Projects of this nature do not occur on a regular basis. In the last decade, Hydro Ottawa built only two new transformer stations, neither of which required a transmission investment level of the magnitude of Cambrian MTS.²⁴

As noted above, when Clearspring analyzed Hydro Ottawa’s total costs in the absence of these two projects, the stretch factor dropped to 0.15%:

“The 2021 to 2025 average forecasted results show that if the FRP investment was excluded the score becomes -9.9%. This is just above the threshold to move the stretch factor recommendation from 0.3% to 0.15%. If both the FRP and the South Nepean MTS investments are excluded the total cost benchmarking score for 2021 to 2025 averages -12.5%. If these two investments were not forecasted, this would have pushed the stretch factor recommendation to 0.15%.”²⁵

²³ The previous name for Cambrian MTS was South Nepean MTS. Clearspring’s report retains the original nomenclature of South Nepean MTS.

²⁴ The last two MTS projects to go into service were Ellwood MTS in 2012 and Terry Fox MTS in 2014. For more information on these projects, please see Exhibit B, Tab 7, Schedule 1 in the joint application filed by Hydro Ottawa and HONI in EB-2019-0077. This joint application sought Leave to Construct approval for the South Nepean/Cambrian MTS and the corresponding transmission system upgrades and expansion.

²⁵ Attachment 1-1-12(A): Econometric Benchmarking Study of Hydro Ottawa’s Total Cost and Reliability, page 35.



These two projects represent approximately \$180M worth of expenditures incurred in a very short time period (2018-2022). Seeing as the FRP is not of a recurring nature, and a new MTS requiring a major transmission upgrade is a rare investment, it is Hydro Ottawa's position that these projects should be excluded for purposes of determining the utility's stretch factor.

4.3.3. "G" Factor: Growth Factor

Hydro Ottawa's CPEF will include a growth factor to account for the increased costs associated with its substantial and steady customer growth. The inclusion of a growth variable in the CPEF is warranted in order to capture the change in distribution revenue that would naturally occur (in the absence of any rate changes) as a result of an increase in the number of customers over the forecast period. The value of the growth factor is determined based upon Hydro Ottawa's historical and forecast growth in customers for the period 2012-2020. As shown in Tables 7 and 8 below, customer growth in Ottawa has been substantial and consistent over that period, averaging approximately 1.34% on an annual basis.

Table 7 – Hydro Ottawa Customer Count (2012-2020)

Rate Class	2012	2013	2014	2015	2016	2017	2018	2019	2020 ²⁶
Residential	282,187	287,191	291,759	296,036	299,909	303,571	307,053	311,464	315,887
Small Commercial	23,921	23,972	24,149	24,563	24,689	24,888	24,996	25,080	25,250
Commercial	3,415	3,548	3,617	3,310	3,271	3,305	3,260	3,216	3,189
Large User	11	11	11	10	11	13	11	11	11
TOTAL	309,534	314,722	319,536	323,919	327,880	331,777	335,320	339,771	344,325

²⁶In this instance, the customer count for 2020 represents a forecast based on historical trends. This forecast was developed internally at Hydro Ottawa and was utilized as an input in the preparation of the supporting evidence for this Schedule prior to the completion of the load forecast which is appended to this Application as Attachment 3-1-1(C).



Table 8 – Hydro Ottawa Customer Count (2012-2020): Total Change, Total Percentage Change, and Compound Annual Growth Rate (“CAGR”)

Hydro Ottawa Customer Growth	
Total Change	34,791
% Change	11.24%
CAGR	1.34%

According to data from Statistics Canada’s 2011 census, the population in the City of Ottawa increased by 8.8% since 2006, which is a faster growth rate than Ontario (5.7%) and Canada as a whole (5.9%).²⁷ Moreover, the City’s *Official Plan* predicts a population growth rate of 16% between 2016 and 2031.²⁸ With additional customers comes the requirement for associated expenditures to serve those customers.

Hydro Ottawa’s load forecast anticipates modest growth in total energy sales and steady growth in customer count over the 2021-2025 period.²⁹ While a load forecast generally reflects the expected growth in a utility’s customer base and energy sales, a growth factor is intended to capture the relationship between the increasing number of customers and the costs to serve them.

Hydro Ottawa’s proposed approach with its CPEF is not without precedent in the context of utility regulation in Canada. The use of a growth factor has been previously employed and approved by regulators in Ontario,³⁰ Québec,³¹ Alberta,³² and British Columbia.³³

²⁷ Statistics Canada, *Focus on Geography Series, 2011 Census* (2012). Statistics Canada Catalogue no. 98-310-XWE2011004. Ottawa, Ontario. Analytical products, 2011 Census.

²⁸ City of Ottawa, *Official Plan: Volume 1* (May 2003), page 2-3.

²⁹ See Exhibit 3-1-1: Load Forecast.

³⁰ Ontario Energy Board, *Decision* (in the matter of a rate application filed by Enbridge Gas Distribution), EB-2007-0615.

³¹ Régie de l’énergie, *Décision*, D-2017-043 (April 7, 2017). This decision was in the matter of the establishment of a regulatory incentive mechanism to ensure efficiency gains by Hydro-Québec Distribution and Hydro-Québec TransÉnergie.

³² Alberta Utilities Commission, *Decision*, 20414-D01-2016 (Errata), (2018-2022 Performance-Based Regulation Plans for Alberta Electric and Gas Distribution Utilities).

³³ British Columbia Utilities Commission, *Decision and Orders*, G-138-14 and G-139-14 (Performance Based Ratemaking Plans for 2014 through 2019 for FortisBC Energy Inc. and FortisBC Inc.).



1 As an expert witness hired by the OEB in HONI's most recent Custom IR proceeding, PEG
2 noted the correlation between customer growth and operating costs as an important factor and
3 recommended that HONI include a customer growth factor in its custom index.³⁴

4
5 Similarly, in a report prepared for the Régie de l'énergie ("Régie") in Québec, PEG has affirmed
6 that "the number of customers served drives the costs of customer services (e.g. billing and
7 collection) and some distribution costs (e.g. those of metering and connections)...In econometric
8 research on distribution cost, the customers variable typically has the highest estimated cost
9 elasticity amongst the scale variables modelled."³⁵ For its part, the Régie has previously
10 established that it will apply a scaling factor of 0.75 to Hydro Québec Distribution's ("Hydro
11 Québec") growth factor as part of Hydro Québec's mécanisme de réglementation incitative
12 ("MRI").³⁶

13
14 In addition, since the mid-1990s, electric utility FortisBC Inc. ("FortisBC") has generally used an
15 Average Customer Growth Factor ("ACGF") in its approach to operations and maintenance
16 ("O&M") escalation.³⁷ As approved by the British Columbia Utilities Commission ("BCUC") in
17 Order G-139-14 dated September 15, 2014,³⁸ FortisBC's current rate plan includes a growth
18 factor of 50% of the ratio of the average number of customers ("AC") one year previous to the
19 average number of customers two years previous, expressed as:

³⁴ EB-2017-0049: Pacific Economics Group, *IRM Design for Hydro One Networks, Inc.*, (April 13, 2018), page 48.

³⁵ Pacific Economics Group, *X Factor Calibration Guidelines for Hydro-Québec Distribution* (May 12, 2019), page 7.

³⁶ "Mécanisme de réglementation incitative" roughly translates into English as "incentive regulation mechanism."

³⁷ FortisBC Inc.'s 1996-2004, 2005-2006, 2007-2011 and 2014-2019 rate plans were approved performance-based rate plans that employed formula based O&M escalation factors based on an I-X index multiplied by the average percentage growth of average number of customers.

³⁸ G-139-14: British Columbia Utilities Commission, *Decision and Order, In the Matter of FortisBC Inc. Multi-Year Performance Based Ratemaking Plan for 2014 through 2018 Decision*, (September 15, 2014), page 116.



$$ACGF = [1 + ((ACT-1 - ACT-2) / ACT-2) \times P\%]$$

where

ACT-1 = customer count at time minus 1

ACT-2 = customer count at time minus 2

P = percentage/scaling factor

Hydro Ottawa proposes to employ a scaling factor of 0.35 to determine its growth factor, consistent with the approved approaches for FortisBC and Hydro Québec. The selection of this scaling factor was made by considering the scaling factors used in other jurisdictions and taking into account the substantial growth in population and customers in the Ottawa area.

Using a scaling factor of 0.35 would render a growth factor in the range of 0.39% and 0.43%, depending on the specific historical years chosen for analysis. For example, using the percentage change in customer count between 2017-2018 and plugging it into the ACGF formula described above would result in a growth rate of 0.39%, as follows:

$$ACGF = [1 + ((333,621 - 329,926) / 329,926) \times 0.35]$$

$$ACGF = 0.392\%$$

Similarly, use of the percentage change in customer count between 2016-2017 would yield a growth rate of 0.43%:

$$ACGF = [1 + ((329,926 - 325,913) / 325,913) \times 0.35]$$

$$ACGF = 0.431\%$$

Unlike FortisBC, which updates its growth factor annually, Hydro Ottawa does not intend to update the growth factor throughout the term of this Application.



Based on the foregoing discussion, and in particular, Hydro Ottawa's consistent customer growth rate since 2012, Hydro Ottawa proposes to employ a conservative growth rate near the lower end of the calculated range of 0.40% in its CPEF. This growth rate would remain unchanged over the course of the 2021-2025 period.

4.3.4. Summary – Custom Price Escalation Factor

Hydro Ottawa proposes to apply a CPEF to its OM&A over the term of this Application. Similar to the escalation formula approved by the OEB in the utility's last Custom IR application,³⁹ Hydro Ottawa's CPEF consists of three variables:

$$\text{CPEF} = \text{I} - \text{X} + \text{G}$$

where

"I" is Hydro Ottawa's custom Inflation Factor (2.26%)

"X" is a two-component productivity factor consisting of the OEB's Total Factor Productivity + Hydro Ottawa's custom Stretch Factor (0.0% +0.15%)

"G" is Hydro Ottawa's customer Growth Factor (0.40%)

$$= 2.26\% - 0.15\% + 0.40\%$$

$$= 2.51\%$$

The result of Hydro Ottawa's CPEF is an escalation of 2.51% per year for years two through five of the 2021-2025 Custom IR term. Year one of the Application term is a traditional rebasing year, with rates set on the basis of a forecast Test Year of \$93.9M. Thereafter, each year will be adjusted by the CPEF (2.51%), as shown in Table 9.

³⁹ Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-Setting Distribution Rate Application*, EB-2015-0004 (April 29, 2015).



Table 9 – 2021 to 2025 Annual OM&A Expenditures (\$'000s)

Year	OM&A	Previous Year	Variance	Variance/ CPEF
2021	\$93,923	N/A	N/A	N/A
2022	\$96,280	\$93,923	\$2,357	2.51%
2023	\$98,697	\$96,280	\$2,417	2.51%
2024	\$101,174	\$98,697	\$2,477	2.51%
2025	\$103,714	\$101,174	\$2,539	2.51%

This formulaic adjustment is consistent with the OEB's policy framework under the RRF, where rates charged to customers are de-linked from the costs of operating the utility. The CPEF conforms to OEB guidance for the Index for Annual Rate Adjustment under the Custom IR method (as laid out in the *Handbook for Utility Rate Applications*), as it accomplishes all of the following:

- It is based on a custom index supported by empirical evidence that can be tested;
- Explicit financial incentives for continuous improvement and cost control targets are included in this Application and incorporated through the CPEF;
- The CPEF does not adopt the stretch factor that the OEB has established for electricity incentive regulation mechanism applications;
- The CPEF is higher than the OEB approved index (I-X) used for electricity distributors under Price Cap IR; and
- The application of the CPEF resulted in a reduction of OM&A spending over the 2021-2025 period of \$13.1M. These savings will be achieved, in part, through productivity gains as described in Exhibit 1-1-13: Productivity and Continuous Improvement Initiatives.



4.4. EARNINGS SHARING MECHANISM

The OEB has clarified that electricity distributors which are filing Custom IR applications are expected to propose one or more mechanisms to protect customers from excessive utility earnings.⁴⁰ In this Application, Hydro Ottawa proposes to include two such mechanisms.

The first is an earnings sharing mechanism (“ESM”). ESMs permit the sharing of utility earnings with customers when earnings rise above or fall below a certain threshold. Under an ESM, earnings may be passed along to customers in the form of rate reductions or rate offsets.

Hydro Ottawa is proposing an asymmetrical ESM such that the utility would only share earnings that exceed a basis point threshold above the utility’s return on equity (“ROE”), with no corresponding adjustment if its earnings fall below the basis point threshold.

The proposed ESM formula is as follows:

Table 10 – Proposed ESM Formula

#	Threshold	Treatment
1	Under earning	Borne entirely by shareholder
2	0-150 basis points	Fully retained by shareholder
3	Above 150 basis points	50:50 sharing of ratepayer/shareholder

Additional detail on the proposed ESM is set forth in Exhibit 9-2-1: New Deferral and Variance Accounts.

4.5. OFF-RAMP(S)

The second mechanism which Hydro Ottawa proposes to include as a means of protecting customers against excessive utility earnings is an off-ramp. Similar to its 2016-2020 Custom IR application, this Application proposes to apply the OEB’s existing policy with respect to

⁴⁰ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 27.



1 off-ramps, wherein a regulatory review may be initiated in the event that an electricity distributor
2 performs outside of an annual ROE dead band of plus or minus 300 basis points.

4 4.6. Z FACTOR(S)

5 In its *Handbook for Utility Rate Applications*, the OEB affirmed its policy that “[a]n acceptable
6 adjustment during a Custom IR term is a Z factor mechanism for cost recovery of unforeseen
7 events.”⁴¹ In step with this guideline, Hydro Ottawa intends to reserve its right over the course of
8 the 2021-2025 rate term to file a Z factor application in order to recover costs resulting from
9 unforeseen events, decisions, or activities, the results of which cannot be reasonably
10 anticipated or quantified at this juncture and where the costs exceed Hydro Ottawa’s materiality
11 threshold. Examples include unforeseen weather events or changes to laws or regulations
12 which would require significant investment to implement.

13
14 Please see Exhibit 9-2-1: New Deferral and Variance Accounts for additional information on Z
15 factors.

17 4.7. CAPITAL VARIANCE ACCOUNT

18 In this Application, Hydro Ottawa proposes to sustain the use of a variance account wherein it
19 will track, on an annual basis, variances in the cumulative revenue requirement arising from
20 variances in the forecasts for the four key categories of capital spending: System Access,
21 System Service and System Renewal, and General Plant.⁴² The creation and use of such a
22 variance account was sanctioned as part of the Approved Settlement Agreement governing
23 Hydro Ottawa’s 2016-2020 rates. The utility believes that the administration of this capital
24 variance account on an ongoing basis is an effective means of ensuring transparency and
25 accountability in the planning, execution, and reporting of annual capital expenditures.

⁴¹ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 27.

⁴² For its 2016-2020 Custom IR rate plan, Hydro Ottawa was granted approval to merge System Renewal and System Service into one category for purposes of this variance account and annual reporting. This approach reflected Hydro Ottawa’s standard operating practice to shift funds between the two categories, as warranted by customer and operational requirements. Hydro Ottawa is planning to maintain this approach during the 2021-2025 rate term, with some modifications, as explained in further detail below.



Accordingly, it is proposed to remain in effect for the 2021-2025 period, and to retain the general design of the account that has been utilized during the 2016-2020 rate term, namely:

- Variances will be calculated by reference to the current forecast for each of the four categories in each year;
- Variances and associated revenue requirement impacts will be calculated and tracked on an annual basis;
- In each year of the 2021-2025 Custom IR plan, if Hydro Ottawa adds to rate base less than its forecast cumulative amount in any of the four categories, the corresponding reduction in revenue requirement will be credited to the variance account and any cumulative reduction in revenue requirement in any of the four categories will be disposed of at the end of the term of the Custom IR plan;
- Each year, Hydro Ottawa will estimate the impact of the revenue requirement resulting from the variance in its cumulative capital additions for each of the four capital additions budgets;
- Disposition of any underspending in the four categories, on a cumulative basis, will be at the conclusion of the five-year Custom IR term; and
- If, at the end of the five-year Custom IR plan, there has been overspending in any category, there will be no charge to the customer.

One important modification to the capital variance account that Hydro Ottawa is proposing to introduce for 2021-2025 is the use of a separate sub-account for System Access capital expenditures. The rationale for this proposal is that capital spending in this category is driven by customer requests and is therefore difficult to predict, as the level of required expenditure is outside of Hydro Ottawa's control.

By proposing the calculation of the annual variance on a cumulative basis, Hydro Ottawa's intent is to ensure that if projects are delayed, but are completed as planned at a later time, then



1 the reduction to revenue requirement will only reflect the period of delay and will cease when
2 the projects have been added to rate base.

3
4 For additional information on the capital variance account, please see Exhibit 9-2-1: New
5 Deferral and Variance Accounts.

6 7 **4.8. CCRA PAYMENTS DEFERRAL ACCOUNT**

8 Similar to the Capital Variance Account discussed above, Hydro Ottawa proposes to continue
9 the use of a variance account to record the revenue requirement impact of Connection Cost
10 Recovery Agreement ("CCRA") payments made to HONI commencing in the year in which the
11 facilities to which each CCRA payment relates provides services to Hydro Ottawa customers. In
12 step with the administration of this account over the 2016-2020 rate term, for the 2021-2025
13 Custom IR plan Hydro Ottawa intends to record depreciation, interest, return, and payment in
14 lieu of taxes components of revenue requirement impact as CCRA-related assets are put into
15 service. The balance will be disposed as part of the Group 2 Accounts and according to the
16 OEB's direction regarding the disposition of Group 2 Accounts.

17
18 It is Hydro Ottawa's intent to utilize this account for purposes of new CCRA payments and for
19 true-ups.

20
21 For additional information, please see Exhibit 9-2-1: New Deferral and Variance Accounts.

22 23 **5. PERFORMANCE MEASUREMENT**

24 As described by the OEB, the RRF is fundamentally a "comprehensive performance-based
25 approach to regulation that promotes the achievement of performance outcomes that will benefit
26 existing and future customers."⁴³ The RRF's four categories of performance outcomes –
27 Customer Focus, Operational Effectiveness, Public Policy Responsiveness, and Financial
28 Performance – serve as the lodestar for the framework and the focal point towards which the

⁴³ RRFE Report, page 55.



1 other core components gravitate and culminate. Accordingly, another key component in the
2 OEB's basket of RRF implementation policies is measuring utilities' performance and setting
3 expectations for continuous improvement in the delivery of services and benefits to customers.

4
5 This Application includes several features that comport with the RRF's emphasis on
6 performance measurement, monitoring, and reporting.

8 **5.1. CUSTOM PERFORMANCE SCORECARD**

9 As detailed above, Hydro Ottawa embedded a robust framework for performance measurement
10 into its 2016-2020 rate plan. This framework represented a blend of OEB performance
11 measures that were – and continue to be – standardized in their application to all rate-regulated
12 distributors (i.e. through the Electricity Utility Scorecard), along with a series of unique KPIs and
13 reporting measures that were customized in their application to Hydro Ottawa. Pursuant to the
14 RRFE Report and the Approved Settlement Agreement governing the utility's 2016-2020 rate
15 term, Hydro Ottawa committed to an annual cycle of reporting on these KPIs, as well as on
16 capital expenditures in each of the four principal categories of spending (System Access,
17 System Renewal and System Service, and General Plant).

18
19 In 2016, the OEB formally clarified its expectation that the annual Electricity Utility Scorecard
20 cannot constitute, on its own, an electricity distributor's performance measurement framework.
21 The *Handbook for Utility Rate Applications* confirmed that, while the OEB had already
22 established a standardized scorecard for all distributors, "additional performance metrics should
23 also be proposed so that expected outcomes can be monitored."⁴⁴

24
25 For the 2021-2025 rate period, Hydro Ottawa is therefore proposing an extension and
26 expansion of its previous framework for performance measurement and reporting. This
27 subsequent iteration of the framework will build upon the success of the preceding one and
28 maintain the approach of combining standard OEB performance measures with ones that are

⁴⁴ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 26.



1 customized for Hydro Ottawa's unique use. What's more, the framework will incorporate
2 customized enhancements that seek to implement lessons learned and findings from the prior
3 rate plan, to strengthen the linkages between customer priorities and Hydro Ottawa's programs,
4 and to incorporate key results from the benchmarking performed by the utility to compare its
5 performance against that of its peers. Through this framework and Hydro Ottawa's use of a
6 Custom Performance Scorecard, the OEB, customers, and other stakeholders will be equipped
7 with quantitative tools with which to effectively measure the utility's performance in achieving
8 customer-focused outcomes.

9
10 For a more detailed description of the proposed performance measurement framework, and the
11 accompanying reporting plan, please see Exhibit 1-1-11: Proposed Annual Reporting -
12 2021-2025.

13 14 **5.2. BENCHMARKING**

15 A key tool in the RRF performance measurement toolkit is benchmarking. In its original RRFE
16 Report, the OEB found that "[e]xpanded use of benchmarking will be necessary to support the
17 Board's renewed regulatory framework policies."⁴⁵ This finding is affirmed in the *Handbook for*
18 *Utility Rate Applications*, which conveys the OEB's expectation for utilities "to provide
19 benchmarking analysis which supports their proposed plans and programs and demonstrates
20 continuous improvement."⁴⁶

21
22 This Application includes several pieces of benchmarking evidence, which are intended to serve
23 multiple purposes. First and foremost, the inclusion of benchmarking information will assist the
24 OEB in evaluating Hydro Ottawa's patterns of performance and in assessing the proposals set
25 forth in the utility's capital and operational plans. Second, the benchmarking that has either
26 been conducted or commissioned by Hydro Ottawa has helped inform the establishment and
27 incorporation of specific outcomes into the performance measurement framework for the
28 2021-2025 rate period. It has also influenced the development of the Custom Price Escalation

⁴⁵ RRFE Report, page 59.

⁴⁶ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 18.



Factor, which is a defining feature of the Custom IR rate-setting framework underpinning this Application (see section 4.3 in this Schedule). Third, the use of such studies and analyses is directed at supporting the achievement of the utility's own corporate strategic objective of Organizational Effectiveness, which is interpreted as the pursuit of performance excellence through the cultivation of a culture of innovation and continuous improvement. Together, these functions will help ensure that Hydro Ottawa remains accountable to the OEB, its customers, and other stakeholders with respect to providing value for money and cost-effective delivery of outcomes.

Consistent with OEB requirements, the benchmarking evidence appended to this Application takes two forms – internal and external. The internal benchmarking primarily relies upon metrics utilized in the annual Electricity Utility Scorecard, the OEB's annual *Yearbook of Electricity Distributors*, and annual PEG Benchmarking Updates to assess Hydro Ottawa's performance and continuous improvement over time. The external benchmarking consists of analysis conducted by Hydro Ottawa, in which the utility's performance is juxtaposed against that of a select subset of the electricity distributor community in Ontario. It also consists of a series of reports commissioned from third-parties, for the purpose of analyzing the utility's performance in a range of categories and measures relative to a comparator group of utilities located either in Ontario, Canada, and/or the United States. These reports are as follows:

- "Econometric Benchmarking Study of Hydro Ottawa's Total Cost and Reliability" – Clearspring Energy Advisors
- "Unit Costs Benchmarking Study" – UMS Group
- "IT Budget Assessment Benchmark" – Gartner Consulting
- "2019 Market Benchmarking" – Mercer Canada

These benchmarking analyses have yielded important insights into Hydro Ottawa's performance and efficiency over the last several years, and into the costs of key programs relative to the utility's peers. In varying measures, the results from these studies have been reflected in



different aspects of this Application, whether serving to validate certain proposals and plans or prompting modifications to others, such that the ongoing achievement of efficiencies can be ensured over the course of the 2021-2025 rate period.

For further details, please see Exhibit 1-1-12: Benchmarking.

5.3. PRODUCTIVITY & CONTINUOUS IMPROVEMENT

Productivity and continuous improvement feature prominently in the architecture of the OEB's performance-based approach to utility regulation. The *Handbook for Utility Rate Applications*, for example, states that "a key objective of incentive regulation is to drive productivity improvements within the utilities."⁴⁷ Moreover, these themes are embedded in the OEB's description of the second performance outcome category underpinning the RRF, Operational Effectiveness: "continuous improvement in productivity and cost performance is achieved; and utilities deliver on system reliability and quality objectives."⁴⁸ What's more, the various rate-setting methods that are made available under the RRF apply a productivity factor to electricity distributors which is derived from industry productivity trends determined by the OEB. These productivity factors are entrenched in the rate adjustment mechanisms governing utility proposals and reflect the OEB's expectation that standard business practice for distributors will involve the achievement of incremental productivity gains.

Responsibly controlling costs and focusing on cost-effective delivery of outcomes that matter to customers remain core priorities for Hydro Ottawa. Amidst the unique confluence of demands, pressures, and constraints on operations, the utility is placing increased emphasis on incorporating productivity and continuous improvement gains, so as to offset increasing expenditures and boost organizational capacity. Hydro Ottawa is therefore committed to ensuring that productivity and continuous improvement serve as hallmarks of its 2021-2025 rate plan.

⁴⁷ Ontario Energy Board, *Handbook for Utility Rate Applications*, page 27.

⁴⁸ RRFE Report, page 2.



1 A retrospective glance at the outcomes and efficiencies derived from productivity initiatives
2 during the preceding five-year rate period demonstrates that there is a firm foundation upon
3 which to build. During the 2016-2020 period, Hydro Ottawa successfully executed a wide
4 spectrum of initiatives which resulted in tangible savings to customers – and at no expense to
5 service quality or system reliability.

6
7 Hydro Ottawa is set to continue strengthening its culture of continuous improvement over the
8 course of its next five-year rate term – whether through harnessing the potential of new
9 technologies and solutions to better serve customers, elevating standards of business
10 performance and excellence, or rationalizing and re-purposing resources.

11
12 Of note, there are particular controls that Hydro Ottawa has adopted to provide the OEB,
13 customers, and other stakeholders with robust assurance that productivity, cost control, and
14 continuous improvement objectives have been firmly integrated into the utility's business
15 planning process, and the resultant capital and operational plans, for the 2021-2025 rate period.
16 Foremost among these is the design of the Custom IR rate-setting framework that serves as the
17 basis of this Application. As discussed above, the Custom Price Escalation Factor will embed
18 productivity savings for customers by capping any increases to operational funding at
19 approximately the rate of inflation. Similarly, in preparing their plans and budgets for the
20 five-year rate term, each administrative division within the utility was mandated to demonstrate
21 productivity savings in a quantitative and/or qualitative fashion and to identify initiatives
22 dedicated to continuous improvement.⁴⁹ Moreover, Hydro Ottawa will continue to administer a
23 performance management framework that ensures accountability in the monitoring and
24 reporting of corporate productivity against a defined set of targets and metrics.

⁴⁹ Please see Attachment 1-1-9(A): Corporate Memorandum - 2020-2025 Priorities and Budget Guidelines. This memorandum was issued by Hydro Ottawa's Chief Financial Officer to members of the executive team in January 2019, regarding the preparation of 2020-2025 priorities and budgets.



1 Along with other measures, the aforementioned internal controls can provide confidence that
2 Hydro Ottawa is well-positioned to continue strengthening its culture of continuous improvement
3 and producing significant savings for customers over the course of its next rate period.

4
5 A more detailed examination of Hydro Ottawa's productivity record and culture is included in
6 Exhibit 1-1-13: Productivity and Continuous Improvement Initiatives. This examination is both
7 retrospective and prospective in nature – i.e. surveying the productivity accomplishments of the
8 2016-2020 rate period as well as identifying the productivity efforts that are planned for
9 2021-2025.

10 11 **6. DISTRIBUTION SYSTEM PLANNING**

12 Alongside the availability of various rate-setting options and expectations for performance
13 measurement, the third and final policy that the OEB has adopted to help facilitate achievement
14 of RRF performance outcomes is the requirement for utilities to engage in long-term planning.
15 The RRFE Report affirms that "[a]n integrated approach to planning will provide a foundation for
16 the setting of distribution rates and lead to optimized investments that support the achievement
17 of the outcomes identified by the Board."⁵⁰ Through the RRF, the OEB has established a firm
18 expectation for distributors to file five-year capital plans to support their rate applications.

19
20 In step with RRF requirements, Hydro Ottawa has formulated a consolidated Distribution
21 System Plan ("DSP"), which provides a detailed and comprehensive view of the utility's
22 investment plans and supporting information for the 2021-2025 period. The DSP is a core
23 deliverable emerging from multiple internal and external planning processes related to capital
24 investment, asset management, regional planning, customer engagement, and business
25 strategy. Hydro Ottawa's DSP details the planning process used to identify the risks and
26 opportunities in the systems of assets and translate them into an expenditure plan. In addition,
27 the DSP outlines how capital investments will be prioritized, paced, and optimized, while
28 minimizing rate impacts for customers and facilitating continuous improvement and productivity.

⁵⁰ RRFE Report, page 31.



1 The DSP serves as a continuation of Hydro Ottawa's 2016-2020 plan, which focused on the
2 enhancement of system capacity to keep pace with growth and shifts in loads within the service
3 territory, and on the renewal of aged and aging infrastructure at risk of failure.

4
5 In preparing the DSP, Hydro Ottawa was guided by the needs and preferences expressed by its
6 customers: (i) keeping distribution rates low; (ii) maintaining reliability; and (iii) investing in new
7 technology. Consultations with customers revealed strong support for making proactive
8 investments in aging infrastructure and grid modernization, with the understanding that this may
9 lead to near-term costs but will result in future savings. What's more, customers confirmed that
10 they place considerable value on accelerated restoration times following extreme weather
11 events and on a reduction in the number and frequency of outages.

12
13 The DSP represents the minimum level of investment needed to achieve a balance between
14 pressures on the distribution system and the top priorities of customers – all while avoiding the
15 accumulation of risk and declines in performance over the long-term.

16
17 To view the DSP in full, please see Exhibit 2-4-3.



2016 Annual Summary

Achieving Ontario Energy Board Renewed Regulatory Framework Performance Outcomes

Prepared by: Hydro Ottawa Limited

Date: September 2017

(Revised: December 2019)



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I. Overview

This document is intended to serve as an annual summary of initiatives at Hydro Ottawa Limited ("Hydro Ottawa") that align with the core performance outcomes enshrined in the Ontario Energy Board's ("OEB") Renewed Regulatory Framework ("RRF").

1. Background – Renewed Regulatory Framework

In its 2012 report – *Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* ("RRF Report") – the OEB outlined a "comprehensive performance-based approach to regulation that is based on the achievement of outcomes that ensure that Ontario's electricity system provides value for money for customers."¹ In the RRF Report, the OEB concluded that four categories of outcomes were appropriate for purposes of better aligning the interests of customers and electricity distributors, and driving continuous improvement within the sector: (1) Customer Focus; (2) Operational Effectiveness; (3) Public Policy Responsiveness; and (4) Financial Performance.

In October 2016, the OEB issued an updated *Handbook for Utility Rate Applications* ("Handbook"). The Handbook provided additional guidance on how the OEB would apply the key principles underpinning the RRF when reviewing rate applications. Development of the Handbook was based on the experience gained by the OEB in reviewing rate applications since the release of the RRF Report.

The Handbook elaborated further upon the OEB's expectations for how utilities would achieve the four performance outcomes under the RRF:

- **Customer Focus:** "Customer engagement is now an explicit and important component of the regulatory framework. Utilities are expected to develop a genuine understanding of their customers' interests and preferences and reflect those interests and preferences in their business plans. Utilities are expected to demonstrate value for money by delivering genuine benefits to customers and by providing services in a manner which is responsive to customer preferences."
- **Operational Effectiveness:** "Utilities are expected to demonstrate ongoing continuous improvement in their productivity and cost performance while delivering on system reliability and quality objectives. The OEB will assess performance trends and look for evidence of strong system planning and good corporate governance. The OEB will use benchmarking to assess a utility's performance over time and to compare its performance against other utilities. Utilities are expected to demonstrate value for money by presenting plans for delivering services that meet the needs of their customers while controlling their costs."
- **Public Policy Responsiveness:** "Utilities are expected to consider public policy objectives in their business planning and to deliver on the obligations required of regulated utilities. These obligations may evolve over time and therefore this Handbook does not provide a comprehensive list of all requirements. Utilities are expected to demonstrate that they

¹ RRF Report, p. 2.



have considered Conservation First in their investment decisions. The OEB will expect to see proposals for how distributors are supporting low income customers through programs such as LEAP and/or OESP, or through other distributor-specific programs. Electricity distributors and transmitters are expected to expand or reinforce their systems to accommodate the connection to their system for renewable energy generation facilities and the OEB expects their system plans to include details on how they will meet this requirement. Natural gas utilities are expected to identify investments or programs that have been planned to meet obligations under Ontario's cap and trade program."

- Financial Performance: "Utilities are expected to demonstrate sustainable improvements in their efficiency and in doing so will have the opportunity to earn a fair return. The OEB will monitor the financial performance of each utility to assess continuing financial viability and to determine whether returns are excessive. Utilities have a choice of rate-setting methods to meet their particular needs. Additional tools are available to support infrastructure investment. Utilities must report comprehensive and consistent information, allowing for comparisons over time and across utilities. The OEB will act on its obligations to ensure a financially viable sector where performance indicates that a regulatory response is needed."

The Handbook also confirmed that, although the RRF was originally developed specifically for electricity distributors, the OEB had since indicated that RRF principles would be applicable to all rate-regulated entities under the OEB's jurisdiction (natural gas utilities, electricity distributors, electricity transmitters, and Ontario Power Generation).

2. Background – Hydro Ottawa's Five-Year Custom IR Rate Plan

To help facilitate the achievement of the RRF's core performance outcomes, the OEB also adopted a set of related policies, one of which involved modifying the methods available to electricity distributors for rate-setting purposes. In the RRF Report, a new method was introduced – Custom Incentive Rate-setting ("Custom IR"), under which "rates are set based on a five year forecast of a distributor's revenue requirement and sales volumes."²

In April 2015, Hydro Ottawa filed a Custom IR Application with the OEB, in which Hydro Ottawa sought approval for changes to the rates that it charges for electricity distribution for a period of five years (January 1, 2016 through December 31, 2020).³ In December 2015 – following an extensive oral hearing proceeding, which included a Technical Conference, interrogatories, and settlement negotiations with intervenor groups – the OEB issued a decision approving Hydro Ottawa's application.⁴ In its decision, the OEB found that Hydro Ottawa's application and the settlement proposal prepared by the parties met the expectations under the RRF for the Custom IR method.

Under the settlement agreement reached for its 2016-2020 rate plan, Hydro Ottawa must file an annual application to adjust its distribution rates and charges. In addition, pursuant to OEB

² RRF Report, p. 18.

³ OEB File No. EB-2015-0004.

⁴ More specifically, the OEB approved a settlement agreement reached by Hydro Ottawa and intervenor groups that governed the terms under which Hydro Ottawa would establish and apply rates charged to customers from 2016-2020. In addition, in February 2016, the OEB issued a decision that addressed the one outstanding issue that was not covered under the settlement agreement – Hydro Ottawa's pole attachment charge, which is the annual charge levied on telecommunications carrier companies for attachments to utility poles.



requirements for the Custom IR method, Hydro Ottawa must submit annual reports on the actual amounts of capital spending that the company undertakes.

3. Annual Summary – Description & Purpose

As stated above, this document – hereinafter referred to as “Annual Summary” – is intended to catalogue initiatives at Hydro Ottawa that align with the four major performance outcomes set forth in the OEB’s RRF.

This Annual Summary will capture those initiatives that were launched, were ongoing, or were completed during 2016. Hydro Ottawa intends to prepare an Annual Summary of this nature for each of the five years in its 2016-2020 Custom IR term.

The value of this Annual Summary is four-fold. The document will:

1. Support the preparation of the annual rate adjustment application and annual report on capital spending, which Hydro Ottawa is obligated to submit to the OEB under the terms of the settlement agreement governing its Custom IR rate plan;
2. Support the preparation of the next Custom IR application that Hydro Ottawa plans to file, for the 2021-2025 period;
3. Help foster a culture of continuous improvement within Hydro Ottawa; and
4. Help ensure that the execution of the company’s business plans and capital investment programs over the course of its Custom IR term are guided by the expectations and goals embedded in the RRF.

The Annual Summary is written in a manner that renders the document suitable for submission to the OEB, as appropriate (e.g. as part of the annual report on capital spending or as evidence for Hydro Ottawa’s planned 2021-2025 Custom IR application).



II. Hydro Ottawa Initiatives by OEB Performance Outcome Category

Alignment between Hydro Ottawa's Strategic Direction and OEB Performance Outcomes

Hydro Ottawa believes that an important point of departure for discussing the alignment between its corporate initiatives and the OEB's core performance outcomes is the company's *2016-2020 Strategic Direction*.

Refreshed in June 2016, Hydro Ottawa's Strategic Direction provides an overview of the company's business strategy and financial projections for the next five years. It is designed to inform Hydro Ottawa's shareholder and all other stakeholders about the most important trends shaping the company's business environment, and how the company intends to respond to them.

As represented in the figure below, the Strategic Direction is grounded in four key areas of focus: (i) Customer Value; (ii) Financial Strength; (iii) Organizational Effectiveness; and (iv) Corporate Citizenship. These objectives were first enshrined in the company's *2012-2016 Strategic Direction*. In step with its predecessor version, Hydro Ottawa's renewed strategy rests on the central imperative of delivering value across the full customer experience.



Source: Hydro Ottawa 2016-2020 Strategic Direction

The primary objectives animating Hydro Ottawa's corporate vision are wholly consistent with the main performance outcomes promoted under the OEB's RRF. Hydro Ottawa views this high-level alignment as a competitive advantage and remains committed to firmly entrenching RRF principles and objectives throughout its operations and business.

The above discussion serves as a useful springboard for examining specific Hydro Ottawa initiatives that align with RRF outcomes and that were in various stages of implementation in 2016. More details are provided on this wide range of initiatives in the sections below.



1. Customer Focus

"Customer engagement is now an explicit and important component of the regulatory framework. Utilities are expected to develop a genuine understanding of their customers' interests and preferences and reflect those interests and preferences in their business plans. Utilities are expected to demonstrate value for money by delivering genuine benefits to customers and by providing services in a manner which is responsive to customer preferences."

A recurring theme that underpins Hydro Ottawa's 2016-2020 Strategic Direction is that the company seeks to put the customer at the centre of everything it does.

As described in Hydro Ottawa's 2016-2020 Custom IR application, the company's vision is that by 2020, the customer experience will be driven by choice – the customer's choice. Customers will be given options to allow them to be in control and to interact with Hydro Ottawa how and when they want. Customers will see Hydro Ottawa as an organization that is customer centric in nature, easy to do business with, caring, efficient, and knowledgeable.

A key to delivering this experience is transitioning from treating all customers in the same way to serving customers when, where, and how they wish to interact with Hydro Ottawa.

To guide and effectuate this transition, Hydro Ottawa crafted a five-year Customer Experience Roadmap, the timeframe of which is aligned with that of the company's Strategic Direction and Custom IR term. It serves as an integrated, "whole of company" roadmap for Hydro Ottawa's customer experience journey. The Roadmap is comprised of approximately 30 projects that were scored and prioritized using an evaluation framework based on expected customer benefits, number of customers impacted, project size, and alignment with internally-developed strategic categories.⁵ The Roadmap charts a course towards ensuring increased customer choice, convenience, control, and communication.

The initiatives highlighted in this section of the Annual Summary demonstrate how Hydro Ottawa is (a) delivering on the commitments in its Custom IR application and Customer Experience Roadmap, in terms of enhanced customer engagement across a range of touchpoints; and (b) achieving outcomes that are aligned with the RRF's Customer Focus category.

(i) Touchpoint Inventory and Journey Mapping

An essential first step in the implementation of Hydro Ottawa's Customer Experience Roadmap was listing and prioritizing all of the touchpoints for customer engagement. Completion of the inventory resulted in the identification of over 50 touchpoints. In turn, these enabled Hydro Ottawa to map out in detail the experiences and journeys for different types of customers, with over 100 improvement opportunities catalogued – both in terms of reduced pain points for customers and greater efficiencies and productivity for the company. This inventory served as a critical platform for the launch of subsequent customer experience enhancements, many of which are highlighted later in this section. Implementation of the many improvement opportunities identified as part of this exercise remains ongoing.

⁵ The seven strategic categories are as follows: (1) Customer Centric Culture; (2) Understanding our Customers; (3) Touchpoint Improvement; (4) Leading Services and Products; (5) Enhanced Technologies and Processes; (6) Leadership and Governance; and (7) Value Monitoring.



(ii) Enterprise Communications Platform

Hydro Ottawa is continuing the digital transformation of its business, using the power of mobile and digital technology to serve customers anytime and anywhere, in a more engaging and effortless manner.

A cornerstone of this transformation is the modernization of the company's Enterprise Communications Platform ("ECP"). This will involve significant replacement and enhancement of Hydro Ottawa's voice, data, and customer communications infrastructure, which has reached the end of its useful life and no longer possesses the functionality required to optimize customer service and business operations. In addition, the company's multi-web environment will be streamlined to better integrate its website, mobile site, online customer portal (MyHydroLink), and additional software.

This investment in a modernized, omni-channel, and feature-rich ECP will yield benefits to customers and Hydro Ottawa alike, in the form of improved services, lower costs, and operational efficiencies.

Core components of this initiative include the following:

a. Customer Contact Centre Enhancements

In step with its commitment to improving the customer experience and achieving operational efficiencies, Hydro Ottawa initiated significant enhancements to its Customer Contact Centre in 2016.

Foremost was the transitioning of the Contact Centre to a new service provider. Following a rigorous procurement process, Optima Communications was selected as the successful proponent.⁶ Optima is a seasoned service provider in many sectors, including the utility sector.

Under the new arrangement, service levels to customers will be elevated considerably. Customer inquiries will be answered more efficiently, additional agents will be made available during emergency events, and system adjustments will enable greater adaptability during periods of high call volume. In addition, translation services will be offered in up to 120 languages (alongside service in both official languages).

This project also includes numerous upgrades to the underlying telecommunications infrastructure and technology. Upon full implementation, a range of advanced self-serve features will be available to customers: omni-channel capabilities (including phone, email, text, and chat) allowing customers to communicate with Hydro Ottawa through the channel of their choice; "Virtual Hold," enabling customer call back without the need to remain on the line; "My Voice is My Password" capability; refreshed Interactive Voice Response functions granting access to billing and payment self-serve options, and allowing callers to "press or say" options, rather than relying solely on key pads; and availability of account balance information via telephone, bypassing the need to speak with a service agent. In addition, long distance charges to the Contact Centre have been eliminated.

⁶ Hydro Ottawa is also transitioning service support for its outage communications call centre to Optima, with an expected "go-live" timeframe of Fall 2017. See below for further details.



In terms of savings, Hydro Ottawa has projected that the contract with the new vendor will yield approximately \$400,000 per year in reduced OM&A expenditures.

As of the end of 2016, the migration of Contact Centre services to a new provider was scheduled to be fully executed by March 6, 2017, with the implementation of service enhancements set to continue thereafter.

b. Outage Communications

Building on its award-winning outage communications system, Hydro Ottawa continued to validate this tool in 2016 and identified areas for further improvement. By implementing new technologies and creating a cross-enterprise team to manage outage communications seamlessly in an integrated fashion, this initiative will make personal, proactive outage information available to customers in the communications channel of their choice (email, text, phone, etc.). In addition, it will allow customers to report outages to Hydro Ottawa through their preferred channel. Final implementation of this latest round of enhancements is expected in 2017/2018.

A new feature incorporated into the company's outage communications toolbox has been the use of real-time footage of utility crews restoring power following a weather event. Utilizing a live-streaming video platform, Periscope, Hydro Ottawa communications personnel are able to diffuse this footage directly from the crews' location to the company's 13,000 followers on Twitter. This service is proving to be increasingly effective in communicating Hydro Ottawa's responsiveness during outage events and, in turn, is becoming increasingly popular with customers.

c. Voice and Data Infrastructure Upgrade

In conjunction with enhancements to components of the company's ECP that are customer-facing, Hydro Ottawa successfully upgraded communications infrastructure that is essential to internal business operations. This includes, for example, the telephone and computer infrastructure that employees rely upon to perform their daily activities.

Much of this infrastructure and technology was more than 25 years old, and therefore had limited functionality. Together with initiatives under the company's Telecommunications Master Plan (see page 20 for more details), the company's new voice and data infrastructure will improve connectivity and redundancy with, and between, Hydro Ottawa's office buildings and substations.

Moreover, the ECP improvements will help ensure a smooth transition to the company's new facilities, which is scheduled to occur in 2019. (See page 19 for further details). The adoption of the Session Initiation Protocol ("SIP") for Hydro Ottawa's public switched telephone network will facilitate the transfer of this network to the new offices. Likewise, utilization of enhanced Voice over Internet Protocol and Power over Ethernet technology for the upgraded voice and data infrastructure will ensure that employees transition to their new workstations with minimal interruption and are able to work anytime – and anywhere – at the new locations.



(iii) Bidgely Mobile Application

Over the course of 2016, Hydro Ottawa continued its development of a free mobile application that will serve as a personal energy advisor to residential customers. The app will provide customers with timely and relevant billing and outage information, as well as personalized recommendations on how they can conserve electricity – all within the palm of their hands.

The app will disaggregate whole-home meter data to provide the customer with specific energy use information, patterns, and insights. Such disaggregated data presents an enormous opportunity for customers to better understand their consumption practices, determine easy and cost-effective measures or actions to increase their energy efficiency, and ultimately reduce their overall consumption.

Key features of the app will include the following:

- Access to data – breakdown of customer electricity usage and costs, as well as trends in usage from bill-to-bill;
- Useful alerts – customer receipt of notifications about usage along with insights to help reduce consumption;
- Neighbourhood comparison – ability for customers to view consumption relative to similar homes in their neighbourhood;
- Cost projections – avoiding bill surprises with a daily cost projection for electricity charges;
- Account information – access to billing history; and
- Outage map – access to latest information on power outages.

Energy reports generated through the app will include information on customer electricity use compared to their historical usage (self-benchmarking), customer electricity use compared to neighbours (social benchmarking), and personalized electricity savings advice with actionable solutions and tips.

The app will utilize three different communication delivery methods, designed to match the preferred communication channel for different customer segments: web and mobile-based tools; monthly email reports; and quarterly paper reports. By incorporating multiple communication channels, the app will help maximize customer participation and motivation – and, in turn, increase savings – by ensuring that each customer will be able to select the communication channel which is most comfortable for them.

In developing the mobile application, Hydro Ottawa worked with Bidgely, a California-based energy services and analytics company with extensive expertise in behind-the-meter, appliance-level consumption information.⁷ Bidgely enables utility customers to monitor and manage their household energy use with the help from a machine-learning algorithm that recognizes appliances.

Hydro Ottawa's Bidgely app was sourced, designed, and created in 2016. As of the end of 2016, the scheduled launch date was Q2 2017. Customers will be able to download the app onto Apple and Android mobile devices. In addition, this program is expected to provide an

⁷ <https://www.bidgely.com/>.



estimated contribution of 35.4 GWh of electricity savings towards Hydro Ottawa's Conservation First target of 394.5 GWh.

(iv) Bill Re-Design

In response to customer feedback, Hydro Ottawa initiated a project in November 2015 to improve the format and design of customer bills, with the goal of developing a bill that would better fulfill customers' expectations for clarity and personalized communications.

The project is moving forward in four distinct phases:

- Phase 1 – Hydro Ottawa performed qualitative internal research, with input from a broad cross-section of employees and internal stakeholders. Prior research from other companies seeking to improve billing communications was also examined, along with research commissioned by the OEB to inform its Regulated Price Plan Roadmap.⁸ Based on this research, Hydro Ottawa then surveyed customers using a customized, online tool through which respondents were able to “design” their ideal bill.⁹ This approach enabled Hydro Ottawa to identify (i) what information customers deemed to be most important, and (ii) how customers prefer to view this content on their bill. The original goal targeted for number of completed surveys was 400. Ultimately, almost 3,000 surveys were submitted, with approximately 850 including substantive feedback for consideration. (Completed – November 2016)
- Phase 2 – Following evaluation of the research results, Hydro Ottawa prepared design concepts for both bill print and E-Bill proposals. A short list consisting of three specific designs was established. (Completed – November 2016)
- Phase 3 – The three design proposals will be assessed, based on the following criteria: technical feasibility, capital implementation costs, OM&A implementation costs, ongoing OM&A costs, and estimated implementation time. (Estimated completion date, as of the end of 2016 – March 2017)
- Phase 4 – The final phase will feature roll-out and communications to customers on the new bill print and E-Bill designs. (Estimated completion date, as of the end of 2016 – November 2017)

Among the many benefits that this initiative is expected to yield are the following: a more personalized experience for engagement and transactions with customers (e.g. unilingual correspondence); enhanced energy literacy and comprehension through a simpler, more understandable bill that provides better information; behavioural change in the form of reduced consumption; integration of new technologies; cost savings (e.g. lower OM&A through reduced paper use); and improved attitudes towards the utility and the sector.

(v) Key Accounts Program

In 2016, Hydro Ottawa continued its transition towards a more proactive approach in managing relationships with Key Account customers. This initiative is focused on the continued evolution

⁸ OEB File Nos. EB-2014-0319 and EB-2016-0201 (Regulated Price Plan Roadmap).

[http://www.ontarioenergyboard.ca/oeb/Industry/Regulatory+Proceedings/Policy+Initiatives+and+Consultations/Regulated+Price+Plan/RPP+Roadmap+\(EB-2016-0201\)](http://www.ontarioenergyboard.ca/oeb/Industry/Regulatory+Proceedings/Policy+Initiatives+and+Consultations/Regulated+Price+Plan/RPP+Roadmap+(EB-2016-0201))

⁹ As an incentive, Hydro Ottawa held a draw for three iPad tablets for customers who completed the survey.



of the company's collaboration with Key Accounts, aimed at assessing and addressing their unique priorities and needs.

Hydro Ottawa's structured approach to relationship-building with Key Account customers is anchored in a five-phase cycle – strategy development, research, action planning, plan execution, and review – with a continuous feedback loop. Specific services offered under this approach include C-Level customer engagement, formal annual account plan reviews, single points of contact for customers at the utility, simplified bill reporting service for large customers with hundreds of individual accounts, landlord reversion agreements, and conservation and demand management ("CDM") assistance. In addition, in 2016 Hydro Ottawa sought to assist customers in understanding and preparing for potential obligations and opportunities associated with the establishment of a cap and trade program in Ontario, as well as with modifications to the Industrial Conservation Initiative.

Another recurring service that Hydro Ottawa continues to refine is the organization of an annual Key Account Symposium. Held in November 2016, the latest installment of this symposium featured networking, valuable business development opportunities for customers, and presentations from Hydro Ottawa on issues of critical importance to customers' businesses (e.g. new and emerging grid technologies, opportunities related to the adoption of "Smart City" solutions in the Ottawa area, and service offerings related to electrical vault maintenance and ownership). An on-site anonymous survey of customers' satisfaction with Hydro Ottawa was conducted, with results made available in real-time. Sixty-five representatives from three dozen of the company's largest customers attended the event.

By using the above approach, and by providing regular opportunities for consultation with the company's Key Account Coordinators, Hydro Ottawa is fostering continuous improvement in its engagement with this particular subset of customers.

(vi) Community Engagement

In 2016, Hydro Ottawa celebrated the 100th anniversary of the company's (and its predecessor utilities') service to the community.¹⁰ The company has built on this heritage as a responsible, community-focused organization by ensuring that it remains visible and accessible to customers and stakeholders, and by stepping up its community presence.

Over the course of the year, Hydro Ottawa participated in more than 350 community events – a 34% increase over 2015. This included an inaugural Community Forum, in which the company hosted community associations, city councillors, and community housing representatives to provide an overview of Hydro Ottawa's latest initiatives and programs. Company officials in attendance included the President & CEO, as well as select members of the executive team and senior management. The company's community activities included energy-related educational programs in schools, a Conservation Team that attends diverse community, corporate and retail events, and a wide range of other tours and presentations. Customized newsletters were likewise launched to keep Community Associations and Business Improvement Areas up to date on key issues of interest.

Hydro Ottawa also increased its online presence and social media engagement. Total visits to the company's webpage (<https://hydroottawa.com>) increased by approximately 150% from 2015 to 2016, with significant year-over-year growth in subscribers across all social media platforms

¹⁰ The Ottawa Hydro Electric Commission was formed in 1916.



as well (Facebook, 174%; LinkedIn, 30%; and Twitter, 18%). Video news releases and drone footage also became more standard features of the company's communications and customer education programs.

In addition, Hydro Ottawa regularly consulted customers with regards to major projects that were designed to improve infrastructure and service to customers and their community. These consultations included project-specific open houses, which are typically conducted for large complex cable replacement, pole replacement, voltage conversion, and substation build/rebuild projects. Hydro Ottawa conducted five such public open houses in 2016 for projects scheduled to go in service in 2017. Company attendance at these events typically included the project manager, planning engineers, a design supervisor, additional technical support as required, staff from the company's media and public affairs department, and a CDM representative.

Specific examples from 2016 of positive customer interaction, and subsequent incorporation of customer feedback, included the following:

- Glen Cairn Cable Replacement Project – During the open house session, several customers expressed concern with the proposed location of equipment.

The design team took these comments under advisement and evaluated additional design options. By analyzing the various options and re-thinking ways to accommodate affected customers in the area, a modified design was created using less impactful equipment locations.

- Woodroffe Substation Pre-Cast Walls Replacement – As part of a larger project to replace switchgear equipment and construct new protection and control structures at a major substation, it was determined that pre-cast walls forming the perimeter of the substation required demolition and replacement.

Hydro Ottawa worked collaboratively with senior personnel at the elementary school located directly adjacent to the substation, with respect to establishing a mutually agreeable timeline for project completion. In order to avoid disruptions to normal school operations and concerns associated with student drop-off/pick-up in close proximity to a worksite with an exposed substation, Hydro Ottawa undertook an accelerated work schedule during Summer 2016 and successfully completed construction prior to the beginning of the school year. In addition, Hydro Ottawa partnered with school staff and students on painting a mural on the school-facing side of the newly completed wall.

These initiatives reinforce how Hydro Ottawa views effective community engagement as essential to earning and retaining customers' confidence and trust, and in turn, to enabling the company's success.

(vii) Customer Connectivity

Over the course of 2016, Hydro Ottawa undertook numerous steps to continue enhancing its web-based customer content and self-serve offerings.

Chief among these was sustained promotion of E-Billing adoption by customers. Hydro Ottawa's 2016 "Go Paperless" Campaign – in which the company makes a \$5 donation to charity for every customer that signs up for E-Billing or automated payments – was the most



successful on record. The registration of over 20,000 customers resulted in a \$102,000 donation to the Children's Hospital of Eastern Ontario Foundation to support the upgrade of patient monitors. With over 120,000 customers enrolled in E-Billing (representing approximately 38% of the company's total customer base), Hydro Ottawa enjoys the highest participation rate of any utility in Ontario, with annual cost savings equalling \$1.3 million annually.

Also ongoing were efforts to optimize customer access to consumption data. By the end of 2016, 135,567 customer accounts (representing approximately 42% of total customers) were registered with MyHydroLink ("MHL"), Hydro Ottawa's online customer account portal. MHL is a web-based customer preference electronic dashboard, which offers a wide range of convenient, flexible self-service options. These include options to view electricity consumption data and usage patterns (hourly, daily, weekly, monthly, etc.); to export data to multiple formats for further analysis; to compare bills based on consumption, rates, bill dates, and weather; to receive bill predictions, based on forecasted usage estimates; to establish and manage customer profile/account information, including bill payment options; to receive, view, and store bills electronically; and to receive alerts when customer-set thresholds regarding consumption and cost have been exceeded. MHL has enabled Hydro Ottawa to make considerable gains in engaging customers and improving energy literacy.

(viii) Customer Satisfaction Survey

Since 2004, Hydro Ottawa has engaged a third party to conduct annual customer satisfaction surveys. The survey questions cover a wide variety of relevant topics, including overall satisfaction with Hydro Ottawa, reliability, customer service, power outages, billing, cost of electricity, and corporate image.

Feedback from these surveys is incorporated into Hydro Ottawa's planning process, and ultimately forms the basis of plans which address customer needs and service offerings. A final report is produced which confirms customer satisfaction levels and identifies areas for improvement. Customer satisfaction surveys also help to identify the most effective means of communication with customers.

For the 2016 installment of this survey, Hydro Ottawa engaged over 600 customers (85% residential and 15% small commercial). Based on the size of the customer sample, results can be considered accurate plus or minus 4%, 19 times out of 20.

In 2016, Hydro Ottawa's overall customer satisfaction was 81%, equal to the Ontario benchmark. In terms of a letter grade, the company scored a "B+," with the provincial benchmark being "B." These numbers are down from 2015, when Hydro Ottawa scored an 87% satisfaction level with customers (compared to the Ontario benchmark of 86%). These scores, along with other results from the survey, helped to yield the key finding that a customer's ability to pay has a direct correlation to overall satisfaction.

In the survey, areas in which Hydro Ottawa scored above the provincial benchmark were the following (Hydro Ottawa's score is listed first, followed by the Ontario average):

- Provides consistent reliable power (92% vs. 86%);
- Electrical safety (89% vs. 84%);
- Outage response (89% vs. 83%);
- Reliability that meets customer expectations (88% vs. 84%);



- Contact response (83% vs. 68%);
- Helpfulness and knowledge of staff (78% and 78% vs. 69% and 68%);
- Level of courtesy (86% vs. 79%); and
- Quality of information provided (75% vs. 66%).

Areas that Hydro Ottawa has flagged for improvement, which include those in which the company's customer satisfaction scores fell below the Ontario benchmark, were the following:

- Adapts well to changes in customer expectations (63% vs. 69%);
- Operates a cost-effective electricity system (58% vs. 57%);
- Provides good value for money (57% vs. 58%); and
- Cost of electricity is reasonable when compared to other utilities (48% vs. 46%).

When asked how Hydro Ottawa could improve its service, the answer from 50% of customers was better prices/lower rates.

(ix) Public Awareness of Electrical Safety

Helping customers understand the importance of staying safe and using electricity wisely is a priority for Hydro Ottawa. The company works to continuously enhance public awareness of electrical safety through three primary vehicles:

- The company's website and related social media tools, which provide electrical safety information to the public in a variety of subject areas, including safety inside and outside the home, during tree trimming, during electrical emergencies, and safety tips for students.
- Hydro Ottawa's well-established student education program, which teaches elementary school children how to use electricity safely and wisely. Since 2001, more than 2,050 presentations have been delivered to over 232,600 students in 306 elementary schools in the community.
- Hazard-specific education campaigns, such as Hydro Ottawa's annual promotion and support of the Ontario Regional Common Ground Alliance's ("ORCGA") Dig Safe Month, the Electrical Safety Authority's ("ESA") Powerline Safety Month, and the ESA's Holiday Safety Campaign. As a member of ORCGA, Hydro Ottawa actively participates in Dig Safe Month in April of each year. This month is dedicated to raising awareness of safe digging practices across the province to improve safety and reduce damages to underground equipment. The ORCGA and its members encourage homeowners and contractors to call for locates before they dig to prevent injuries, property damage, and electrical outages. Hydro Ottawa raises public awareness of promotional campaigns such as Dig Safe Month and ESA's safety campaigns through its website, local community newspapers, and social media channels.

In order to gauge overall electrical safety awareness amongst the general public, Hydro Ottawa commissioned a research firm to conduct the company's first *Public Awareness of Electrical Safety Scorecard Survey*, during March 2016. The online survey consisted of a representative sample of 407 residents, 18 years or older, currently residing in Hydro Ottawa's service territory.



Responses to the six core survey questions resulted in a 2016 Public Safety Awareness Index of 70%. The results of the survey inform Hydro Ottawa's ongoing public safety messaging and programs.

(x) Customer Specific Reliability Pilot with OEB

In 2015, the OEB announced an initiative to implement Customer-Specific Reliability Measures ("CSRM") and reporting requirements. The OEB agreed with findings of the related working group that it would be beneficial to undertake a series of pilot projects with a number of willing electricity distributors. Hydro Ottawa volunteered to participate, with the company's project focused on implementing the tracking/measurement of CSRM for its full service territory using data logged in its outage management system. The project would then assess the level of effort and identify business processes required to assess, maintain, and improve the accuracy of the CSRM data collected.

As of the end of 2016, the pilot was still underway. The scheduled project completion date was April 2017, with a final report outlining findings and recommendations set to follow thereafter.

(xi) Creation of Chief Customer Officer Position

In 2016, Hydro Ottawa implemented leadership and organizational shifts to better align the company with the goals set forth in its *2016-2020 Strategic Direction* – and in particular, with the overriding imperative to put the customer at the centre of everything the organization does.

These changes included the establishment of a new executive position – Chief Customer Officer ("CCO"). Hydro Ottawa's CCO is responsible for consolidating and overseeing the functions of Customer Service, Communications and Public Affairs, and CDM. By organizing these groups together under a single executive, Hydro Ottawa is better able to leverage, align, and expand its customer service offerings; advance the delivery of the company's Customer Experience Roadmap; and position Hydro Ottawa as an innovative and truly customer-centric organization.



2. Operational Effectiveness

"Utilities are expected to demonstrate ongoing continuous improvement in their productivity and cost performance while delivering on system reliability and quality objectives. The OEB will assess performance trends and look for evidence of strong system planning and good corporate governance. The OEB will use benchmarking to assess a utility's performance over time and to compare its performance against other utilities. Utilities are expected to demonstrate value for money by presenting plans for delivering services that meet the needs of their customers while controlling their costs."

This section of the Annual Summary highlights how Hydro Ottawa is (a) delivering on the commitments in its Custom IR application regarding continuous improvement, productivity initiatives, and cost performance; and (b) achieving outcomes that are aligned with the RRF's Operational Effectiveness category.

It should be noted that this section does not include information on capital spending undertaken by Hydro Ottawa, in accordance with its OEB-approved Distribution System Plan ("DSP"). As explained on pages 4-5, Hydro Ottawa is obligated to submit annual reports to the OEB on its actual capital spending on a program level, based on three categories: System Access; System Renewal/System Service; and General Plant. Please consult these annual reports for information on the progress in Hydro Ottawa's capital expenditures against its DSP.

(i) Enterprise Resource Planning Project

Hydro Ottawa relies on a centralized enterprise resource planning ("ERP") system to manage core functions related to finance, accounting, inventory and supply chain management, work order management, and human resources.

Initially deployed in 2003, this system required supplemental customizations over the years as business needs evolved. More recently, Hydro Ottawa experienced growing operational and financial management challenges, on account of complexities associated with ongoing ERP system modifications and the relative age of the system itself.

Ultimately, it was determined that a more agile, flexible, and integrated ERP environment was required. A formal ERP replacement project was initiated ("Project Transformer"), aimed at executing upon the following key objectives:

- Establish a stable, well-supported platform for all desired ERP operations that is easy to maintain;
- Develop well-defined processes and best practices that improve the efficiency, effectiveness, and accuracy of information flows to transform the business;
- Eliminate offline systems, paper, and other manual workarounds;
- Ensure the security and integrity of critical information such that the system can be relied on as trusted source for annual audits;
- Improve user adoption and productivity improvements by providing employee and manager self-service capabilities with a focus on user experience;
- Introduce dashboards and improved real-time reporting capabilities to facilitate timely and accurate decision making; and



- Leverage mobile integration to ERP to facilitate collaboration, sharing of information, timely approvals, and ultimately make the day-to-day tasks of employees easier.

External partners engaged to support Project Transformer include IT hardware and software solutions expert Mid-Range Inc., along with PwC Canada.

Through this project, the effectiveness of core Hydro Ottawa business functions are being enhanced, while the company is being more effectively positioned for growth and responsiveness to continual evolutions in the business environment.

As of the end of 2016, Phase 1 of Project Transformer, in which ERP system upgrades will go live for finance and human resource business units, was set to be complete in Q4 2017.

(ii) Mobile Workforce Management

Hydro Ottawa has a large mobile workforce that is responsible for a wide range of work – from simple disconnections, reconnections, or meter changes, to more complex and longer-duration pole changes and cable replacements. The company historically used a combination of Microsoft Excel spreadsheets, in-house developed databases, and an Intergraph In-Service system for scheduling and dispatching work. This was executed through a decentralized model, with several different groups dispatching mainly to their own resources. While good success was achieved through this approach over the years, it was recognized that evolving business needs, combined with technological advances, required investment in a Mobile Workforce Management (“MWM”) tool to drive productivity to the next level.

MWM is an automated scheduling and dispatch tool designed to optimize the scheduling and routing of work and crews to increase productivity and enhance customer service. The system enables Hydro Ottawa to centralize the scheduling and dispatch functions for field resources, improve the overall visibility of workload, reduce unnecessary manual planning activities, highlight resource availability, and ensure consistent application of scheduling policies to all types of work. With features such as schedule optimization and route planning, MWM improves field resource productivity, reduces mileage and overtime costs, and increases the ability to meet customer commitments. It also reduces the time spent on scheduling, allowing the dispatcher to focus on handling exceptions or emergencies like trouble calls or outages.

Hydro Ottawa’s MWM system went live in December 2015, meaning 2016 represented the first full year of implementation.

MWM has been implemented for new residential service connections, collections, metering, forestry inspections, service trench inspections, and service truck work (e.g. service upgrades, disconnections and re-energizations, and service removals and demolitions). As of the end of 2016, 28 separate crews within Hydro Ottawa were operating on the system.

During the first phase of adoption, the Collections and Metering groups achieved immediate positive results. Through greater workflow automation and elimination of certain manual processes, Metering experienced a 4% increase in the total number of tasks completed, notwithstanding the use of approximately 6,200 or 21% fewer chargeable hours. With regards to Collections activity, use of MWM freed-up greater internal resources, with productivity increases enabling Hydro Ottawa to allow a contract with a third-party collections agency to lapse. This will translate into an annual OM&A savings of approximately \$300,000.



Hydro Ottawa plans to continue boosting the use of MWM across its operations, including through integration into the enhanced ERP program once Phase 1 is complete in 2017 (see above). In addition, in 2017 MWM is set to be expanded to damage prevention inspectors, with potential further extension to plant inspectors and stations technicians engaged in preventative maintenance programs.

(iii) Facilities Renewal Program

With the approvals secured in its 2016-2020 Custom IR rate plan, Hydro Ottawa has embarked on a Facilities Renewal Program. This program will serve as a key modernization and operational efficiency initiative that will see the company consolidate administrative functions; modernize the work environment and provide for future growth; and relocate from obsolete, end of life facilities in 2019.

Under the program, two parcels of land have been purchased, upon which Hydro Ottawa will construct two regional campuses. The sites are ideally situated in commercial and light-industrial areas that will increase emergency responsiveness, given their proximity to major highways and interchanges. The East Campus will be home to the company's Main Offices, East Operations Centre, and cable storage facility. The South Campus will house the South Operations Centre, Metering, Transformer Shop, and Warehousing.

The Facilities Renewal Program will also involve the sale of certain existing facilities.

In 2016, Hydro Ottawa issued a Request for Proposals ("RFP") and awarded a design-build contract for the new facilities.

(iv) Smart Grid Deployment

A key component of Hydro Ottawa's 2016-2020 Custom IR application was the "Grid Transformation Action Plan." This plan catalogues a range of projects and initiatives that Hydro Ottawa will execute as part of supporting the implementation of a smart grid in Ontario, and as part of delivering on the vision enshrined in the company's *2016-2020 Strategic Direction* to become a leading partner in a smart energy future.

Key accomplishments in 2016 related to smart grid deployment and implementation included the following:

a. SCADA System Upgrade

Hydro Ottawa's existing Supervisory Control and Data Acquisition ("SCADA") system has been in place since 2006 and is due for replacement, on account of its utilization of older technology that is becoming obsolete. SCADA is the primary tool in the control room for monitoring and controlling the power system. The new system will be designed from the ground up, will include quadruple redundancy across two dedicated physical sites, and will align with corporate and industry best practices, including cyber security, virtualization, and maintainability.

The Request for Information ("RFI") process and vendor demonstrations were completed in 2015. In 2016, the major milestones were the launch and completion of a formal RFP, with a contract awarded to a specific vendor. Final migration to the new system is expected in Q1 2018.



b. Telecommunications Master Plan

In 2016, Hydro Ottawa pushed forward on its multi-year plan to upgrade its telecommunication infrastructure, with the goal of developing a high-speed, high-performance network that will expand the opportunities and impacts of devices and sensors on the distribution grid. This project will include the installation of approximately 300 kilometres of dark fibre across the company's service territory, as well as the implementation of wireless networks in locations where fibre is not feasible.

When the telecommunications transformation is complete, Hydro Ottawa will have opportunities to leverage this infrastructure to help meet the broadband needs of the community, through "Smart City" initiatives or strategic partnerships with businesses and the MUSH (municipalities, universities, schools and hospitals) sector.

Contracts for both the network equipment installation and communication medium (fibre) installation were awarded to vendors in 2016. The multi-year detailed design packages progressed well, with approximately 65% completion. Dark fibre installation in 2016 totalled 11.5 km. Equipment deployment is set to continue in stages through 2019.

c. Smart Grid Projects

- **The GREAT DR** – The goal of the "Grid Edge Active Transactional Demand Response" project ("GREAT DR") is to develop a field-proven, open source, and royalty-free reference standard. This standard would define the transactive energy and demand response negotiations that need to occur between behind-the-meter sources and the grid, in order to ensure that they can manage themselves autonomously within the limits of available grid supply and capacity. This innovative and complex system will be facilitated through the detailed collaboration of energy management systems, renewable generation, and energy storage. In 2016, Hydro Ottawa worked with other partners (Ministry of Energy, Carleton University, University of Ottawa, Energate, Panasonic, Quadra Power, and CIMA+) to finalize the project scope. As of the end of 2016, initial deployment and field testing was scheduled to occur over the course of 2017 and 2018.
- **Ellwood Energy Storage Project** – This project is a 4 MW/2.7 MWh lithium ion battery energy storage facility that will be built by Canadian Solar as part of a three-year contract with the Independent Electricity System Operator ("IESO") for grid support and voltage control. The facility consists of several lithium ion battery modules that will inject energy into or take energy from the grid, in order to support grid stabilization in response to IESO operational directives. Hydro Ottawa is hosting this project on-site at its main office location. Key milestones in 2016 included execution of the access license agreement and the offer to connect, completion of Hydro Ottawa's design package, civil preparation, and installation of the station service. As of the end of 2016, the planned energization date was Summer 2017. This project represents an excellent opportunity to observe and evaluate an energy storage facility and its effects on the grid. At the end of the contract between Canadian Solar and the IESO, Hydro Ottawa will have the option to purchase the facility, if a mutually agreeable transfer of ownership agreement can be executed.



- **Surplus Electric Baseload for Building Thermal** – In late 2016, Hydro Ottawa was awarded funding through the City of Ottawa’s Energy Evolution Catalyst Funding Program for a proof of concept solution that will use clean, efficient electricity to supplement the use of natural gas boilers for space heating. This solution will be applied without increasing the building’s electricity demand, and will provide operational savings and reduced greenhouse gas emissions. As of the end of 2016, Hydro Ottawa was set to launch the project in 2017, in partnership with Thorium Technologies. Assuming successful proof of concept, the solution has the potential to be replicated in approximately 30 municipal facilities, such as community centres, sports complexes, offices, and retirement homes.

d. Smart Energy Steering Committee

In 2016, Hydro Ottawa formed a cross-functional internal Smart Energy Steering Committee (“SESC”). The SESC has been tasked with providing leadership, oversight, coordination, and direction of Hydro Ottawa’s Smart Energy initiatives on both sides of the meter, through a whole-of-company, multi-year roadmap.

Formation of the SESC was borne out of recognition that, while the company’s Smart Grid initiatives have provided a net benefit to Hydro Ottawa, there remain significant opportunities for further collaboration and alignment in the selection and execution of future projects. The SESC is expected to yield the formal governance structure necessary to ensure maximum effectiveness and efficiency in the planning and delivery of the utility’s Smart Grid initiatives.

Early SESC deliverables in 2016 included preparing a Terms of Reference, as well as performing an initial review for optimization and prioritization of Hydro Ottawa’s Smart Grid project portfolio.

(v) System Reliability

In 2016, Hydro Ottawa achieved its best system reliability results in the past five years, with three-year rolling averages for both frequency and duration of outages continuing to trend downward.¹¹ Critical to the achievement of this high performance level was the significant amount of investment made to keep our system reliable, with \$65 million targeted towards aging infrastructure, localized reliability issues, and increasing station capacity. A further \$38 million was invested to expand the system to meet customer needs. Over the course of the year, a total of 1,135 new poles, 398 overhead transformers, and 270 km of overhead cables were installed, while 200 demand capital projects were initiated, including the addition of 2,738 new residential and 502 new commercial connections.

(vi) Good Corporate Governance Practices

Hydro Ottawa is committed to establishing and maintaining leading governance practices for a company of its size and mandate. Because governance standards and best practices are always evolving, the company seeks to continuously improve its governance practices.

While Hydro Ottawa is not a reporting issuer under the *Securities Act* and is therefore not subject to governance standards that apply to publicly-traded companies, the company is guided by these standards and seeks to meet or exceed them. In addition, Hydro Ottawa regularly

¹¹ The company’s System Average Interruption Duration Index (“SAIDI”) fell from 1.15 in 2015 to 1.00 in 2016, while its System Average Interruption Frequency Index (“SAIFI”) dropped from 0.75 in 2015 to 0.74 in 2016.



compares its governance practices to those of private and public sector organizations, and to standards set by agencies such as the Canadian Securities Administrators and the Ontario Securities Commission.

In 2016, Hydro Ottawa undertook several activities in accordance with its standard governance practices. This included annual review of the charters of the Board of Directors and Board committees, as well as annual assessment of the Board's effectiveness. Likewise, Hydro Ottawa prepared a detailed annual report, outlining its major accomplishments, financial results, and progress against its strategic and business plans, for the previous year. Consistent with established practice, the annual report included a dedicated section summarizing the company's corporate governance structure, processes, and controls. The annual report was presented by the Board Chair and President & CEO to the company's shareholder, the City of Ottawa, at the shareholder's Annual General Meeting.

Activities that were unique to the specific context of 2016 were the execution of succession plans for Directors whose terms expired during the year, as well as the adoption of a new five-year Strategic Direction, which provides an overview of the company's business strategy and financial projections for the 2016-2020 timeframe. (For more details on the Strategic Direction, please see page 6).

(vii) Information Management Strategy

In 2016, Hydro Ottawa continued its implementation of a multi-year initiative to proactively address challenges and opportunities related to long-term information management ("IM") requirements and needs within the company. Among the key goals of this initiative is to efficiently and sustainably transition the company to a higher level of IM maturity by mid-2018, prior to the company's re-location to its new facilities.

In large part, the scope of this initiative is based on the findings of an expert consultant's assessment of the maturity level of Hydro Ottawa's current IM programs and practices. Presented to the company in early 2016, this assessment examined the company's IM landscape; analyzed the relationship between IM and the company's mission, vision, and strategic plan; reviewed IM in relation to the company's legislative and regulatory environment (including the record retention requirements introduced by the OEB in 2016); identified the IM implications of the company's organizational structure and culture; and benchmarked the company's current IM program and practices against the *Generally Accepted Recordkeeping Principles®*.

Early actions undertaken by Hydro Ottawa in 2016 in response to the external findings included the adoption of a formal IM vision statement,¹² as well as the establishment of four strategic priorities that will guide the company's IM strategy going forward: (1) IM Governance; (2) IM Processes; (3) IM Communications and Training; and (4) IM and IM-related Technology.

In addition, Hydro Ottawa has taken initial action to implement the following recommendations emerging from the consultant's report:

¹² The vision statement reads as follows: "Hydro Ottawa's recorded information will be managed in accordance with law, policy, standards, and procedures to support service delivery, foster informed decision-making, and facilitate accountability, transparency, and collaboration."



- Recognize and re-implement IM as a corporate business program through consistent governance and oversight, the reaffirmation/development of IM policies, the hiring and retention of IM subject matter experts, and the development and implementation of processes to monitor and audit IM performance;
- Develop, enhance, and implement procedures, processes, and tools to support IM renewal and sustain the corporate IM program;
- Develop and implement a communications strategy to raise and sustain IM awareness, and communicate corporate IM program information; and
- Develop and implement a training program for all employees (including new hires) to educate them on IM requirements and instruct them in using IM tools and technologies.

(viii) Migration of Business Systems to Cloud-Based Solutions

Fall 2016 marked an important milestone in the execution of Hydro Ottawa's information technology ("IT") strategy. At that time, the company reached an agreement with IBM to leverage its SoftLayer Infrastructure-as-a-Service ("IaaS") offering. SoftLayer is a leading cloud computing platform offering bare metal, virtual servers, networking, and turnkey big data and private cloud solutions.

Under terms of the agreement, IBM will provide Hydro Ottawa with cloud-based infrastructure for many of the company's key business systems. This platform will serve as a single web portal to view and manage servers, storage, and infrastructure. Movement to the cloud will eliminate the need for purchasing, deploying, and maintaining on-premise solutions; alleviate IT resource constraints; enable Hydro Ottawa to deliver an enhanced customer experience; increase the reliability, flexibility, and security of the company's business systems; and ensure the company is able to keep pace with technological innovation. Other benefits will include access to a highly secure and trusted data centre; increased infrastructure reporting; a single technology and service provider reducing resolution time; reduced local footprint; improved service level agreements; and introduction of 24/7 infrastructure support.

Initial adoption of the SoftLayer platform will focus on two of Hydro Ottawa's largest business systems that are due for refreshed hardware. As of the end of 2016, IBM was scheduled to stand up new hardware by February 2017 to host the new version of the JD Edwards ERP system, as part of Project Transformer. IBM was also set to migrate the Customer Care & Billing ("CC&B") system to a cloud-based platform before May 2017.

(ix) Asset Management

Key initiatives in 2016 related to asset management included the following:

a. Efficiencies in Major Equipment Procurement

Hydro Ottawa is employing several strategies to decrease costs of major equipment purchases while continuing to provide high levels of reliability to the distribution system. The company has formed cross-functional working groups to evaluate and create approved supplier lists for major equipment procurement. Major equipment suppliers are actively reviewed on a proactive basis for quality, responsiveness, and cost management. As approved supplier lists are updated and finalized, the information feeds into master purchasing service agreements ("MPSAs") for each



type of equipment. Such an approach increases consistency and improves efficiencies during design, construction, and the remaining lifecycle of an asset. MPSAs serve as a safeguard against undertaking multiple procurements for the same piece of equipment for multiple projects. To promote and achieve continuous improvement, the MPSAs are set to be updated on an as-required basis through lessons learned discussion and documentation.

This new approach through MPSAs was implemented in 2016 for the procurement of electrical and civil engineering consulting services.

b. Utilization of Enhanced Asset Management Software

Hydro Ottawa is working to improve the way asset replacement decisions are made by utilizing enhanced software for investment planning. As a result of superior analytics capabilities offered through Copperleaf C55 software, the company will be able to better define its specific data requirements and the timeframe for collection through existing and new inspection and maintenance programs. As of the end of 2016, this initiative was on track for completion by 2019.

c. ISO 55000 Compliance

In 2016, Hydro Ottawa contracted an external party to assess the company's current asset management practices against the requirements of ISO 55001:2014, the international standard for Asset Management Systems. The review involved a team of consultants and consisted of off-site documentation review, onsite interviews, and additional information gathering. The exercise resulted in a gap analysis report and development of a roadmap which would enable Hydro Ottawa to improve its practices and move towards compliance with the standard. Findings included both Hydro Ottawa's internal view and the third-party external view of ISO 55001 compliance. In each case, compliance was scored using the Institute of Asset Management's maturity scale.

Based on the results of this analysis, Hydro Ottawa has initiated a working group with the goal of maturing the company's asset management practices to become ISO 55001 compliant. Certification with the standard may be considered and pursued at a later time.

d. Asset Condition Assessment

Over the course of 2016, Hydro Ottawa completed a detailed asset condition assessment of stations' major equipment, including transformers and switchgear. The data was collected through inspection and maintenance programs, and then translated into indicators utilized to develop a probability of failure for each asset type in the system. Next, the probability of failure was applied in a risk assessment process to produce an asset failure risk score. Going forward, Hydro Ottawa will use these risk scores to plan asset replacements.

Historically, asset condition scores were primarily based on asset age. However, through enhanced practices and tools, the adoption of a risk-based asset management framework has enabled the company to identify the optimal replacement time for aging assets, and thereby minimize total costs of asset ownership. This includes direct financial costs as well as indirect costs related to reliability, environmental impacts, collateral damage, and safety impacts.



(x) Enhancements in Program Execution Timelines for System Design

In its OEB-approved 2016-2020 DSP, Hydro Ottawa highlighted several areas in its capital programs for which it intended to apply a particular focus on achieving greater productivity, efficiencies, and cost savings. One of those areas was more detailed short-term planning.

In 2016, particular progress was achieved in this area in relation to timelines for program execution. Through more advanced coordination with third parties, the company's planning process for system design has become more adaptive and better able to accommodate adjustments in projects, with customer feedback received earlier in the process.

With more system design packages created in advance, Hydro Ottawa was able to bump-up completion dates for package-ready projects from 2017 to September 2016. This resulted in more accurate resource and budget planning, while offering options for project advancement, deferral, or swapping, in the event of unforeseen needs or third-party constraints arising.

(xi) Contractor Onboarding

In 2016, Hydro Ottawa established a new process for contractor onboarding. The process applies to all contractors that require either network or physical access to company facilities.

Using a centralized identity management system (an Oracle-based product referred to as "OIM"), Hydro Ottawa has been able to re-purpose the framework and workflow currently in place that synchronizes and automates employee information between critical business systems owned by different departments (Human Resources, IM&IT, and Facilities).

As a result, contractor onboarding, off boarding, and status changes will now be automatically synchronized to email and network accounts, as well as the building badge/access system. When a contractor joins or leaves Hydro Ottawa, a series of automated entries will now take place within numerous systems that contain contractor information.

This automated workflow will reduce a number of manual tasks, increase productivity, ensure accuracy and consistency of contractor information throughout all business lines, improve identity security and backups, and significantly reduce duplication.

Alongside the new OIM system going live in 2016, draft training material was prepared. In addition, the company initiated a working group that has been tasked with strengthening our contractor onboarding training process. As of the end of 2016, an updated training program for contractors and Hydro Ottawa staff was scheduled for delivery in 2017.

(xii) Fleet Wi-Fi & GPS Installation

Hydro Ottawa's fleet service is responsible for the maintenance and management of approximately 230 vehicles.

The existing Global Positioning System ("GPS") and telematics system utilized for fleet management was adopted in 2003. After approximately 12 years, the system had reached end of life, with vendor support no longer provided as well. Accordingly, Hydro Ottawa issued an RFP in March 2016 to upgrade to a new set of solutions. The RFP was evaluated and the contract awarded in July 2016, with the agreement executed in December 2016.



The scope of services encompassed within the agreement includes the supply and installation of new Automatic Vehicle Locator tracking devices; installation of Wi-Fi hotspot devices; integration with Hydro Ottawa's existing fleet management application and internal outage map; adoption of a web-enabled electronic process for logging hours of service and preparing Driver's Vehicle Inspection Reporting for all bucket trucks; and ongoing technical support for these solutions for a term of three years. Moreover, in step with the discussion on page 23 regarding cloud services, the fleet management software utilized (MyGeotab) is a Software-as-a Service ("SaaS") solution that will help achieve greater efficiencies and flexibility in overall fleet management.

Deployment of these solutions will enable optimization of the company's fleet with real-time data on vehicle position, speed, and fuel use; reduced fuel costs; and improved driver behaviour, which in turn will increase safety and security. As of the end of 2016, estimated cost savings associated with the use of fleet Wi-Fi, instead of individual laptops, is \$70,000 per year, with these savings expected to be fully realized in Q1 2018.

(xiii) Field Crew Operational Productivity Improvements

In 2016, Hydro Ottawa conducted a thorough investigation of field crew resource allocation by location. Based on the results, the company was able to optimize the location of field crews in regions with the highest volume of scheduled work, thereby reducing travel time and increasing wrench time. To further the success of this productivity enhancement, projects were also coordinated with existing road closures, which in turn lowered both travel and set-up times.¹³ In addition, Hydro Ottawa introduced innovative equipment into our fleet to enable crews to work more safely and efficiently on distribution assets located in rear lots. Finally, the company successfully installed an additional 2,500 remote disconnect meters, which will yield benefits in the form of reduced field work and reduced need for vehicle dispatch.

(xiv) Workforce Stabilization

Hydro Ottawa continued its implementation in 2016 of a multi-year, whole-of-company initiative around organizational rightsizing as a complement to productivity initiatives. Key outcomes achieved included no increase in full-time permanent positions; reallocation of vacant positions to trades hiring; reduction of 18% in on-call costs from 2014 to 2016, as a result of rationalizing and ensuring better front-line coverage; and ongoing stabilization of overtime costs, with 2016 costs 5.7% below 2014 costs. These and other measures served to illustrate Hydro Ottawa's enduring commitment to doing more with less, and to demonstrate sustained sensitivity to containing costs and safeguarding ratepayer interests.

(xv) Workforce Planning

Like many other utilities, Hydro Ottawa faces challenging workforce demographics that require a concerted response. In 2016, the company continued to implement a proactive and multifaceted Talent Management Strategy to ensure a prepared and sustainable workforce over the next five to 10 years. This included ongoing execution of a comprehensive succession planning process to identify and develop talent for all levels of leadership throughout the organization; growth in programs related to apprenticeships, powerline technicians, summer and co-op students, engineering interns, and retiree and older worker engagement; and expanded partnerships with industry and educational institutions, including renewed collaboration with Algonquin College to deliver the College's Powerline Technician programs in Eastern Ontario for 2016-2020.

¹³ A specific example of a particularly successful project in this regard was the relocation of 20 utility poles during a 12-hour period, as part of a road widening project.



(xvi) Skype for Business

In step with the company's technology modernization initiatives, Hydro Ottawa implemented Skype for Business in October 2016, following a successful pilot program. The roll-out of Skype capabilities across the company allows employees to engage in virtual collaboration with co-workers, through the use of instant messaging, online meetings, and screen sharing. In addition to enhanced collaboration, benefits include reduced travel and employee reimbursement costs associated with travel in between the company's various offices and facilities located across its service territory.



3. Public Policy Responsiveness

"Utilities are expected to consider public policy objectives in their business planning and to deliver on the obligations required of regulated utilities. These obligations may evolve over time and therefore this Handbook does not provide a comprehensive list of all requirements. Utilities are expected to demonstrate that they have considered Conservation First in their investment decisions. The OEB will expect to see proposals for how distributors are supporting low income customers through programs such as LEAP and/or OESP, or through other distributor-specific programs. Electricity distributors and transmitters are expected to expand or reinforce their systems to accommodate the connection to their system for renewable energy generation facilities and the OEB expects their system plans to include details on how they will meet this requirement. Natural gas utilities are expected to identify investments or programs that have been planned to meet obligations under Ontario's cap and trade program."

This section of the Annual Summary highlights how Hydro Ottawa is (a) delivering on obligations mandated by government through legislation, Ministerial directives, and regulatory requirements; and (b) achieving outcomes that are aligned with the RRF's Public Policy Responsiveness category.

Consistent with the discussion on page 6 regarding general alignment between Hydro Ottawa's Strategic Direction and RRF performance outcomes, Hydro Ottawa wishes to emphasize that its responsiveness to public policy at all levels of government is rooted in its commitment to the well-being of the community by acting as a responsible and engaged corporate citizen.

(i) Regulatory Compliance Project

In step with the company's commitment to excellence in fulfilling its OEB- and IESO-related compliance obligations, Hydro Ottawa undertook a formal review of its regulatory compliance program in 2016.

The goals of the review were to assess the effectiveness of the company's existing compliance program and associated business practices; identify both gaps and best practices; and develop and implement solutions for program re-design, including formal documentation to facilitate enhanced compliance. Key outcomes identified as part of the targeted end-state for the company's regulatory compliance framework included automated compliance monitoring; a compliance inventory and outcomes repository; operational compliance management, policies, and accountability; internal stakeholder engagement and education; efficient compliance management practices; compliance sustainability; best practices; and a culture of compliance.

As part of the project roll-out, Hydro Ottawa conducted a competitive RFP process in Summer 2016 to obtain expert third-party services and support for the project. Following selection of a proponent, Hydro Ottawa collaborated with the external consultant throughout Fall 2016 to map out the processes utilized under the existing program and to conduct interviews with relevant internal stakeholders engaged in compliance activities. As of the end of 2016, the development and finalization of an enhanced regulatory compliance program was scheduled to occur in early 2017, followed by implementation of a pilot project as a test case for the new program.



(ii) 8% Provincial Rebate

In its September 2016 Speech from the Throne, the government announced plans to rebate an amount equal to the provincial portion of the Harmonized Sales Tax ("HST") for residential, farm, and small business electricity consumers, beginning January 1, 2017. Enabling legislation – *Ontario Rebate for Electricity Consumers Act, 2016* – was then passed in October 2016.

Notwithstanding provisions in the legislation that authorized electricity vendors to adapt their invoices no later than July 1, 2017, Hydro Ottawa worked diligently to prioritize implementation of the 8% Provincial Rebate in advance of the January 1, 2017 effective date. Hydro Ottawa ensured that the first invoices issued to applicable customers for electricity consumed in 2017 included the rebate. The company also sought to raise customer awareness of the rebate through the addition of a dedicated page on its public website; distribution of a bill insert; communications shared through on-envelope, on-bill, and on-hold messaging; and social media outreach.¹⁴

In addition, Hydro Ottawa supported the effective implementation of the 8% Provincial Rebate through direct participation in the Electricity Rate Mitigation Working Group formed by the Ministry of Energy to solicit input on operational and technical matters related to the program.

(iii) Climate Change Action Plan Working Group

In October 2016, Hydro Ottawa established an inter-departmental Climate Change Action Plan Working Group ("CCAP-WG"). The formation of this group was driven by recognition of (i) the priority status of the Climate Change Action Plan ("CCAP") within the Government of Ontario's public policy agenda, and (ii) the significant impact that the CCAP could have on electricity distributors and their customers.

The CCAP-WG serves as a forum for the exchange of information and proposal of Hydro Ottawa's engagement strategies regarding the implementation of the CCAP and cap and trade program. The CCAP-WG is comprised of representatives from divisions across the company which will be impacted by the CCAP's various programs, and/or which will play a leadership role in preparing and steering the company's engagement therein. The group's membership features a balanced mix of competencies, skill sets, and seniority.

Through the CCAP-WG, Hydro Ottawa believes that it will be well-positioned to support the implementation of, and be responsive to, an over-arching policy priority of the Government of Ontario.

In addition, as noted on pages 11-12, in 2016 Hydro Ottawa sought to assist Key Account customers in understanding and preparing for potential obligations and opportunities associated with the establishment of a cap and trade program in Ontario.

(iv) Conservation Results & Planning

In 2016, Hydro Ottawa achieved over 59 GWh in energy savings through its CDM programs. In addition, as part of the 2016 year-end results, the IESO adjusted the company's 2015 results upwards by 15.5 GWh. Hydro Ottawa's combined results for 2015-2016 represent achievement of 33% of the company's allocated target under the province's Conservation First Framework ("CFF"). In terms of overall energy savings on a kWh basis, Hydro Ottawa ranked 5th amongst Ontario distributors based on 2015-2016 results.

¹⁴ <https://hydroottawa.com/8percent> (Accessed September 11, 2017).



Several large CDM projects were initiated and went in-service in 2016, but will not be eligible for attribution until 2018 and 2019. Many of these projects involve the installation of Combined Heat and Power ("CHP") facilities on the premises of large institutional customers. These projects serve as excellent examples of how Hydro Ottawa continued to incorporate CFF obligations into its planning and investment decisions. The company actively supported these customers in exploring and ultimately deploying on-site CHP units. The \$2 million incentive provided by Hydro Ottawa to one customer covered 17% of their project cost. This customer's annual consumption is set to be reduced by 10.1 GWh, which represents approximately 40% of their total electricity usage.

These projects were executed under the auspices of Hydro Ottawa's largest conservation program – the Save on Energy Retrofit Program. Established in 2007, the program includes lighting upgrades, motor and heating retrofits, and updated control and automation systems in order to increase energy efficiency. This program benefits approximately 1,000 commercial customers each year and was responsible for 27.6 GWh of the energy savings achieved by Hydro Ottawa in 2016 (representing 47% of overall savings). On the residential side, the company's most successful program in 2016 was the Save on Energy Coupon Program, which delivered 15 GWh in savings.

In addition to the energy savings achieved, 2016 featured a series of enhancements to Hydro Ottawa's CDM marketing campaigns and sales tools.

With respect to marketing, changes were driven by findings that the company had covered the "low hanging fruit" across its customer base and that a recalibration of messaging was required. In turn, Hydro Ottawa crafted a lifestyle-inspired theme – "Save Your Energy for What Matters" – that transitioned away from a transactional engagement with customers to a more personal focus. Among the positive results achieved through this campaign has been tremendous growth in customer redemption of LED coupons.

Regarding improved sales tools, Hydro Ottawa modified the previous version of the Retrofit Program lighting worksheet and replaced it with a more customer- and contractor-friendly tool. With the updated tool, information is inputted once, with subsequent self-population of other applicable fields which also rely on that information. The ultimate output of the tool is a single page that enables customers to make an informed decision on a potential project, with financial impacts, incentive opportunities, and multi-year cash flows all clearly presented. What's more, the output page can serve as the customer's application to the program. Among the metrics of the success of this improved tool are increased sales by lighting contractors and adoption of the tool by electricity distributors across Ontario, with whom Hydro Ottawa has shared the tool.

(v) Low-Income Customer Support

Hydro Ottawa is committed to assisting low-income customers through various programs and actions. In 2016, 10,081 Hydro Ottawa customers collectively received over \$2 million in financial assistance through the Ontario Electricity Support Program ("OESP"), 482 customers accessed emergency relief through the Low-Income Energy Assistance Program ("LEAP"), and 588 households participated in the Home Assistance Program ("HAP").

Through engagement with government and other stakeholders, Hydro Ottawa continued to highlight the need for targeted enhancements to these programs, especially in relation to improving the processes for identifying and enrolling eligible customers. In addition, the



company sought to raise customer awareness of these programs through such actions as the inclusion of information for low-income customers on the home page of its public website, creation of a page specific to low-income programs, on-bill and on-hold messaging, and outreach via social media.

(vi) Integration of Renewable Energy Generation

Hydro Ottawa has remained active in facilitating the connection of renewable energy facilities since the passage of the *Green Energy and Green Economy Act* in 2009 and the predecessor Renewable Energy Standard Offer Program 2006. In 2016, Hydro Ottawa connected 1270.33 kW of embedded generation, with embedded generation in the company's service territory now totaling 71.8973 MW. Connections in 2016 were comprised of 32 embedded generation facilities totaling 1216.03 kW, along with 54.3 kW of net metered solar generation.

(vii) Long-Term Load Transfers

Hydro Ottawa was pleased to be party (along with Hydro One Networks) to the first joint application by distributors to eliminate long-term load transfer ("LTLT") arrangements, in accordance with amendments to the Distribution System Code from 2015 which established a June 21, 2017 deadline for elimination of all LTLTs. In April 2016, Hydro Ottawa and Hydro One filed an application to transfer 309 Hydro One customers to Hydro Ottawa, and to transfer 44 Hydro Ottawa customers to Hydro One. The company worked collaboratively with Hydro One to coordinate proactive communications to customers and to make the transition as seamless as possible. With only one exception, all LTLT customers were successfully transitioned by the end of 2016.

(viii) Carbon 613

In step with its commitment to environmental sustainability, in 2016 Hydro Ottawa became a charter member of Carbon 613. The Carbon 613 network is a made-in-Ottawa, target-based sustainability program that supports local businesses in setting and achieving sustainability goals, while enhancing their competitive advantage and stimulating the low-carbon economy. The program is one of eight such programs across Ontario.

Members of Carbon 613 reduce their greenhouse gas ("GHG") emissions by setting a baseline and GHG-reduction target, taking action to achieve that target, tracking and reporting annual emissions, and publicly disclosing emissions data.

(ix) Federal PCB Regulations

In 2008, Environment and Climate Change Canada ("ECCC") finalized regulations that established specific deadlines for ending the use of polychlorinated biphenyls ("PCBs") above a prescribed concentration and mandated the removal of all equipment containing PCBs.

Understanding the severity of environmental and health impacts of PCBs, Hydro Ottawa initiated a vigorous and aggressive testing and replacement program of all suspect equipment following issuance of the regulations. Hydro Ottawa has been able to meet all timelines set out by ECCC. As of the end of 2016, the company had achieved 95% progress in its PCB and equipment removal plans, with the expectation of completing all activity well in advance of the December 31, 2025 deadline.

(x) Collaboration with Natural Resources Canada on Electric Vehicles Study

In March 2016, Hydro Ottawa became a partner in a research project initiated by Natural Resources Canada ("NRCan"). The project was launched to increase learning around the



impact of direct current fast charging (“DCFC”) electric vehicle (“EV”) chargers on local distribution networks. Hydro Ottawa committed in-kind support to the project. As of the end of 2016, a project charter had been established, with the project set for completion in 2017.

(xi) Regional Infrastructure Planning

Hydro Ottawa has actively participated in and supported the IESO-led Regional Infrastructure Planning (“RIP”) process to develop short- and long-term investment plans based on system needs in the Greater Ottawa region. Hydro Ottawa has also engaged community membership through the Local Advisory Committee (“LAC”) and has identified opportunities for enhancing community engagement through the LAC.

(xii) Participation in OEB, Government & IESO Working Groups

Hydro Ottawa strives to support the development and implementation of robust public policy that will enable movement towards a smart, sustainable energy future for Ontario. As evidence of this commitment, Table 1 below identifies representatives from the company who constructively contributed to the formulation of effective regulations and policies through formal participation on OEB, government, and IESO working groups in 2016.

Table 1 – Hydro Ottawa Participants in OEB, Government & IESO Working Groups

Name	Title	Working Group	Government/Sector Organization
Raed Abdullah	Distribution Engineer	Smart Grid	Ministry of Energy
Sally Barakat	Manager, Meter to Cash Support	Electricity Rate Mitigation	Ministry of Energy
		Smart Metering Entity (SME) Licence Order	Independent Electricity System Operator
Bruce Bibby	Manager, Conservation Programs	Conservation First Implementation Committee	Independent Electricity System Operator
Linda Bruce	Supervisor, Conservation	Residential Working Group	Independent Electricity System Operator
Mark Fernandes	Chief Information & Technology Officer	Cyber Security Steering Committee – Protecting Privacy of Personal Information and the Reliable Operation of the Smart Grid in Ontario (EB-2016-0032)	Ontario Energy Board



Name	Title	Working Group	Government/Sector Organization
Shane Labrash	Program Officer, CDM	Business Working Group – Lighting Sub-group	Independent Electricity System Operator
Jojo Maalouf	Manager, IT Security	Cyber Security Working Group – Protecting Privacy of Personal Information and the Reliable Operation of the Smart Grid in Ontario (EB-2016-0032)	Ontario Energy Board
Casey Malone	Manager, Distribution Policies & Standards	Pole Attachment Working Group	Ontario Energy Board
Matthew McGrath	Supervisor, Asset Management	Regional Planning and Cost Allocation Review (EB-2016-0003)	Ontario Energy Board
Joel McGuire	Supervisor, Data Systems Metering	Free Overnight Charging for Electric Vehicles	Ministry of Energy
Chantal Nault	Manager, Systems Projects	Financial Assistance Working Group	Ontario Energy Board
Michel Provost	Manager, Billing, Collections & MDS	Electricity Rate Mitigation	Ministry of Energy
		Smart Metering Entity Steering Committee	Independent Electricity System Operator
		Smart Metering Entity (SME) Licence Order	Independent Electricity System Operator
		Financial Assistance Working Group	Ontario Energy Board
Charles Zaloum	Supervisor, Conservation	Business Working Group	Independent Electricity System Operator



4. Financial Performance

"Utilities are expected to demonstrate sustainable improvements in their efficiency and in doing so will have the opportunity to earn a fair return. The OEB will monitor the financial performance of each utility to assess continuing financial viability and to determine whether returns are excessive. Utilities have a choice of rate-setting methods to meet their particular needs. Additional tools are available to support infrastructure investment. Utilities must report comprehensive and consistent information, allowing for comparisons over time and across utilities. The OEB will act on its obligations to ensure a financially viable sector where performance indicates that a regulatory response is needed."

This section of the Annual Summary highlights how Hydro Ottawa is (a) creating sustainable growth in its business and earnings; and (b) achieving outcomes that are aligned with the RRF's Financial Performance category.

As noted on pages 4-5, this section does not include information on capital spending undertaken by Hydro Ottawa. Hydro Ottawa is obligated to submit annual reports to the OEB on its actual capital spending on a program level. Please consult these annual reports for information on the progress in Hydro Ottawa's capital expenditures against its DSP.

(i) Financial Results

By several metrics, Hydro Ottawa achieved strong financial results in the first year of its approved Custom IR rate plan. For example, distribution revenue increased \$7.2 million (or 4%) from 2015. The company also increased its net income by \$0.6 million over the previous year, for a total of \$34.3 million. In addition, the company's liquidity ratio increased to 1.19 – the highest level in the last five years. Finally, the actual return on equity ("ROE") realized was 9.8%.¹⁵

With respect to Hydro Ottawa's debt to equity ratio, for the past three years the company has carried a higher ratio as a result of the significant capital expenditure program required to replace aging distribution system infrastructure. Although Hydro Ottawa is more highly leveraged than the deemed capital structure, the company has been able to keep its cost of borrowing very low due to favourable interest rates on its long-term debt.

(ii) Dividend & Updated Dividend Policy

Hydro Ottawa's strong financial performance in 2016 generated a dividend for the enterprise's sole shareholder – the City of Ottawa – of \$20.6 million.¹⁶

This dividend was significant for several reasons. First, it marked the largest dividend payment in the company's history. Second, it was the first dividend executed pursuant to a new dividend policy approved by the Shareholder in June 2016. The scope of the amended dividend policy applies to regulated net income only. Annual dividends will be the larger of (i) 60% of the net income of Hydro Ottawa (i.e. the local distribution utility within the company's corporate structure), or (ii) \$20 million.

¹⁵ The 9.8% ROE calculation reflects the impacts of Lost Revenue Adjustment Mechanism from the previous fiscal year, consistent with OEB and IESO reporting requirements.

¹⁶ The annual dividend paid by Hydro Ottawa is based on the previous year's results. Accordingly, the dividend based on 2016 results was paid in 2017.



Both the dividend payment and amended policy reflect the robust positioning of the company for sustainable long-term growth and performance.



III. Conclusion

As catalogued above, 2016 marked the first year in which Hydro Ottawa embarked on the parallel five-year journeys of an OEB-approved rate plan and a refreshed corporate strategic plan. Both are anchored in consistent and mutually reinforcing objectives.

Hydro Ottawa trusts that the preparation of this Annual Summary, along with the content included herein, will serve to underscore the company's robust commitment to incorporating RRF principles across its business operations. It is hoped that the range of initiatives captured in this Annual Summary will be viewed as evidence that Hydro Ottawa has undertaken a strong start in seeking to deliver upon the RRF's objectives and that the company will remain firmly guided by the expectations of the RRF over the course of the next few years – and beyond.

Hydro Ottawa is pleased to present this Annual Summary and looks forward to preparing successive versions for each of the years in its 2016-2020 Custom IR term.



Version History Tracking

Version	Author	Date Revised	Description of Changes
Version 1	Regulatory Affairs	September 2017	N/A – initial release
Version 2	Regulatory Affairs	October 2019	Revisions to section II., 4. Financial Performance, (ii) Dividend Payment (addition of clarifying language).
Version 3	Regulatory Affairs	December 2019	Revisions to section II., 2. Operational Effectiveness, (iv) Smart Grid Deployment (refinement of project descriptions) and (xii) Fleet Wi-Fi & GPS Installation (addition of clarifying language).



2017 Annual Summary

Achieving Ontario Energy Board Renewed Regulatory Framework Performance Outcomes

Prepared by: Hydro Ottawa Limited

Date: December 2018

(Revised: December 2019)



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I. Overview

1. Background – Hydro Ottawa’s 2016 Summary of Initiatives Aligned with the RRF

In September 2017, Hydro Ottawa Limited (“Hydro Ottawa”) finalized a document entitled *2016 Annual Summary: Achieving Ontario Energy Board Renewed Regulatory Framework Performance Outcomes*. The document summarized initiatives at Hydro Ottawa that were launched, were ongoing, or were completed during 2016, and that aligned with the core performance outcomes enshrined in the Ontario Energy Board’s (“OEB”) Renewed Regulatory Framework (“RRF”).

As stated therein, the value and purpose of that document was the following:

1. Support the preparation of the annual rate adjustment application and annual report on capital spending, which Hydro Ottawa is obligated to submit to the OEB under the terms of the settlement agreement governing its Custom IR rate plan;
2. Support the preparation of the next Custom IR application that Hydro Ottawa plans to file, for the 2021-2025 period;
3. Help foster a culture of continuous improvement within Hydro Ottawa; and
4. Help ensure that the execution of the company’s business plans and capital investment programs over the course of its Custom IR term are guided by the expectations and goals embedded in the RRF.

The aforementioned document (hereinafter referred to as the “2016 RRF Summary”) also signaled Hydro Ottawa’s intention to prepare an annual summary of a similar nature for each of the five years in its 2016-2020 Custom IR term.

2. Hydro Ottawa’s Second Annual RRF Summary (For 2017 Initiatives)

Hydro Ottawa is hereby pleased to present the second version of this annual summary (hereinafter referred to as the “2017 RRF Summary”). The pages below serve as a catalogue of Hydro Ottawa’s initiatives from the year 2017 that were in direct alignment with the OEB’s RRF performance categories.

In order to avoid duplication and optimize the efficiency of review, this 2017 RRF Summary does not duplicate any of the background sections included in the 2016 RRF Summary – namely, the detailed information provided on the OEB’s RRF and four performance categories, as well as on Hydro Ottawa’s five-year Custom IR rate plan and corporate strategic direction.

In addition, for those initiatives which were either launched or were underway in 2016, and which witnessed a milestone, deliverable, or culmination in 2017, this 2017 RRF Summary likewise does not offer a detailed description of that initiative. Instead, only the incremental information of relevance for 2017 is highlighted.



Similar to the 2016 RRF Summary, the 2017 RRF Summary is organized around the four principal performance outcomes enshrined under the RRF: (i) Customer Focus; (ii) Operational Effectiveness; (iii) Public Policy Responsiveness; and (iv) Financial Performance.

Moreover, it was equally Hydro Ottawa's intent in preparing the 2017 RRF Summary that the document be suitable for submittal to the OEB at a later date, as appropriate.

In sum, Hydro Ottawa trusts that the 2017 RRF Summary reflects the company's commitment to further entrench RRF principles throughout its operations and business, to execute its corporate plans and capital investment programs in accordance with RRF objectives, and to continually align its interests with those of its customers.



II. Hydro Ottawa Initiatives by RFF Performance Outcome Category

1. Customer Focus

“Customer engagement is now an explicit and important component of the regulatory framework. Utilities are expected to develop a genuine understanding of their customers’ interests and preferences and reflect those interests and preferences in their business plans. Utilities are expected to demonstrate value for money by delivering genuine benefits to customers and by providing services in a manner which is responsive to customer preferences.”

As noted in Hydro Ottawa’s 2016 RRF Summary:

- Hydro Ottawa’s *2016-2020 Strategic Direction* is anchored in the imperative that the company will seek to put the customer at the centre of everything it does.
- Hydro Ottawa’s vision is that by 2020, the customer experience will be driven by choice – the customer’s choice. Customers will be given options to allow them to be in control and to interact with Hydro Ottawa how and when they want.
- Hydro Ottawa has crafted a five-year Customer Experience Roadmap, the timeframe of which is aligned with that of the company’s Strategic Direction and Custom IR term. It serves as an integrated, “whole of company” roadmap for Hydro Ottawa’s customer experience journey.

The initiatives highlighted in this section of the 2017 RRF Summary illustrate the progress being achieved by Hydro Ottawa in (a) delivering on the commitments in its Custom IR application and Customer Experience Roadmap, as they relate to enhanced customer engagement across a range of touchpoints; and (b) achieving outcomes that are aligned with the RRF’s Customer Focus category.

As a preface to the information presented below, Hydro Ottawa would note that its progress and leadership in service excellence received external recognition in 2017. CS Week is the largest utility customer service conference in the world, with over 2,000 delegates from more than 300 utilities. In May 2017, CS Week recognized Hydro Ottawa with an Innovation in Digital Customer Engagement Award. Examples of the types of activities which formed the basis for receipt of this award are outlined in the sections below.

(i) Enterprise Communications Platform

Major milestones achieved over the course of 2017 in the implementation of the core components of this initiative were the following:

a. Customer Contact Centre Enhancements

Arguably one of the most significant accomplishments achieved by Hydro Ottawa in 2017 in any of the RRF performance categories was the migration of the company’s Customer Contact Centre to a new service provider – Optima Communications, which was selected following a rigorous procurement process.¹

¹ Optima is a seasoned service provider in many sectors, including the utility sector.



Following more than 12 months of meticulous planning and preparation, the transition was executed on March 6, 2017.

Under this new arrangement, Hydro Ottawa and its customers are benefitting through improved customer service, lower costs, and operational efficiencies. For example:

- Customer inquiries are answered more efficiently;
- Additional agents are made available during emergency events;
- System adjustments are enabling greater adaptability during periods of high call volume;
- Translation services are offered in up to 120 languages (alongside service in both official languages);
- Long distance charges to the Contact Centre have been eliminated; and
- A range of advanced self-serve features are available to customers:
 - omni-channel capabilities (including phone and email) allowing customers to communicate with Hydro Ottawa through the channel of their choice;
 - “Virtual Hold” Call Back Assist, enabling customer call back without the need to remain on the line;
 - “Voice ID” capability, which uses voice biometrics authentication to enable customer access to personal account information;
 - refreshed Interactive Voice Response (“IVR”) functions granting access to billing and payment self-serve options, and allowing callers to “press or say” options, rather than relying solely on key pads; and
 - 24/7 availability of such information as account balance, bill due date, amount of last payment, and date of last payment received via IVR, bypassing the need to speak with a service agent.

In addition, the transition enabled Hydro Ottawa to expand the Contact Centre’s hours of operation. On July 29, 2017, Hydro Ottawa began offering service on Saturdays, from 9:00 am to 3:00 pm, becoming one of the first local distribution companies (“LDCs”) in Ontario to open to customers on Saturdays.

Finally, this initiative contributed significantly to the substantial reduction in Operating, Maintenance and Administration (“OM&A”) costs achieved by Hydro Ottawa in 2017. The company estimates that migration of the Customer Contact Centre yielded approximately \$400,000 in OM&A savings in 2017, and will produce a similar level of annual savings going forward.

b. Outage Communications²

In addition to the new customer self-serve IVR enhancements, Hydro Ottawa made a number of customer experience improvements to its outage communications system in 2017.

When calling to report an outage, customers will receive a more streamlined experience. They will hear a consistent “voice” across Hydro Ottawa’s system and will be able to speak to the system in a natural language format.

² This initiative is one of seven “material investments” under the General Plant category that are included in Hydro Ottawa’s 2016-2020 Distribution System Plan (“DSP”).



From a Hydro Ottawa perspective, the upgraded outage communications IVR solution will offer a number of efficiency gains. The number of phone calls that the system can handle simultaneously has been almost doubled, with near real-time logging of outages through the IVR rather than the previous batch file transfer process. Over time, this will translate into faster processing of outage reports and more expedited power restoration times. Further, the new system will allow faster daily customer telephone number updates rather than the weekly updates of the past.

Concurrently with these changes and with the migration to a new Customer Contact Centre, Hydro Ottawa transitioned its live outage call answering to its new Contact Centre provider – Optima Communications. This streamlines the previous dual contact centre vendor solution to one vendor. The new vendor will provide a greater number of agents for customer outage call answering, thereby increasing customer service while reducing customer reporting timelines.

(ii) Hydro Ottawa Mobile Application

In May 2017, Hydro Ottawa introduced a mobile app that allows residential customers to track their electricity usage and costs, to access their billing information, and to find out about current power outages. The app acts as a personal energy advisor to customers, delivering timely and relevant insights to the palm of their hands. Customers receive alerts and notifications with personalized saving tips, neighbourhood comparisons, and cost projections. Unique and industry-leading, this bilingual app (English & French) is the first in North America to offer all of these features in one, easy-to-use, and customizable tool.

Key features of the app include the following:

- Access to data – breakdown of customer electricity usage and costs (overall and disaggregated for individual appliances), as well as trends in usage from bill-to-bill;
- Useful alerts – customer receipt of notifications about usage along with insights to help reduce consumption;
- Neighbourhood comparison – ability for customers to view consumption relative to similar homes in their neighbourhood;
- Cost projections – avoiding bill surprises with a daily cost projection for electricity charges;
- Account information – access to billing history; and
- Outage map – access to latest information on power outages.

Hydro Ottawa spent approximately two years customizing the mobile application in partnership with Bidgely, a California-based energy services and analytics company with extensive expertise in behind-the-meter, appliance-level consumption information.³ Bidgely enables utility customers to monitor and manage their household energy use with the help from a machine-learning algorithm that recognizes appliances.

Customers are able to download the app free-of-charge onto Apple and Android mobile devices through iTunes and the Google Play Store.

By the end of 2017, more than 8,500 residential customers had downloaded the app. An early, recurring trend observed by Hydro Ottawa was that downloads of the app spiked during

³ <https://www.bidgely.com/>.



outages, suggesting that the outage map and outage-related information provided by the app are popular features amongst customers.

Hydro Ottawa is planning a focused marketing and education campaign in 2018 to raise awareness of the app and promote its usage and benefits.

(iii) Bill Re-Design

In response to customer feedback, Hydro Ottawa initiated a project in November 2015 to improve the format and design of customer bills, with the goal of developing a bill that would better fulfill customers' expectations for clarity and personalized communications.

The first two of the four phases of this project were completed in 2016 (i.e. performance of external and internal research, followed by a customer survey based on the research results, as well as preparation of specific design concepts for both bill print and online bills).

The subsequent phases (assessment of design proposals, followed by adoption and roll-out) were planned for completion by the end of 2017. However, this initiative was put on hold in early 2017 in order to prioritize the implementation of requirements associated with the Government of Ontario's Fair Hydro Plan ("FHP"). Thereafter, this project was again delayed, following the receipt of notification from the Ministry of Energy in June 2017 that the Ministry would be launching a Redesign Action Plan ("RAP") to simplify the regulatory framework governing bill presentment for electricity invoices.

In order to ensure successful implementation of the modified bill presentment framework (including requirements for a "dynamic message" on customer invoices to indicate savings achieved as a result of the FHP), Hydro Ottawa ultimately decided to defer execution of its bill re-design project until a new bill print provider had been selected through a competitive procurement process. The contract with Hydro Ottawa's provider was scheduled to expire on May 24, 2018. Accordingly, the remainder of 2017 was spent undertaking the necessary steps to prepare for issuance of a Request for Proposal in advance of the contract expiration.

(iv) Community Engagement

Over the course of 2017, Hydro Ottawa participated in more than 465 community events – a 32% increase over 2016.⁴ The company's community activities included energy-related educational programs in schools (with over 24,000 students educated on electricity safety, conservation, and renewable energy), a Conservation Team that attends diverse community, corporate and retail events, and a wide range of other tours and presentations. Following a successful inaugural event in 2016, Hydro Ottawa hosted its second annual Community Forum, in which the company provided updates on Hydro Ottawa's latest initiatives and programs to community associations, city councillors, and community housing representatives.

In addition, Hydro Ottawa significantly expanded its program and practices for consulting customers who were set to be affected by major projects that were designed to improve infrastructure and service in their community. A main feature of these consultations was project-specific open houses, which are typically conducted for large complex cable replacement, pole replacement, voltage conversion, and substation build/rebuild projects. Whereas Hydro Ottawa held five such public open houses in 2016, the company increased this number to 14 in 2017. Company attendance at these events typically included the project manager, planning

⁴ Of note, the number of community events held in 2016 (351) represented a 34% increase over 2015.



engineers, a design supervisor, additional technical support as required, staff from the company's media and public affairs department, and a Conservation and Demand Management program representative.

Hydro Ottawa likewise worked closely with the City of Ottawa to coordinate project work around the "Canada 150" sesquicentennial celebrations and to minimize traffic impacts on arterial roads. This collaboration resulted in the avoidance of any disruption to the organization of public events, while ensuring smooth delivery of Hydro Ottawa's capital program projects.

The company's online presence and social media engagement also experienced an uptick in 2017. Total visits to the company's webpage (<https://hydroottawa.com>) increased by 57% over 2016, with significant year-over-year growth in subscribers across all social media platforms as well (Facebook, 51%; LinkedIn, 40%; and Twitter, 21%).

(v) Customer Connectivity

Continuous improvement in the quality and quantity of web-based customer content and self-serve offerings to customers remained a priority for Hydro Ottawa in 2017.

A significant new feature introduced in January 2017 was a social login capability for the company's website. This update allows increased customer choice and convenience as customers can now sign-in to their online MyAccount using email, Facebook, or Google. As part of this revamped logon process, and in light of heightened cyber security concerns worldwide, Hydro Ottawa asked customers to strengthen their passwords in order to help protect their data. The new login process will serve as the gateway enabling Hydro Ottawa to offer a number of new and improved service offerings online.

Other action included the implementation of a new customer self-serve Automated Payment Plan management tool. Built within MyAccount, this new tool is fully mobile-friendly and addresses previous technical challenges experienced when customers were looking to register or make changes to their Autopay and/or Equal Monthly Payment Plans. Available 24/7, the new solution is interactive and provides a smoother, integrated customer experience. In addition to the customer benefits, Hydro Ottawa will benefit from 50% less manual effort and estimated operational cost savings of up to \$40,000 per year.

In addition, Hydro Ottawa continued to promote online billing among its customer base. The company's annual "Go Paperless" Campaign – in which the company makes a \$5 donation to charity for every customer that signs up for online billing or automated payments – resulted in the registration of over 17,000 customers and a donation of \$88,465 to the CHEO Foundation to enable the purchase of new equipment for patients in neonatal intensive care. Hydro Ottawa continued to enjoy the highest online billing participation rate of any utility in Ontario, with 134,761 customers enrolled – representing more than 40% of the total customer base. With the growth in online billing participation from 2017, annual cost savings are expected to increase slightly from 2016 levels (from \$1.3 million to \$1.4 million).

There was also an uptick in 2017 in the total number of customers registered for MyAccount. By the end of the year, 167,114 accounts were registered, representing approximately 50% of all customers and an increase of 23% from 2016's total of 135,567 accounts.



(vi) Customer Satisfaction Survey

Since 2004, Hydro Ottawa has engaged a third party to conduct annual customer satisfaction surveys. The survey questions cover a wide variety of relevant topics, including overall satisfaction with Hydro Ottawa, reliability, customer service, power outages, billing, cost of electricity, and corporate image. Feedback from these surveys is incorporated into Hydro Ottawa's planning process, and ultimately forms the basis of plans which address customer needs and service offerings.

In 2016, customers stated that an inability to pay their bill was a real concern. In 2017, a number of government initiatives were implemented to address affordability, such as the Fair Hydro Plan and increased low-income assistance. Nevertheless, 52% of customers surveyed indicated that lower rates would be viewed as a service improvement.

In 2017, Hydro Ottawa's overall customer satisfaction level – 90% – experienced a marked increase over 2016 (81%). Hydro Ottawa believes that much of this shift can be attributed to implementation of the new programs discussed above (e.g. website enhancements, online self-service offerings, and the new mobile app).

In the survey, areas in which Hydro Ottawa scored above the provincial benchmark were the following (Hydro Ottawa's score is listed first, followed by the Ontario average):

- Provides consistent reliable power (93% vs. 89%);
- Electrical safety (89% vs. 87%);
- Outage response (88% vs. 85%);
- Reliability that meets customer expectations (91% vs. 86%);
- Delivers on service commitments (87% vs. 84%);

Areas that Hydro Ottawa has flagged for improvement, which include those in which the company's customer satisfaction scores fell below the Ontario benchmark, were the following (similar to the list above, Hydro Ottawa's score is listed first, followed by the Ontario average):

- Adapts well to changes in customer expectations (71% vs. 69%);
- Operates a cost-effective electricity system (65% vs. 60%);
- Provides good value for money (66% vs. 57%);
- Cost of electricity is reasonable when compared to other utilities (58% vs. 52%); and
- Provides information to help customers reduce their costs (79% vs. 74%).

(vii) Public Awareness of Electrical Safety

In 2017, Hydro Ottawa continued its strong promotion of electrical safety awareness through established channels such as the company's website, social media, education programs for elementary schools, on-bill messages, participation in "Dig Safe Week" events, and the organization of a specific forum on safety with contractors. In addition, the company augmented its traditional toolkit through the launch of a focused public safety video campaign (<https://hydroottawa.com/community/educational-resources/electrical-safety>). Entitled "Smart as a Fox," the campaign featured a series of videos reinforcing simple, but critical, steps to stay safe near electrical equipment.

In addition, Hydro Ottawa safety specialists performed 330 visits to work sites in 2017. Of these, 204 visits were to the work sites of Hydro Ottawa crews, while 126 visits were to the work sites



of contractors. What's more, 34 unplanned visits were made to non-Hydro Ottawa work sites, which were typically the result of a Hydro Ottawa employee observing a potential hazard and reporting it for follow-up attention. These visits focused on making construction supervisors and workers aware of the safe limits of approach to overhead powerlines, in situations where construction activity might place workers or members of the public at risk of electrical contact.

In 2017, the company's Public Safety Awareness Index remained constant at 2015 and 2016 levels (70%). Hydro Ottawa will assess these results and contemplate additional program enhancements for 2018.

(viii) Customer Specific Reliability Pilot with OEB

In 2015, the OEB announced an initiative to implement Customer-Specific Reliability Measures ("CSRM") and reporting requirements. The OEB agreed with findings of the related working group that it would be beneficial to undertake a series of pilot projects with a number of willing electricity distributors. Hydro Ottawa volunteered to participate, with the company's project focused on implementing the tracking/measurement of CSRM for its full service territory using data logged in its Outage Management System ("OMS"). The focus of the pilot was on assessing the level of effort and identifying business processes required to assess, maintain, and improve the accuracy of the CSRM data being collected and the tools required to do so.

The pilot took place over the course of June 2016 to April 2017. A key outcome yielded through the pilot was improvement in the utilization of OMS for reliability reporting. Hydro Ottawa found that, through the integration of reporting processes into OMS, the system will provide benefits by integrating data stored from several separate systems into a single repository which will enable more detailed analysis into customer specific performance.

Overall, it was determined that the tools and processes in place through OMS for reporting reliability information were adequate for Hydro Ottawa's needs. With over 99% of Hydro Ottawa's customers being tied to a premise location captured in the company's Geographic Information System ("GIS"), the OMS is set to remain Hydro Ottawa's preferred approach for providing accurate customer specific data.

However, it was also found that there remain data quality issues to enable reporting at the required confidence level. In order to continuously improve data accuracy and reliability, Hydro Ottawa intends to execute process improvements and training. Likewise, the pilot demonstrated that due to the volume of records involved in system CSRM data, offline post processing to address errors and omissions in the data was not feasible.

Hydro Ottawa will continue to enhance its processes to use the OMS in order to report accurate customer-specific outage data.



2. Operational Effectiveness

“Utilities are expected to demonstrate ongoing continuous improvement in their productivity and cost performance while delivering on system reliability and quality objectives. The OEB will assess performance trends and look for evidence of strong system planning and good corporate governance. The OEB will use benchmarking to assess a utility’s performance over time and to compare its performance against other utilities. Utilities are expected to demonstrate value for money by presenting plans for delivering services that meet the needs of their customers while controlling their costs.”

This section of the Annual Summary highlights how Hydro Ottawa is (a) delivering on the commitments in its Custom IR application regarding continuous improvement, productivity initiatives, and cost performance; and (b) achieving outcomes that are aligned with the RRF’s Operational Effectiveness category.

Consistent with the approach taken in the 2016 RRF Summary, this section of the 2017 RRF Summary does not include information on capital spending undertaken by Hydro Ottawa, in accordance with its OEB-approved Distribution System Plan (“DSP”). Hydro Ottawa is obligated to submit annual reports to the OEB on its actual capital spending on a program level, based on three categories: System Access; System Renewal/System Service; and General Plant. Please consult these annual reports for information on the progress in Hydro Ottawa’s capital expenditures against its DSP.

It should be noted that the combined savings achieved by the productivity initiatives outlined below and the activities identified in the section above on Customer Focus contributed to a decrease of almost \$1 million in Operating, Maintenance and Administration (“OM&A”) costs from 2016. Although Hydro Ottawa’s OM&A costs typically increase year-over-year due to inflation and the rising cost of doing business, continuous efforts to increase productivity and efficiency resulted in a reduction of OM&A costs to below 2015 levels. These programs demonstrate Hydro Ottawa’s commitment to continuous improvement in productivity and cost performance, while simultaneously maintaining the ability to deliver increased system reliability and service quality to its customers.

(i) Enterprise Resource Planning Project⁵

As detailed in the 2016 RRF Summary, Hydro Ottawa initiated a project to replace its centralized enterprise resource planning (“ERP”) system to manage core functions related to finance, accounting, inventory and supply chain management, work order management, and human resources.

Over the course of 2017, numerous milestones were achieved in preparing for the ultimate deployment of the upgraded ERP system – especially in relation to employee training and change management.

As of the end of 2017, Phase 1 of this project (dubbed “Project Transformer”), encompassing ERP system upgrades for finance and human resource business units, was set to go live and be available to all employees by early January 2018.

⁵ The finance system upgrade (JDE Application Upgrade) that is included under the scope of this initiative is one of the seven material General Plant investments included in Hydro Ottawa’s 2016-2020 DSP.



(ii) Mobile Workforce Management⁶

Mobile Workforce Management ("MWM") is an automated scheduling and dispatch tool designed to optimize the scheduling and routing of work and crews to increase productivity and enhance customer service.

Following the first full year of MWM implementation in 2016, Hydro Ottawa expanded use of the tool in 2017 to its inspections group and forestry contractors, as well as to contract service trucks. In total, as of the end of 2017, 33 field crews were operating on the MWM system (representing an increase of 15% in the number of crews for whom the tool has been deployed).

One particular area in which the use of MWM matured and strengthened considerably in 2017 was the offering of a wider variety of appointment windows to customers. Hydro Ottawa was able to meet over 90% of all appointments booked with customers, with specific appointment arrival windows being as narrow as 30 minutes.

Additional groups within the company that will be targeted for MWM capability in 2018 include remaining plant and stations inspection resources.

(iii) Facilities Renewal Program⁷

With the approvals secured in its 2016-2020 Custom IR rate plan, Hydro Ottawa has embarked on a Facilities Renewal Program. This program will serve as a key modernization and operational efficiency initiative that will see the company consolidate administrative functions; relocate from obsolete, end of life facilities in 2019; improve productivity; enhance service through more strategically-located and better-equipped facilities; modernize the work environment and provide for future growth; promote sustainability, innovation, and flexibility; and enable Hydro Ottawa to be more customer-focused.

In 2017, Hydro Ottawa broke ground on the construction of its new East and South Campuses, and as of the end of the year, was proceeding on schedule with its project partners and contractors. In addition, the company launched the initial phases of an extensive internal change management program, the goal of which is to ensure a smooth and seamless migration of personnel, equipment, records, and other resources to the new facilities.

(iv) CC&B Enhancements⁸

An essential component – and determinant – of Hydro Ottawa's operational effectiveness is its Customer Care & Billing ("CC&B") system, which produces all of the customer invoices for the company. With the goal of continuing to enhance the services that are provided to customers, as well as to ensure compliance with the maintenance contract with the system vendor, Hydro Ottawa undertakes periodic upgrades to CC&B, on an as-needed basis.

In 2017, CC&B system enhancements included completion of system migration to a cloud-based platform, integration of direct deposit functionality, and implementation of an auto-dialer solution to replace hand delivery of disconnection notices (for further detail, see page 18 below).

As described in Hydro Ottawa's DSP, the most significant planned enhancement to CC&B is

⁶ This initiative is among the seven material General Plant investments included in Hydro Ottawa's 2016-2020 DSP.

⁷ *Ibid.*

⁸ *Ibid.*



scheduled for 2019, at which time the system will be upgraded to the next full version contemplated by the vendor (version 3.0).

(v) Enterprise Architecture Program⁹

To support achieving the company's vision that information should be accessible when and where it is needed to support customer interaction and ongoing business operations, Hydro Ottawa set out to establish a standard architectural framework. The projected benefits of this initiative included improving integration, facilitating access to key data, re-engineering business processes to improve outcomes, productivity and efficiency, and implementing master data management.

Hydro Ottawa launched an Enterprise Architecture Program-Enterprise Service Bus project in 2014. As part of this project, a Service Oriented Architecture ("SOA") methodology for managing, measuring, executing, and optimizing processes was adopted within Hydro Ottawa to help better achieve business outcomes. A key component of the SOA methodology was the deployment of an Enterprise Service Bus ("ESB"), which establishes and prioritizes a standard architectural framework for all system and solution work across the company. ESB sought to leverage industry best practices and enable real-time integration of business applications.

The intended scope of the project from 2016 to 2020 was to focus on integrating applications via the ESB and automating major processes using SOA service orchestration. The integration would mainly involve integrating new applications to existing applications, seeing as Hydro Ottawa was expecting to deploy approximately 20 new applications over the course of its five-year rate plan.

However, in 2017, adjustments were made to this project for several reasons. First, work was deferred in light of the re-prioritization of various information technology ("IT") projects. Secondly, the departure of key staff personnel resulted in a reduction of the specialized expertise and skills necessary to ensure project success.

In turn, Hydro Ottawa began exploring alternative ways to pursue application integration – including through the potential use of a cloud-based solution that does not require a specialized skill set. Work is expected to continue on this effort throughout 2018 and 2019.

(vi) Smart Grid Deployment

A key component of Hydro Ottawa's 2016-2020 Custom IR application was the "Grid Transformation Action Plan." This plan catalogues a range of projects and initiatives that Hydro Ottawa will execute as part of supporting the implementation of a smart grid in Ontario, and as part of delivering on the vision enshrined in the company's *2016-2020 Strategic Direction* to become a leading partner in a smart energy future.

Much of 2017 was spent advancing the development of key projects which are expected to be fully executed during later years of the company's five-year rate plan. Major accomplishments in this regard included the following:

- a. *SCADA System Upgrade* –The new hardware was received from the vendor and underwent significant testing and data conversion evaluation. In addition, training was launched and continued over the course of the year for the company's internal SCADA

⁹ *Ibid.*



administrative team. As of the end of 2017, final cut-over to the new system was expected in Q1 2018.

- b. *Telecommunications Master Plan* – Installation of dark fibre was ongoing throughout 2017 and transitioned into a more accelerated pace of work, following a re-organization of internal resources aimed at optimizing the design process. A third-party solutions provider was also retained to assist with provision and installation of all optical and networking equipment. Equipment deployment is set to continue in stages through 2019.
- c. *Smart Grid Projects*
- **The GREAT DR** – Activity focused heavily on customer outreach and recruitment. In September 2017, approximately 2,500 letters were sent to prospective participants, with around 125 replies received. Following further narrowing down of the prospect pool, Hydro Ottawa invited over 40 prospective participants to a public information session held on November 6, 2017. At this session, attendees had the opportunity to learn more about the project trial and its benefits. Initial deployment and field testing was scheduled to occur in early 2018.
 - **Ellwood Energy Storage Project** – This project is a 4 MW/2.7 MWh lithium ion battery energy storage facility that will be built by Canadian Solar as part of a three-year contract with the Independent Electricity System Operator (“IESO”) for grid support and voltage control. The facility consists of several lithium ion battery modules that will inject energy into or take energy from the grid, in order to support grid stabilization in response to IESO operational directives. Hydro Ottawa is hosting this project on-site at its main office location. The original timeframe for project energization was Summer 2017. However, the proponent encountered several challenges and delays over the course of 2017 in procuring the lithium ion batteries from an overseas vendor. As a result, the targeted energization date has been pushed back into 2018.
 - **Surplus Electric Baseload for Building Thermal** – In 2016, Hydro Ottawa was awarded funding through the City of Ottawa’s Energy Evolution Catalyst Funding Program for a proof of concept solution using clean, efficient electricity to supplement the use of natural gas boilers for space heating.

The solution was tested and modelled through a mock study involving the Building Automation System (“BAS”) for Ottawa’s City Hall. The software solution’s optimization program determined the real-time marginal cost of electricity and compared it to prices for natural gas, and set-up historical tracking to record and report the input and output data to validate both dollar and greenhouse gas (“GHG”) savings.

The simulation ultimately yielded findings of an energy cost savings potential of at least \$22,000 and 150 tonnes of CO₂ equivalent. Based on these results, the City of Ottawa is assessing various opportunities and scenarios, including enhancement of the software solution and installation of electric heating at municipal facilities. It is estimated that the solution has the potential to be replicated in approximately 30 City of Ottawa facilities.



- d. *Smart Energy Steering Committee ("SESC")* – Hydro Ottawa's SESC was formed to provide leadership, oversight, coordination, and direction of the company's Smart Energy initiatives on both sides of the meter, through a whole-of-company, multi-year roadmap. In 2017, the committee focused on initiatives to achieve the company's goal of developing service offerings to enable provision of a 100% reliability electrical service guarantee to customers, and on formalizing an intake process for scoring and prioritizing Smart Energy projects based on a set of defined criteria (reliability and system resilience; customer benefit; innovation and technology; environmental sustainability; leveraging our infrastructure and people; and revenue growth and diversification).

(vii) Planned Outage Communications

On any given day, Hydro Ottawa plans multiple outages to complete its maintenance and capital projects. For customers, this can be very impactful. Hydro Ottawa's commitment is to provide customers with at least 48 hours' notice of the outage, so that they can plan accordingly. Historically, the company often used powerline maintainer ("PLM") staff to hand-deliver planned outage notices at the premises of affected customers. Over time, the use of highly-skilled staff resources for this purpose proved to be time consuming and sub-optimal from a cost-effectiveness perspective.

Accordingly, in late 2017 Hydro Ottawa launched an initiative to complete customer notifications using an alternative solution that would reduce costs, leverage existing technology and platforms, and support the company's broader adoption of digital – as opposed to paper-based – solutions.

The solution contemplated would allow Hydro Ottawa to utilize an existing platform known as Tough Logic to make outbound calls to all phone numbers associated with a customer account in order to inform them of the planned outage. The company's service desk team would use pole and transformer nomenclature lists to extract a list of impacted customers from the GIS system. Tough Logic enables the uploading of the list of customers and phone numbers – along with the date, time, and duration of the planned outages – and the transmission of phone calls at a cost of \$0.12 per minute. As part of the project scope, Hydro Ottawa recorded different messages for service desk and forestry work, along with cancellation notifications in the event that a project is impacted by weather or other circumstances.

Expected benefits of this initiative include the following:

1. Timely dissemination of planned outage notifications (and cancellations, where appropriate)
2. Ability to disseminate notifications on an expedited basis, in the event of such occurrences as emergency tree removals
3. Elimination of the need to coordinate the printing of hard copy notices and to manually fill out door knocker cards
4. Re-direction of skilled PLM resources to higher-priority capital and maintenance work
5. Optimization of existing technology and platforms, as opposed to the introduction of another solution or system into the company's IT architecture
6. Support for corporate-wide migration to paperless environment

As of the end of 2017, the initiative was scheduled to be fully implemented by mid-2018.



(viii) Fleet Replacement¹⁰

Hydro Ottawa's fleet service is responsible for the maintenance and management of approximately 230 vehicles.

Hydro Ottawa maintains a multiple-year capital plan to effectively manage its fleet assets. This plan is an essential tool for both short- and long-term planning and budgeting. Fleet replacement is required to support the day-to-day business activities and to sustain operations by minimizing down-time and total vehicle lifecycle costs.

Major developments that occurred in 2017 as part of Hydro Ottawa's ongoing implementation of its fleet management and replacement plans were the following:

- *Acquisition of extended-reach bucket trucks:* In recent years, Hydro Ottawa has observed a considerable uptick in the number of system access, renewal, and service projects for which bucket trucks with an extended reach are required (e.g. pole replacements and new installs located higher off and further away from the road). Procurement research revealed that trucks with extended reach and larger capacity would cost significantly more than a conventional bucket truck with a 65-foot reach. The solution that was ultimately pursued involved the purchase of 65-foot units equipped with 12-foot bed elevators, offering a 77-foot reach and an 83-foot working height from the bucket. The purchase of two of these units resulted in savings of \$108,000 relative to the price of conventional units.
- *Deployment of "mini" bucket trucks:* Hydro Ottawa successfully experimented with the use of "backyard" bucket trucks. Track-mounted and designed for work in narrow, difficult-to-access areas such as residential backyards, these miniature units make digging, setting utility poles, restoring power, and maintaining power lines both safer and more efficient. Hydro Ottawa tested units with reaches of 47 feet and 58 feet, and found them to yield several positive outcomes in a field environment. Use of these mini trucks has also reduced the need for the following: crane rentals to assist with backyard pole replacement projects (translating into cost savings); planned outages in situations where crews perform work in areas with constrained access; and pole climbing by crews, thereby enhancing worker safety and comfort. Based on the early, encouraging experience with these trucks, Hydro Ottawa plans to continue using them and examine opportunities for expanding their application as well.

(ix) Fleet GPS Installation

As noted in Hydro Ottawa's 2016 RRF Summary, the company launched a GPS Evaluation & Implementation Project in 2016 to install and configure a new fleet service Global Positioning Solution ("GPS") solution.

Over the course of 2017, several major milestones were achieved in project execution:

- Installation of new GPS tracking devices and Wi-Fi hotspot devices into fleet vehicles;
- Configuration of Software as a Service ("SaaS") database solution;
- Transition of Commercial Vehicle Operator's Registration ("CVOR") vehicles to a web-enabled process for Hours of Service and Driver's Vehicle Inspection Reporting; and

¹⁰ *Ibid.*



- Training for more than 175 managers, supervisors, drivers, and administrative assistants.

As of the end of 2017, additional project integration, training, and close-out activity was scheduled for completion by Q2 2018.

(x) Cybersecurity Program

Since 2012, Hydro Ottawa has had a formal, robust cybersecurity program in place, in which an annual roadmap of deliverables is defined and executed. For the first several years, the program was anchored in the ISO 27000 series of standards governing information security. Subsequently, in 2016, Hydro Ottawa began implementing core components of the Cyber Security Framework developed by the U.S. National Institute of Standards and Technology ("NIST"). The decision to begin adhering to the NIST Framework was based, in part, upon the results of a third-party maturity assessment, which underscored a broader shift taking place across the North American electric utility industry in adopting the Framework.

In 2017, areas of focus for Hydro Ottawa revolved around the "Identify" and "Detect" functions, as outlined in the NIST Framework. Activities included enhancing the company's focus on governance and risk management through the updating of corporate policies, procedures, and guidelines, as well as the tracking of cybersecurity risks across the company. In addition, Hydro Ottawa launched a pilot project with an external cyber security firm, Stratejm. Stratejm will provide a managed security service solution to Hydro Ottawa, alongside the implementation of advanced auditing, alert, and detective capabilities through automated workflow. The pilot project is scheduled to wrap-up in 2018.

Likewise, as noted below on pages 25-26, Hydro Ottawa participated fulsomely over the course of 2017 in the work of the OEB's Cyber Security Steering Committee and Cyber Security Working Group to assist in the establishment of cyber security policy and reporting requirements for OEB-regulated utilities.

(xi) Automated Outbound Calling System for Disconnect Notices

In October 2017, Hydro Ottawa implemented an automated outbound calling system to replace its previous hand delivery of Disconnect Notices. As part of the new approach, the company will no longer roll a truck to the service address for residential and small commercial customers who are within 48 hours of service disconnection.

With this solution, all Disconnect Notices will be considered 100% delivered, so long as there is a working customer telephone number. For those customers who do not have a valid telephone number, Hydro Ottawa will maintain its previous Disconnection Notice delivery process.

For larger commercial customers, they will receive live phone calls from Hydro Ottawa customer service agents, should they be within 48 hours of disconnection. In the case of not reaching these customers via an agent phone call, the company's traditional delivery process will be followed.

At the time of receiving the automated phone call from Hydro Ottawa, customers are able to switch to a live agent to discuss payment arrangements. Customers also have the option of making a payment by credit card.



This new automated process will involve Hydro Ottawa's CC&B system generating a contact note with the corresponding time and date stamp of the call, along with the telephone number dialed and the balance outstanding. All calls will be delivered in the customer's language of choice.

Through this new approach, Hydro Ottawa became one of the first utilities in Ontario to fully integrate an automated outbound calling system into its collections processes.

These changes will yield several benefits. From a cost savings perspective, this functionality has already helped to achieve savings, as it enabled Hydro Ottawa to discontinue a contract with an external service provider that had been retained to support delivery of Disconnect Notices and service reconnections. Expected savings associated with discontinuance of this contractual arrangement are approximately \$300,000 per year.

Similarly, this tool will lead to greater efficiency in the use of Hydro Ottawa's collections resources – in particular, by allowing field representatives to focus on the installation of 7,000 remote disconnect/reconnect meters per year and on the execution of actual service disconnects for non-payment.¹¹ In addition, the movement away from paper-based Disconnect Notices will reduce the company's environmental footprint.

Likewise, as a result of this automation, Hydro Ottawa has observed a 65% payment rate within a few days of the call being received by the customer.

As a final note, Hydro Ottawa wishes to emphasize that, during the Disconnection Ban Period in which LDCs are prohibited from disconnecting residential customers for reason of non-payment, automated calls to customers are utilized strictly for purposes of extending payment reminders.

(xii) Field Crew Operational Efficiencies

In November 2017, the OEB amended the licenses of all electricity distributors in Ontario to prohibit the disconnection of residential customers by reason of non-payment from November 15th in one year to April 30th in the following year. One practical effect of the prohibition was an impact on the workload of the collections field representatives employed by Hydro Ottawa.

During the Disconnection Ban Period, Hydro Ottawa re-deployed these personnel to assist with other areas of company operations, including the following activities: removal and replacement of approximately 1,800 transformer labels; flagging services for construction and maintenance crews; field checks on meters for which remote reads are not feasible; investigations into meter data service requests and inquiries requiring additional analysis or troubleshooting; and overhaul and clean-up of warehouse and storage inventory. Through this approach, Hydro Ottawa ensured the efficient scheduling and use of collections field personnel for the benefit of customers and the company.

(xiii) Workforce Planning

In 2017, Hydro Ottawa achieved savings of \$30,000 by transferring the training costs for powerline technician apprentices to an in-house Training Delivery Agent ("TDA") program, which was developed and is administered in partnership with Algonquin College. The TDA program was also expanded in 2017 to offer training services to other utilities and utility contractors.

¹¹ To confirm, in 2017 Hydro Ottawa was successful in reaching its target of installing 7,000 new remote disconnect meters.



3. Public Policy Responsiveness

"Utilities are expected to consider public policy objectives in their business planning and to deliver on the obligations required of regulated utilities. These obligations may evolve over time and therefore this Handbook does not provide a comprehensive list of all requirements. Utilities are expected to demonstrate that they have considered Conservation First in their investment decisions. The OEB will expect to see proposals for how distributors are supporting low income customers through programs such as LEAP and/or OESP, or through other distributor-specific programs. Electricity distributors and transmitters are expected to expand or reinforce their systems to accommodate the connection to their system for renewable energy generation facilities and the OEB expects their system plans to include details on how they will meet this requirement. Natural gas utilities are expected to identify investments or programs that have been planned to meet obligations under Ontario's cap and trade program."

This section of the Annual Summary highlights how Hydro Ottawa is (a) delivering on obligations mandated by government through legislation, Ministerial directives, and regulatory requirements; and (b) achieving outcomes that are aligned with the RRF's Public Policy Responsiveness category.

(i) Fair Hydro Plan Implementation

Arguably, the most significant public policy obligation for Hydro Ottawa in 2017 was the implementation of the Fair Hydro Plan ("FHP"). Announced in March 2017, the FHP consists of various rate mitigation measures which, taken together, are lowering electricity bills for residential, farm, and small business customers by an average of 25%. The reduction of 25% includes the 8% Provincial Rebate introduced in January 2017.

The core components of the FHP are the following:

- Re-financing of a portion of the Global Adjustment ("GA"), with the costs of clean energy investments spread out over a longer period of time;
- Increasing the Ontario Electricity Support Program ("OESP") credit by 50%, broadening eligibility requirements for the program, and shifting program costs from provincial electricity ratepayers to the tax base; and
- Enhancement of the Rural and Remote Rate Protection ("RRRP") program, including by shifting program costs from ratepayers to the tax base.

In addition, these proposals were accompanied by other actions intended to provide rate relief to different customer classes: reduction of the eligibility threshold for the Industrial Conservation Initiative ("ICI"); elimination of the delivery charge for all on-reserve First Nations households; and establishment of an Affordability Fund to assist customers who do not qualify for low-income conservation programs and are unable to undertake energy efficiency improvements without financial assistance.

Enabling legislation – *The Fair Hydro Act, 2017* – was passed on May 31, 2017 and came into effect on June 1, 2017. The implementation date for the majority of the FHP's programs was July 1, 2017.



Hydro Ottawa undertook a wide array of actions to ensure smooth implementation of the FHP for customers. Numerous briefings and information sessions were held for internal stakeholders, so as to achieve a robust level of awareness across the company of the FHP's programs, as well as Hydro Ottawa's assorted obligations under the plan. The company also sought to ensure a high level of awareness among customers regarding the relevant components of the FHP through the establishment of a dedicated page on its public website;¹² distribution of Ministry of Energy ("MOE") bill inserts on a quarterly basis; communications shared through on-envelope, on-bill, and on-hold messaging; preparation of background information and key messages for Customer Contact Centre call agents; and social media outreach.

In addition, Hydro Ottawa supported the effective implementation of the FHP through direct participation in the Electricity Rate Mitigation Working Group formed by the MOE to solicit input on operational and technical matters related to the programs. (This was the same working group convened by MOE in Fall 2016 to seek input on matters related to the implementation of the 8% Provincial Rebate).

(ii) Conservation Results

Hydro Ottawa delivered exceptional results through its Conservation and Demand Management ("CDM") programming in 2017, with energy savings totaling 108 GWh. This result is 1.8 times greater than the results achieved in 2016 and is the equivalent of 27% of the company's allocated target of 395 GWh under the province's Conservation First Framework ("CFF"). As of the end of 2017, Hydro Ottawa had achieved 69.98% of its six-year CFF target. In terms of overall energy savings on a kWh basis, the company ranked 4th amongst Ontario distributors in 2017.

In addition, Hydro Ottawa was recognized by its peers for excellence in the promotion of Save on Energy programs. At the inaugural "Powerful Ideas" conference hosted by the IESO in June 2017, Hydro Ottawa received three awards for best-in-class projects involving sales and marketing: Best Creative, Large LDC (re-design of Home Show Display Booth), Best in Show (advertising promotions for Hydro Ottawa's "Save Your Energy for What Matters" campaign), and Best Sales Tactic (Lighting Worksheet tool to identify costs and payback associated with lighting retrofits, that has subsequently been adopted by many LDCs across the province).

Similarly, Hydro Ottawa distinguished itself as a leader in the delivery of CDM customer service and sales training to other LDCs in Ontario, as well as channel partners in its service territory. The company collaborated with IESO and Enbridge in offering training courses to local channel partners during January and February 2017, with the aim of boosting these organizations' success in sales and service to end-user customers. Thereafter, this pilot program was extended to five cities across Ontario.

(iii) Redesign Action Plan/Bill Presentment

In conjunction with the implementation of the FHP, MOE initiated a Redesign Action Plan aimed at simplifying bill presentment and optimizing key elements of electricity invoices. Hydro Ottawa participated in the working group that was struck in July 2017 to advise MOE staff on areas for improving bill presentment and to assist with the development of a new regulatory framework for invoicing. As of the end of 2017, MOE had published proposed regulatory amendments to

¹² <https://hydroottawa.com/accounts-and-billing/residential/rates-and-conditions/ontarios-fair-hydro-plan> (Accessed November 1, 2017).



prescribe invoicing requirements in order to implement a bill that is redesigned to meet the needs of Ontario consumers and was reviewing comments submitted by stakeholders.

(iv) Climate Change Action Plan Working Group

Throughout 2017, the inter-departmental Climate Change Action Plan Working Group ("CCAP-WG") formed by Hydro Ottawa met to discuss matters related to the roll-out of various initiatives under the government's Climate Change Action Plan ("CCAP").

The CCAP-WG focused its attention primarily on programs with a direct impact on Hydro Ottawa and its customers. Chief among these were the following:

- *Ontario Climate Change Solutions Deployment Corporation* – incorporated pursuant to O.Reg. 46/17 and publicly launched under the "Green Ontario Fund" brand in August 2017, this organization was set up to stimulate development of industry, trades and business undertakings in Ontario that would further the deployment of commercially available technology to reduce GHG emissions from buildings and from the production of goods.

Hydro Ottawa sought to support the uptake of Green Ontario Fund programs among its customer base by taking such actions as adding information and links to the Fund on the company's Save on Energy "Incentives and Rebates" webpage and through social media outreach.

- *Amendment to Electric Vehicle Requirements in the 2012 Building Code* – in May 2017, the Building Code was amended through O. Reg. 139/17 to include new requirements for "electric vehicle ready" homes and businesses. More specifically, provisions were added to the Building Code stipulating that (i) all new homes and townhomes with garages, carports, or driveways must be equipped with a 200 amp panelboard to allow for the future installation of electric vehicle ("EV") supply equipment, and (ii) all new commercial office buildings and workplaces (where parking is provided within the building) must have at least 20% of parking spaces equipped with EV supply equipment.

These requirements were slated to take effect on January 1, 2018. However, in the lead-up to the effective date, it became apparent that interpretations of how to apply these requirements differed between certain stakeholder groups. Hydro Ottawa played a lead role amongst Ontario LDCs in providing guidance to the Ministry of Municipal Affairs on the development of transition provisions to support the smooth implementation of these requirements. These transition provisions were formalized in December 2017 and helped carve out a clear, reasonable implementation path forward for all parties.

(v) Energy and Water Reporting and Benchmarking

O.Reg. 20/17: Reporting of Energy Consumption and Water Use was finalized and published in February 2017. The goal of the regulation is to assist Ontario in meeting its energy conservation and GHG-reduction objectives by requiring building owners to submit reports on their energy and water use, and to benchmark their consumption against comparator buildings. Under the regulation, LDCs are obligated to provide yearly electricity consumption data to building owners, upon request.



Following publication of O.Reg. 20/17, Hydro Ottawa convened internal stakeholders to raise awareness around the new requirements and to assign compliance accountabilities to relevant business units. As of the end of 2017, applicable business units had engaged in several months of preparation for customer education and outreach initiatives, which were scheduled for roll-out in early Q1 2018.

In addition, Hydro Ottawa volunteered to participate in a working group of utility representatives that was formed by MOE to offer guidance on numerous technical matters related to the provision of electricity consumption data to building owners. This working group convened on three separate occasions over the course of Fall 2017. One of the most consequential initial deliverables for this working group was the launch of pilot projects to test utilities' business processes and systems for data reporting. Hydro Ottawa successfully supported the participation of four Ottawa-area building owners in the pilot.

(vi) Regulatory Compliance Project

As noted in the 2016 RRF Summary, Hydro Ottawa undertook a formal review of its regulatory compliance program in 2016. The goals of the review were to assess the effectiveness of the company's existing compliance program and associated business practices; identify both gaps and best practices; and develop and implement solutions for program re-design, including formal documentation to facilitate enhanced compliance.

In 2017, the first major phase of this initiative was completed. It consisted of compliance review sessions which were held with key internal stakeholders and which were facilitated by the external consultant retained by Hydro Ottawa. Participating stakeholders were those who are directly involved in regulatory reporting and compliance activities on behalf of the company.

Based upon the input received at these sessions, and together with separate research and mapping exercises performed by the consultant, Hydro Ottawa was able to produce a compliance catalogue documenting all relevant processes and tools. This catalogue will serve as a repository for all OEB (and IESO) compliance requirements and process maps. Perhaps most importantly, the catalogue incorporates a RACI matrix to establish stakeholder roles and responsibilities for each compliance requirement as follows: responsible, accountable, consulted, or informed ("RACI").

The second phase of this project will focus on applying the tools developed in Phase 1 to assess the quality and reliability of reported information, associated internal business processes, and evidentiary material. A key component will be a compliance review pilot program involving internal business units across the company. The pilot is scheduled to commence in Q1 2018.

(vii) Low-Income Customer Support

In 2017, 12,074 Hydro Ottawa customers collectively received \$5.9 million in financial assistance through the Ontario Electricity Support Program ("OESP"), 476 customers accessed emergency relief through the Low-Income Energy Assistance Program ("LEAP"), and 924 households participated in the Home Assistance Program ("HAP").

Hydro Ottawa continued to raise customer awareness of these programs through such actions as the inclusion of information for low-income customers on the home page of its public website, creation of a page specific to low-income programs, on-bill and on-hold messaging, and outreach via social media. During collections calls and collection field visits, the company



makes every attempt to inform customers of available low-income support programs. In addition, in 2017 Hydro Ottawa began developing a financial assistance brochure for customers that would cover the entire range of programs available. As of the end of 2017, this brochure was scheduled for distribution in early 2018.

(viii) Integration of Renewable Energy Generation

Hydro Ottawa has remained active in facilitating the connection of renewable energy facilities since the passage of the *Green Energy and Green Economy Act* in 2009 and the predecessor Renewable Energy Standard Offer Program in 2006. In 2017, Hydro Ottawa connected 8,646.88 kW of embedded generation, with embedded generation in the company's service territory now totaling 80,554 kW. Connections in 2017 were comprised of 59 embedded generation facilities totaling 8,641 kW, along with 5.88 kW of net metered solar generation.

(ix) Collaboration with Natural Resources Canada on Electric Vehicles Study

In 2016, Hydro Ottawa became a partner in a research project initiated by Natural Resources Canada ("NRCan") and funded through the department's Energy Innovation Program. The project was launched to increase learning around the impact of direct current fast charging ("DCFC") EV chargers on local distribution networks. More specifically, Hydro Ottawa and NRCan investigated the need for DCFCs in Ottawa, the locations at which they will likely be installed, and their impact on the distribution grid for different scenarios of EV penetration for the period 2017-2037. Hydro Ottawa committed in-kind support to the project.

The study – entitled "Impact of Clusters of DC Fast Charging Stations on the Electricity Distribution Grid in Ottawa, Canada" – was published in October 2017, in conjunction with the international EVS30 Symposium held in Germany. Key findings in the study were as follows:

- EV growth over the next 20 years will require the installation of a large number of DCFCs to facilitate long-distance travelling and provide charging opportunities for EV owners who cannot charge at home.
- The impact of the large load of DCFC clusters on the distribution grid was found to be fairly limited. It should not be a problem for Hydro Ottawa to prepare for grid impacts, given the 20-year period over which these impacts will slowly increase.
- The dynamic impact of the large load of DCFC clusters on the distribution grid will need to be taken into account in the installation phase to ensure the proper operation of the grid. Most feeders in Ottawa will allow the installation of DCFCs without upgrades to the distribution grid.

Hydro Ottawa is confident that the results of this study will play a value-added role in helping the company plan and prepare for increased penetration of EVs across its service territory.

(x) Participation in OEB, Government & IESO Working Groups

Hydro Ottawa strives to support the development and implementation of robust public policy that will enable movement towards a smart, sustainable energy future for Ontario. As evidence of this commitment, Table 1 below identifies representatives from the company who constructively contributed to the formulation of effective regulations and policies through formal participation on OEB, government, and IESO working groups over the course of 2017.



Table 1 – Hydro Ottawa Participants in OEB, Government & IESO Working Groups

Name	Title	Working Group	Government/Sector Organization
Raed Abdullah	Distribution Engineer	Smart Grid	Ministry of Energy
Sally Barakat	Manager, Meter to Cash Support	Electricity Rate Mitigation	Ministry of Energy
		Smart Metering Entity (SME) Licence Order	Independent Electricity System Operator
April Barrie	Manager, Rates & Revenue	Energy Retailer Service Charges (EB-2015-0304)	Ontario Energy Board
Susan Barrett	Manager, Communications	Redesign Action Plan	Ministry of Energy
Bruce Bibby	Manager, Conservation Programs	Conservation First Implementation Committee	Independent Electricity System Operator
Patrick Brown	Manager, Regulatory Policy & Research	Data Strategy Advisory Council	Independent Electricity System Operator
Linda Bruce	Supervisor, Conservation	Residential Working Group	Independent Electricity System Operator
Mark Fernandes	Chief Information & Technology Officer	Cyber Security Steering Committee – Protecting Privacy of Personal Information and the Reliable Operation of the Smart Grid in Ontario (EB-2016-0032)	Ontario Energy Board
		Energy Transformation Network of Ontario	Independent Electricity System Operator
Benjamin Hazlett	Manager, Distribution Policies & Standards	Pole Attachment Working Group (EB-2015-0304)	Ontario Energy Board
Shane Labrash	Program Officer, CDM	Business Working Group – Lighting Sub-group	Independent Electricity System Operator



Name	Title	Working Group	Government/Sector Organization
Jojo Maalouf	Manager, IT Security	Cyber Security Working Group – Protecting Privacy of Personal Information and the Reliable Operation of the Smart Grid in Ontario (EB-2016-0032)	Ontario Energy Board
Casey Malone	Manager, Distribution Policies & Standards	Pole Attachment Working Group (EB-2015-0304)	Ontario Energy Board
Matthew McGrath	Supervisor, Asset Management	Regional Planning and Cost Allocation Review (EB-2016-0003)	Ontario Energy Board
Joel McGuire	Supervisor, Data Systems Metering	Free Overnight Charging for Electric Vehicles	Ministry of Energy
Chantal Nault	Manager, Systems Projects	Financial Assistance Working Group	Ontario Energy Board
Michel Provost	Manager, Billing, Collections & MDS	Electricity Rate Mitigation	Ministry of Energy
		Smart Metering Entity Steering Committee	Independent Electricity System Operator
		Smart Metering Entity (SME) Licence Order	Independent Electricity System Operator
		Financial Assistance Working Group	Ontario Energy Board
Gregory Van Dusen	Director, Regulatory Affairs	Regulatory Affairs Standing Committee	Ontario Energy Board
Charles Zaloum	Supervisor, Conservation	Business Working Group	Independent Electricity System Operator



4. Financial Performance

"Utilities are expected to demonstrate sustainable improvements in their efficiency and in doing so will have the opportunity to earn a fair return. The OEB will monitor the financial performance of each utility to assess continuing financial viability and to determine whether returns are excessive. Utilities have a choice of rate-setting methods to meet their particular needs. Additional tools are available to support infrastructure investment. Utilities must report comprehensive and consistent information, allowing for comparisons over time and across utilities. The OEB will act on its obligations to ensure a financially viable sector where performance indicates that a regulatory response is needed."

This section of the Annual Summary highlights how Hydro Ottawa is (a) creating sustainable growth in its business and earnings; and (b) achieving outcomes that are aligned with the RRF's Financial Performance category.

As noted on page 12, this section does not include information on capital spending undertaken by Hydro Ottawa. Hydro Ottawa is obligated to submit annual reports to the OEB on its actual capital spending on a program level. Please consult these annual reports for information on the progress in Hydro Ottawa's capital expenditures against its DSP.

(i) Financial Results

Hydro Ottawa continued to achieve strong financial results in the second year of its approved Custom IR rate plan. For example, distribution revenue increased \$5.1 million (or 2.8%) over 2016. The company also increased its net income by \$2.1 million over the previous year, for a total of \$36.5 million. In addition, the company's liquidity ratio set another new record high, increasing to 1.23. Finally, Hydro Ottawa witnessed steady year-over-year growth in its actual return on equity ("ROE") as well, with an ROE of 10.1%.

With respect to Hydro Ottawa's debt to equity ratio, for the past three years the company has carried a higher ratio as a result of the significant capital expenditure program required to replace aging distribution system infrastructure. Although Hydro Ottawa is more highly leveraged than the deemed capital structure, the company has been able to keep its cost of borrowing very low due to favourable interest rates on its long-term debt.

(ii) Dividend

Hydro Ottawa's robust financial performance in 2017 also helped produce another new record. Its strong financial results generated a dividend of \$11.9 million for the holding company, thereby positioning the holding company to make the largest dividend payment to the enterprise's sole shareholder – the City of Ottawa – in its history.¹³ The holding company's 2017 dividend totaled \$21.9 million, representing a 6.3% increase over 2016. Likewise, the payment was \$1.9 million higher than the \$20 million floor for the dividend payment, which was established pursuant to a revised dividend policy adopted in 2016.

¹³ The annual dividend paid by Hydro Ottawa to the holding company is based on the previous year's results. Accordingly, the dividend based on 2017 results was paid in 2018. The same applies for the dividend paid by the holding company to the shareholder.



Together with the increase in the company's ROE, the year-over-year growth in the Hydro Ottawa's dividend payment bodes well for the company's ability to continue providing strong value to both its shareholder and its customers into the future.



III. Conclusion

This 2017 RRF Summary describes the numerous outcomes achieved by Hydro Ottawa over the course of 2017 that were guided by RRF objectives and expectations.

Hydro Ottawa is pleased to be able to report that 2017 featured a broad range of milestones that underscore a strong level of performance across the four areas of focus underpinning the RRF. These include, but are not limited to, the transition to a new Customer Contact Centre, roll-out of a mobile application for residential customers, continued progress in the transformation of the company's enterprise resource planning platform, exceptional results in CDM programming, highest shareholder dividend payment in the company's history, timely and smooth implementation of all Fair Hydro Plan requirements, and a \$1 million reduction in OM&A expenses.

Hydro Ottawa is confident that the 2017 RRF Summary serves to illustrate the company's commitment to continuous improvement and to the incorporation of RRF principles across its business operations.

Hydro Ottawa looks forward to preparing and presenting the next version of its annual summary for the year 2018.



Version History Tracking

Version	Author	Date Revised	Description of Changes
Version 1	Regulatory Affairs	December 2018	N/A – initial release
Version 2	Regulatory Affairs	October 2019	Revisions to section II., 3. Public Policy Responsiveness, (x) Participation in OEB, Government & IESO Working Group (addition of participant in OEB Regulatory Affairs Standing Committee). Revisions to section II., 4. Financial Performance, (ii) Dividend Payment (addition of clarifying language).
Version 3	Regulatory Affairs	December 2019	Revisions to section II., 2. Operational Effectiveness, (viii) Fleet Replacement (addition of clarifying language).



2018 Annual Summary

Achieving Ontario Energy Board Renewed Regulatory Framework Performance Outcomes

Prepared by: Hydro Ottawa Limited

Date: October 2019

(Revised: December 2019)



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I. Overview

1. Background – Hydro Ottawa’s Annual Summaries of Initiatives Aligned with the RRF

In September 2017, Hydro Ottawa Limited (“Hydro Ottawa”) finalized a document entitled *2016 Annual Summary: Achieving Ontario Energy Board Renewed Regulatory Framework Performance Outcomes*. The document summarized initiatives at Hydro Ottawa that were launched, were ongoing, or were completed during 2016, and that aligned with the core performance outcomes enshrined in the Ontario Energy Board’s (“OEB”) Renewed Regulatory Framework (“RRF”).

As stated therein, the value and purpose of that document was the following:

1. Support the preparation of the annual rate adjustment application and annual report on capital spending, which Hydro Ottawa is obligated to submit to the OEB under the terms of the settlement agreement governing its Custom IR rate plan;
2. Support the preparation of the next Custom IR application that Hydro Ottawa plans to file, for the 2021-2025 period;
3. Help foster a culture of continuous improvement within Hydro Ottawa; and
4. Help ensure that the execution of the company’s business plans and capital investment programs over the course of its Custom IR term are guided by the expectations and goals embedded in the RRF.

The aforementioned document (hereinafter referred to as the “2016 RRF Summary”) also signaled Hydro Ottawa’s intention to prepare an annual summary of a similar nature for each of the five years in its 2016-2020 Custom IR term.

2. Hydro Ottawa’s Third Annual RRF Summary (For 2018 Initiatives)

Hydro Ottawa is hereby pleased to present the third version of this annual summary (hereinafter referred to as the “2018 RRF Summary”). The pages below serve as a catalogue of Hydro Ottawa’s initiatives from the year 2018 that were in direct alignment with the OEB’s RRF performance categories.

In order to avoid duplication and optimize the efficiency of review, this 2018 RRF Summary does not duplicate any of the background sections included in previous versions of this document – namely, the detailed information provided on the OEB’s RRF and four performance categories, as well as on Hydro Ottawa’s five-year Custom IR rate plan and corporate strategic direction.

In addition, for those initiatives which were either launched or were underway in 2016 and/or 2017, and which witnessed a milestone, deliverable, or culmination in 2018, this 2018 RRF Summary likewise does not offer a detailed description of that initiative. Instead, only the incremental information of relevance for 2018 is highlighted.



Similar to previous versions of this annual summary, the 2018 RRF Summary is organized around the four principal performance outcomes enshrined under the RRF: (i) Customer Focus; (ii) Operational Effectiveness; (iii) Public Policy Responsiveness; and (iv) Financial Performance.

Moreover, in step with past years, it remains Hydro Ottawa's intent that this document be suitable for submittal to the OEB at a later date, as appropriate.

In sum, Hydro Ottawa trusts that the 2018 RRF Summary reflects the company's commitment to cement the principles of the RRF throughout its operations and business, to execute the company's corporate plans and capital investment programs in accordance with RRF objectives, and to continually align its interests with those of its customers.



II. Hydro Ottawa Initiatives by RRF Performance Outcome Category

1. Customer Focus

“Customer engagement is now an explicit and important component of the regulatory framework. Utilities are expected to develop a genuine understanding of their customers’ interests and preferences and reflect those interests and preferences in their business plans. Utilities are expected to demonstrate value for money by delivering genuine benefits to customers and by providing services in a manner which is responsive to customer preferences.”

As noted in Hydro Ottawa’s 2016 RRF Summary:

- Hydro Ottawa’s *2016-2020 Strategic Direction* is anchored in the imperative that the company will seek to put the customer at the centre of everything it does.
- Hydro Ottawa’s vision is that by 2020, the customer experience will be driven by choice – the customer’s choice. Customers will be given options to allow them to be in control and to interact with Hydro Ottawa how and when they want.
- Hydro Ottawa has crafted a five-year Customer Experience Roadmap, the timeframe of which is aligned with that of the company’s Strategic Direction and Custom IR term. It serves as an integrated, “whole of company” roadmap for Hydro Ottawa’s customer experience journey.

The initiatives highlighted in this section of the 2018 RRF Summary illustrate the progress being achieved by Hydro Ottawa in (a) delivering on the commitments in its Custom IR application and Customer Experience Roadmap, as they relate to enhanced customer engagement across a range of touchpoints; and (b) achieving outcomes that are aligned with the RRF’s Customer Focus category.

(i) Enterprise Communications Platform

As noted in the 2016 and 2017 versions of this RRF Summary, Hydro Ottawa has been in the process of transforming many of its tools for communicating with customers. Key milestones achieved in 2018 in the ongoing implementation of this initiative were the following:

a. Customer Contact Centre Enhancements

The migration of Hydro Ottawa’s Customer Contact Centre to a new service provider in 2017 opened the door to improved service offerings for customers. One such example is the availability of translation services in up to 120 languages (alongside service in both English and French). Communicating with customers in their preferred language is integral to the customer-centric service Hydro Ottawa provides.

To ensure the company had customers’ language preferences on file, along with up-to-date contact information, Hydro Ottawa launched a “Your preference matters” campaign in early 2018. Residential customers were encouraged to login to their online account to review their language preference, telephone numbers, and email address. Customers who updated their preferences during the campaign period were entered into a contest to win one of three tablets. Residential customers with an up-to-date online account were also automatically entered into



the contest. This initiative was promoted in customer communications, advertisements, and social media.

As part of its evaluation of the benefits associated with its new call centre, Hydro Ottawa implemented a metric which tracks the number of customer calls received in which translation services were requested. In 2018, 134 such calls were received from customers speaking 20 different languages, representing 0.06% of the overall number of calls received.

b. Outage Communications¹

Piggybacking upon a suite of changes made to its outage communications system in 2017, Hydro Ottawa made additional enhancements over the course of 2018. These included equipping customers with the ability to report outages through Hydro Ottawa's website and mobile application.

Moreover, Hydro Ottawa gained valuable insights into the limitations of its online outage map, in the aftermath of the September 2018 tornadoes that touched down in the National Capital Region. (See page 12 below for more details). At the peak of the event, high volumes of customer traffic led to technical difficulties with the availability and accuracy of outage information.² In light of the discovery of this vulnerability, a strategic decision was made to suppress the outage maps in favour of maintaining an online presence during the event. However, the public reaction to this action was generally negative, prompting the company to troubleshoot and develop a stop-gap solution to restore the outage maps. In collaboration with the Outage Management System vendor, Hydro Ottawa was able to expedite the implementation of an outage map hosted within Microsoft Azure Cloud that was able to withstand sustained high traffic volumes over the course of consecutive days, until service was fully restored.

Based on this successful model, Hydro Ottawa now possesses the capability to develop a stop-gap outage map solution that will alleviate system resources during high traffic volumes until such time that the main website (hydroottawa.com) has been re-platformed and/or a new solution can be sourced. What's more, the experience yielded additional fruit in the form of new features for the map that were not previously supported: an address search that will zoom to the address entered and pin the location; current location identifier (based on where the user is located, the identifier will zoom in and pin the location); and distinct pin symbols that differentiate between planned outages (orange polygon) and unplanned outages (red polygon).

In April 2018, the company earned recognition for its successful efforts to enhance the online customer experience during outages. This recognition took the form of a Best Practices Award in Outage Communications from Chartwell. The award acknowledged Hydro Ottawa's multi-solution efforts, including leveraging video on social media (for example, through the use of drone footage) and utilization of the mobile app that was rolled out in 2017.

¹ This initiative is one of seven "material investments" under the General Plant category that are included in Hydro Ottawa's 2016-2020 Distribution System Plan ("DSP").

² To put the post-tornado online customer traffic in its proper context, Hydro Ottawa wishes to offer the following information. From the afternoon of September 21, 2018 (when the tornadoes first touched down) to September 22, 2018 at 12:00 pm, Hydro Ottawa's website processed over 1 million unique pageviews. This represents the equivalent of the average year's worth of site traffic.



(ii) Behavioural Savings Program

Over the first full year of implementing its Behavioural Savings Program for residential customers, Hydro Ottawa gained many valuable insights into customer needs and preferences. The program includes a mobile application, Home Energy Report emails, and a personalized web portal for obtaining valuable insights on energy consumption.

Through the program, Home Energy Reports are provided to customers free of charge. The Home Energy Reports are personalized emails that offer a variety of information, including the following: a monthly summary of electricity use and costs, personalized energy-saving tips, neighbourhood comparisons, bill projections, high usage alerts, and more. In each email, customers are asked to provide feedback as to whether the email was useful or not, as well as why they liked or disliked the email and its content.

Hydro Ottawa then compiled feedback and inputted the results into dashboard reporting. The reporting included the percentage of negative and positive feedback, the number of customer comments per email type (e.g. neighbourhood comparison vs. monthly summary), and trending reasons motivating the feedback rating.

In addition to the Home Energy Report feedback, Hydro Ottawa monitored the mobile app reviews and ratings in the Apple Store and Google Play. These ratings and reviews alerted the company to customer challenges and areas for improvement.

In Fall 2018, Hydro Ottawa launched a marketing campaign to encourage customers to download and use the app, and to subscribe to the Home Energy Reports. Campaign messaging was centered around tips for increasing energy efficiency in the home and the creation of savings opportunities. The campaign was promoted online through the company's website, digital ads, and social media. Other campaign channels included on-bill messaging, on-hold messaging, bill inserts, and advertisements on municipal transit and at select sports venues.

On a monthly basis, program metrics for the Home Energy Reports, the mobile app, and the online portal were shared with key internal stakeholders, including senior leadership. Acting upon the input received from customer feedback, app reviews, and program metrics is one example of how the Behavioural Savings Program has proven extremely valuable in identifying opportunities for adjusting and enhancing the customer experience and has better equipped Hydro Ottawa to listen and respond to the voice of the customer.

As of the end of 2018, the mobile application had been downloaded over 20,400 times.

(iii) Innovation in Voice-Activated Digital Assistance

In 2018, Hydro Ottawa became the first utility in Canada to develop and make information available through a Smart Speaker skill, compatible with both Amazon Echo and Google Assistant. The deployment of this tool was driven by Hydro Ottawa's enduring commitment to serve customers using a channel of their choice and to equip customers with information, when and how they need it. It was also the fruit of the company's past investments in cloud-based customer identity management software and social sign-on capability, and its focus on creating applications using Application Programming Interface ("API") protocols and tools, which enable access to commonly used operating systems and simplify the development of solutions for customers.



The company's Smart Speaker skill is designed to provide customers with information about their account. Once activated by customers, it provides information on the topics that are the subject of many of the most commonly-asked questions from customers, including conservation tips, current electricity rates, outage information, and bill information.

Moreover, Hydro Ottawa's Smart Speaker skill system collects metrics on its own performance – e.g. customer retention, poorly handled messages, customer pathways, and most importantly, queries posed by customers that the skill was unable to answer in an anonymized manner. Likewise, the system collects web-based analytics which are employed to ensure that the most requested information is also available on other Hydro Ottawa customer communications channels, such as the website and mobile app.

At the time of launch, the Hydro Ottawa Smart Speaker skill was available only in English, with the company actively exploring French language capabilities. The skill is free to download and is available on the following Smart Speaker devices: Google Home, Google Mini, Amazon Echo, Echo Plus, Echo Dot, and Echo Spot. What's more, information is accessible wherever Amazon's Alexa or Google's Home Assistant platforms are accessible, including by phone, tablet, or in-vehicle systems.

The page on Hydro Ottawa's website that is dedicated to this skill includes a demonstration of the application and frequently asked questions.³

As of the end of 2018, over 1,800 customers had downloaded the skill. The number of customer interactions with the skill was averaging approximately 260 on a monthly basis, 70 on a weekly basis, and 10 on a daily basis. These figures are expected to increase as customer awareness of the availability of this solution grows.

(iv) Community Engagement

Over the course of 2018, Hydro Ottawa participated in more than 400 community events. Similar to previous years, the company's community activities included the following: energy-related educational programs in schools; a Conservation Team that attended diverse community, corporate, and retail events; engagement with business improvement areas; and a wide range of other tours and presentations.

Hydro Ottawa also sustained its program and practices for consulting customers who are set to be affected by major projects that were designed to improve infrastructure and service in their community. Scheduled during the Fall, the company's open houses educate customers on planned projects for the following year, providing them with information, insight, and the opportunity to ask questions or voice concerns well in advance of the work taking place.

From September-November 2018, Hydro Ottawa hosted eight open houses in various wards across the city to address projects that were scheduled for 2019. Customers who reside in the affected areas were invited to the events. All open houses were accessible to the general public, with details available on the company's website. These events help ensure that, if any issues arise prior to work beginning, Hydro Ottawa project managers can collaborate with customers in order to best address their concerns while keeping projects on schedule.

³ <https://hydroottawa.com/save-energy/innovation/smart-audio>.



- **Elgin Street Renewal:** a significant infrastructure renewal effort in which Hydro Ottawa played a key support role in 2018 was an integrated road, sewer, water, and utility project for a major north-south artery in downtown Ottawa. Initial working group meetings for the Elgin Street Renewal project were hosted by the City of Ottawa beginning in Q4 2017, enabling all key stakeholders – especially the Elgin Street business association – the opportunity to ask questions and suggest recommendations to Hydro Ottawa’s proposed designs for relocation and underground burial of its distribution infrastructure.

Continuing into 2018, Hydro Ottawa and the City held public drop-in sessions to receive input from members of the public on the proposed work. This gave Hydro Ottawa the opportunity to engage numerous business owners and residents on a face-to-face basis, which helped foster a strong working relationship with the local community. Based on the needs and preferences communicated by stakeholders, Hydro Ottawa relocated padmounted transformer equipment away from originally proposed locations and coordinated with City officials and local business improvement area associations to ensure power is available to their future deployment of public WiFi in the area. The company also worked with the Canadian Museum of Nature to identify decorative options for the padmount equipment set to be installed at this facility, located at the southern tip of the project area. The museum ultimately opted for a decorative blind, to obscure the padmount devices while maintaining the required operational clearances.

The beginning of construction was not scheduled until Q4 2018, so as to avoid disruption of local commerce and events during seasons of peak activity. In addition, to the maximum extent possible, Hydro Ottawa and its contractors arranged work times around business hours over the course of the year, in order to avoid impeding access for patrons to local businesses. What’s more, Hydro Ottawa erected temporary trench crossing bridges (all of which were compliant with the *Accessibility for Ontarians with Disabilities Act*) that allowed for uninterrupted pedestrian access to local businesses.

Alongside the City of Ottawa, the company distributed customer notification letters to almost 10,000 customers in the area, sharing critical information related to traffic management, road closures, and pending construction. Hydro Ottawa also created a specific page on its website dedicated to the project.⁴

Feedback from stakeholders, especially the local business association, on Hydro Ottawa’s engagement efforts was quite positive overall.

Year-over-year growth was also sustained in several aspects of the company’s online and social media presence. For example, web-based engagements increased by more than 300% over 2017, while the total number of Twitter followers exceeded 30,000, as of year-end. Hydro Ottawa also published over 100 videos, with many of them focused on customer education around such topics as storm response, essential capital projects like pole replacement and transformer relocation, electrical safety, conservation tips, and what to anticipate when requesting a specific service from the utility.

⁴ <https://hydroottawa.com/blog/elgin-street-renewal>.



(v) Customer Satisfaction Survey

For over a decade, Hydro Ottawa has engaged a third party to conduct annual customer satisfaction surveys. These customer satisfaction surveys provide information that supports the analysis and planning of customer service improvements and offerings within Hydro Ottawa. The survey questions cover a wide variety of relevant topics, including overall satisfaction with Hydro Ottawa, reliability, customer service, power outages, billing, cost of electricity, and corporate image. Feedback from these surveys is incorporated into Hydro Ottawa's planning process, and ultimately forms the basis of plans which address customer needs and service offerings.

For the second consecutive year, Hydro Ottawa experienced an appreciable uptick in overall customer satisfaction – from 90% in 2017 to 93% in 2018. Multiple macro-level ratings placed Hydro Ottawa in the top quartile amongst its peers: Credibility & Trust Index of 85%, Customer Experience Performance Rating of 87%, Customer Centric Engagement Index of 84%, and an overall grade of "A" on the survey's report card (while the Ontario-wide averages were 80%, 83%, 80%, and "B+", respectively).

According to the survey results, Hydro Ottawa scored above the provincial benchmark in numerous core responsibility categories, such as the following (the company's score is listed first, followed by the Ontario average):

- Provides consistent reliable power (93% vs. 90%);
- Quickly handles outages and restores power (91% vs. 86%);
- Electricity safety is a top priority (91% vs. 86%); and
- Delivers on its service commitments (88% vs. 86%).

The survey likewise pointed out areas requiring more pro-active communication and attention from Hydro Ottawa. Nevertheless, in these categories as well, the company's scores still exceeded the Ontario benchmark (similar to the list above, Hydro Ottawa's score is listed first, followed by the provincial average):

- Adapts well to changes in customer expectations (75% vs. 72%);
- Operates a cost-effective electricity distribution system (76% vs. 71%);
- Provides good value for money (75% vs. 71%);
- Cost of electricity is reasonable when compared to other utilities (65% vs. 61%); and
- Provides information to help customers reduce their costs (82% vs. 78%).

And in specific categories related to customer service satisfaction, Hydro Ottawa once again ranked above the provincial benchmark, in all but one metric (which is marked in *italics*):

- Deals professionally with customers' problems (88% vs. 82%);
- Is "easy to do business with" (85% vs. 82%);
- Customer-focused and treats customers as if they're valued (83% vs. 79%);
- The time it took to contact someone (73% vs. 64%);
- The time it took someone to deal with your problem (70% vs. 65%);
- The helpfulness of the staff who dealt with you (65% vs. 64%);
- *The knowledge of the staff who dealt with you (62% vs. 64%);*
- The level of courtesy of the staff who dealt with you (74% vs. 70%);



- The quality of information provided by the staff who dealt with you (65% vs. 61%); and
- The 24/7 availability of call-centre staff Monday to Friday (82% vs. 76%).

(vi) Customer Connectivity

Over the course of 2018, Hydro Ottawa continued to witness steady growth in the number of customers opting to register in the company's online MyAccount portal. By year's end, over 184,000 customers were enrolled, representing approximately 55% of the customer base. These numbers were bolstered by concerted efforts to reduce the level of burden for customers to create an online account with Hydro Ottawa. In 2018, the company eliminated the need for a customer to have a physical bill in hand to create an online account. Moving forward, a customer will only require a valid email address, with registration only taking a matter of minutes and including the option to enroll in online billing. Other improvements for MyAccount users include the availability of electricity disaggregation data and Home Energy Reports, that are also made available through the mobile application for residential customers (see page 7 above). Data exports through the Green Button Download My Data function also remain available to users.⁵

With respect to online billing, the total number of customer accounts receiving bills online increased to almost 151,000 (or 45% of all customers). Overall OM&A annualized savings associated with Hydro Ottawa's online billing program stand at \$1,668,000.⁶

Other highlights in relation to strengthening customer connectivity included the following:

- **Move-in Move-out ("MIMO") enhancements:** in 2018, Hydro Ottawa processed approximately 60,000 MIMO requests from customers. Effective December 2018, existing customers who are moving are encouraged to submit their move requests online through the MyAccount portal. The benefits of this new business process will include encouraging customer registration for MyAccount and online billing, improving customer security by requiring MyAccount authentication, simplifying customer experience with auto-populated fields after login, and minimizing the need for Hydro Ottawa call backs due to insufficient information.
- **Electronic payments:** following simplifications to its online registration and electronic payment processes, Hydro Ottawa observed a 58% increase in electronic payments by customers in 2018, relative to 2017.

⁵ <http://www.greenbuttondata.org/>.

⁶ These savings are calculated by multiplying the total number of customer accounts registered for online billing by annual savings per customer in 2018 of \$11.05.



2. Operational Effectiveness

“Utilities are expected to demonstrate ongoing continuous improvement in their productivity and cost performance while delivering on system reliability and quality objectives. The OEB will assess performance trends and look for evidence of strong system planning and good corporate governance. The OEB will use benchmarking to assess a utility’s performance over time and to compare its performance against other utilities. Utilities are expected to demonstrate value for money by presenting plans for delivering services that meet the needs of their customers while controlling their costs.”

This section of the Annual Summary highlights how Hydro Ottawa is (a) delivering on the commitments in its Custom IR application regarding continuous improvement, productivity initiatives, and cost performance; and (b) achieving outcomes that are aligned with the RRF’s Operational Effectiveness category.

Consistent with the approach taken in the 2016 RRF Summary, this section of the 2018 RRF Summary does not include information on capital spending undertaken by Hydro Ottawa, in accordance with its OEB-approved Distribution System Plan (“DSP”). Hydro Ottawa is obligated to submit annual reports to the OEB on its actual capital spending on a program level, based on three categories: System Access; System Renewal/System Service; and General Plant. Please consult these annual reports for information on the progress in Hydro Ottawa’s capital expenditures against its DSP.⁷

(i) Post-Tornado Storm Response

Hydro Ottawa experienced an historic severe weather event on September 21, 2018, when tornadoes with wind speeds of up to 265 km/h produced devastating effects in the western and southern segments of the company’s service territory. Damage occurred to various sections of primary circuits, hundreds of individual customer secondary lines, as well as the provincial transmission system, including extensive damage to Hydro One’s Merivale Transformer Station, which serves as one of the key supply points for Ottawa from the bulk power system. This loss of supply further impacted customers in central areas due to outages at multiple Hydro Ottawa substations. At the peak of the outage, approximately 174,000 customers – almost 50% of the company’s customer base – was without power. All told, the tornadoes adversely impacted Hydro Ottawa’s distribution system more than any other event in the last 20 years.

After activating its Electricity Emergency Response Plan and mobilizing its Incident Command Centre (“ICC”), Hydro Ottawa undertook a significant restoration effort. By the evening of September 24, with primary lines having been rebuilt and through collaboration with Hydro One in reconfiguring transmission supply to local substations, service was restored to 95% of customers. By September 26, all remaining customers without damaged services or equipment had been restored.

Notwithstanding the exceptional scale, speed, and success of the restoration effort, there were several lessons learned for the company. Many of these were identified in one of a few forums: (i) formal debriefs within the company’s Crisis Communication Team, and among the ICC and Distribution Operations teams, during which all management parties involved in restoration

⁷ These reports are available on Hydro Ottawa’s website: <https://hydroottawa.com/about/regulatory-affairs/reports>.



examined what worked well and where there were areas for improvement; and (ii) a meeting with leaders from the municipality and local community associations, which featured discussion on various aspects of storm response. Feedback from these forums was consolidated into an official After Action Report, which underwent several rounds of review before being finalized in early January 2019. Among other things, this report formally documented the lessons learned emerging from the event – which ranged from updated training for employees on emergency response planning to centralization of contractor management functions to reviews of logistics support and communications technology. The report assigned designated leads for execution, along with timelines for completion.

In recognition of the exceptional performance in responding to this severe weather event, the Edison Electric Institute presented Hydro Ottawa with its annual Emergency Recovery Award. This award is presented to utilities in honour of extraordinary efforts to restore power to customers after service disruptions caused by severe weather conditions or other natural events. Award winners are selected by a panel of judges following an international nomination process.

(ii) Enterprise Resource Planning Project⁸

As detailed in the 2016 RRF Summary, Hydro Ottawa initiated a project to replace its centralized enterprise resource planning (“ERP”) system to manage core functions related to finance, accounting, inventory and supply chain management, work order management, and human resources (“HR”).

Many functional areas within the company rely upon the ERP system to achieve their operational mandates. Accordingly, the underlying objective of this project was to shift away from time-consuming, manual, and paper-based processes which required multiple employees to execute, and adopt a digital solution with self-service capability that would simplify business practices and put more and better information into the hands of employees. In many ways, the implementation of an enhanced ERP system was not simply a technology initiative, but also an important opportunity for business transformation.

The one-week period between December 31, 2017 and January 6, 2018 (inclusive) marked the achievement of a landmark project milestone, with the successful launch of the upgraded ERP system. This system consists of two integrated software solutions – Workday for human capital management (“HCM”) and JD Edwards (“JDE”) EnterpriseOne version 9.2 for all other core ERP functions (e.g. finance, accounting, and supply chain).

The investments made in this up-to-date, out-of-the-box (“OOTB”) ERP solution have firmly established a solid technology foundation that will reliably support current and future operational needs. What’s more, both solutions have a strong customer base and robust vendor commitment to continued reliable results through sustaining and growing their solutions to meet evolving business needs. The contractual and strategic relationships between Hydro Ottawa and its vendors (Workday and Oracle) will provide opportunities for the company to influence product evolution, based on shifting business requirements.

From a broad perspective, one important benefit of this investment is that ERP support employees at Hydro Ottawa are now able to concentrate most of their efforts on enhancing

⁸ The finance system upgrade (JDE Application Upgrade) that is included under the scope of this initiative is one of the seven material General Plant investments included in Hydro Ottawa’s 2016-2020 DSP.



functionality by utilizing the standard vendor support resources. With the previous ERP system, the support model involved a heavy reliance on developers, seeing as much of the core ERP functionality had been modified and this dependence deepened with every incremental change that was applied.

Prior to the launch of the new ERP system, an extensive change management and training program was delivered, in order to ensure a high level of staff acceptance and readiness for the new systems. Over 90 training sessions were delivered to employees and over 110 instructional aids were created to guide employees in completing specific transactions. The availability of this functional training material going forward will be valuable from a knowledge transfer perspective.

The early experience with the enhanced ERP systems in 2018 served as validation of the original project objectives. In addition, it advanced Hydro Ottawa's larger strategic goal of leveraging technology and enhancing productivity through an "Anything, Anytime, Anywhere" approach to making tools available to the workforce where and when they are needed.

(a) Workday

For the HCM components of the company's business, all employees – whether in the office or in the field – are able to benefit from the industry-leading, enterprise-level software Workday.⁹ Through Workday, employees are much better equipped to satisfy a comprehensive suite of HR-related functional requirements and access HR services, thereby enhancing accountability.

Implementation of Workday unfolded in two phases over the course of 2018. Phase 1 focused on foundational modules such as personal information, time tracking, compensation, benefits, onboarding, safety incident tracking, and job requisitions. Towards the latter half of the year, Phase 2 concentrated on the movement to Workday of the more strategic modules of learning, talent, and performance management. The second phase also involved the deployment of a dashboard tool for managers and supervisors to generate reports which provide a broad range of high-level insights into their respective teams (e.g. overtime hours, compensation summaries, average length of service, retirement eligibility, training transcripts, and organizational charts), thereby enabling superior performance management and decision-making.

The diverse toolbox of analytics enabled by Workday provided assurance of robust employee adoption. As an illustration, by the end of June 2018 there had been 48,770 unique employee self-service log-ins, and 96% of employees used Workday from their computer, while 4% used it from their phone or tablet.

Furthermore, the implementation of Workday has generated significant efficiencies which have improved the overall employee experience and enhanced productivity. For example, under the old system, the allocation of hours applied to Work Orders and equipment required supervisors to spend upwards of one hour per day manually entering information for their employees into a spreadsheet. With the system upgrade, total time has been reduced to 10 minutes, with employees entering their own hours through a process flow which is automatically sent to supervisors for approval.

By the end of 2018, Hydro Ottawa was on track to save approximately 9,000 hours a year in supervisor time, allowing them to dedicate greater time to operational and safety-related duties,

⁹ <https://www.workday.com/>.



rather than manual administrative ones. The level of transparency and access that employees enjoy with Workday translates into efficiencies insofar as accountability has been shifted from HR personnel to employees who are better placed to review and action an item.

What's more, Hydro Ottawa's internal Workday implementation team was successful in several instances in expanding and leveraging the functionality of Workday to suit the unique needs of the company. For example, an automated solution was crafted for targeted employee notifications and associated action items, with the ability to track progress on the completion of these items. This was formerly a time-consuming, manual task. In addition, the company continues to integrate Workday with other systems, one of which is the system for ordering flame resistant/arc rated ("FR/AR") and non-FR/AR clothing for employees into Workday. This provides greater flexibility for employees to order clothing as required and to enable direct delivery to the employee's place of residence.

Altogether, the first year of experience with Workday bodes well for ongoing productivity and business transformation. With Workday's annual cost per employee equaling \$480, Hydro Ottawa is confident that this system will allow the company to continue improving its operational efficiency and flexibility, and better meet the evolving needs of employees and customers as a result.

(b) JDE

Offered and maintained by the leading multinational cloud-based solutions firm Oracle, JDE is a top-tier integrated ERP solution.¹⁰ JDE has historically been employed by Hydro Ottawa to support operational needs related to finance, accounting, inventory and supply chain management, and work order management.

As of the timeframe of the filing of Hydro Ottawa's 2016-2020 Custom IR application (i.e. early 2015), the version of JDE that was in use at the company (EnterpriseOne version 9.0 or "JDE v9.0") was becoming outdated and lapsing into sustainment support. This represented a significant shift in the risk profile for this mission-critical business application. In contrast, the version to which Hydro Ottawa has now upgraded (JDE v9.2) enjoys the benefit of the vendor's commitment to a continuous delivery approach for incremental updates for new features and functions, and to the provision of full technical support.

Among the numerous benefits that were realized through the first year of experience with the enhanced JDE platform (and that are set to multiply going forward) were the following:

- General navigation was significantly improved through the introduction of E-1 pages to guide infrequent users to the most common transaction types. Along with the configuration of predefined access for individual users, this is reducing user confusion, as employees are only able to access those features which are necessary to fulfill their specific responsibilities and needs.
- Expense management was transitioned away from a paper-based process to a more efficient self-serve model which, in storing expense claims within JDE, enables increased transparency, provides superior support for audit review control purposes, and comports with the company's "Anything, Anytime, Anywhere" philosophy by allowing employees and supervisors to submit and approve expenses electronically.

¹⁰ <https://www.oracle.com/ca-en/products/applications/jd-edwards-enterpriseone/overview/>.



- Efficiencies have been achieved in the reconciliation process and account mapping between JDE and Uniform System of Accounts ("USoA") for regulatory accounting purposes. For example, the heavily customized nature of many of the applications utilized by Hydro Ottawa under the previous version of JDE meant that manual effort was required in much of the company's regulatory accounting and reporting activity that relied upon JDE data. With the adoption of the new version of JDE, the company now has the benefit of standard category code functionality, which encompasses USoA. Moreover, the upgraded version of JDE offers the ability to analyze multiple years of USoA coding within the program in real time. Previously, multiple year comparisons involved a need to create spreadsheets and other files outside of the program, and lacked the capability for real-time analysis. Likewise, modifications to USoA coding for smaller tasks can now be executed in real time and no longer involve running multiple processes or batches in order to be able to see the updated changes.
- New integrations with Workday have significantly enhanced insight, and the timeliness of insight, into job cost information on an ongoing basis. This stands in contrast to the previous approach, which entailed waiting for bi-weekly payroll cycles.
- Generation of quotations related to standard fees for various services (in accordance with Appendix G of Hydro Ottawa's Conditions of Service) and subsequent tracking of any necessary customer engagement can now be performed within JDE, rather than through a manual process involving multiple spreadsheets. In addition, quotation forms have been simplified, thereby improving the customer and field crew experiences while continuing to satisfy related reporting requirements.
- Introduction of Service Contract Billing has provided greater flexibility, reduced manual efforts, and improved reporting. One contract can have both capital and work for others combined on one invoice. Using this billing module for pole and duct rental has provided streamlining over the previous process and also provides a system-generated revenue recognition advantage.
- Significant changes were evident in the Work Order process to eliminate the customizations of the past and to embrace recommended OOTB best practices available within the ERP. For example, the ability to create Purchase Orders directly from the Work Order eliminated both the need to create receipts for services and to manually sign paper copies. In addition, procurement orders with long lead times now come directly from Work Orders, as opposed to manual requisitions. These and other Work Order-related changes have improved efficiency, flexibility, supportability, controls, and reporting for many stakeholder areas.
- Watchlists have been established to log system advisements about progressions like Work Order status changes to impacted groups. This helps maintain awareness of the status of Work Orders and, where necessary, prompt appropriate action by staff.
- Receiving by Supply Chain resources was eliminated for everything except stock items to avoid those recurring process steps which gave little incremental business value.
- Policy updates were enabled allowing for two-way instead of three-way matching for most Accounts Payable receipts. This facilitated a more streamlined process and overall time savings.
- The OOTB recurring invoicing functionality for cyclical items such as rentals and retiree benefits recovery has streamlined the previous manual tracking outside of the system and has provided greater visibility.
- A process change was introduced to enter Requests for Quotes within the ERP rather than through various off-line methods. This change helped improve both transparency for involved parties and reporting capabilities.



- The new Service and Warranty module has facilitated data mining on service layout requests and has helped to ensure that proper costing is performed for each item – all while avoiding the need for manual inputs.

(iii) Facilities Renewal Program¹¹

In 2018, progress was sustained in the execution of this once-in-a-generation project. With shovels having been put in the ground the previous year, much of 2018 was spent on facility construction, as well as the initiation of operational integration and migration processes.

For example, several critical decisions were made on the technologies that would be utilized at the new administrative campuses and operational centers. A refreshed closed loop radio system was implemented ensuring the security and responsiveness of a mission critical system used to support the safety of our operational staff and communication between our System Office and Field Crews. A separate Request for Proposals process was likewise successfully completed, through the procurement of a Hot Aisle Containment System (“HACS”), which will provide more efficient cooling and distribution of heat for rooms housing critical IT equipment. HACS sensors monitor room temperature and adjust cooling to meet requirements. Case studies have shown that containment systems offer 50% energy consumption savings, meaning use of this technology will also reduce Hydro Ottawa’s own energy footprint.

Prior to migrating the company’s servers and network gear to the new facilities, Hydro Ottawa analyzed any systems that were approaching end-of-life and were due for replacement. In turn, appliances were purchased to reduce physical footprint and approximately 30 servers were replaced with a virtual instance. One upshot of this option will be reducing the number of IT outages required in 2019 once migration of equipment and personnel begins. Furthermore, through outreach to multiple vendors, Hydro Ottawa was able to find one that agreed to loan the company network equipment during the three-month migration process. This resulted in a cost avoidance of approximately \$250,000, without impacting uptime for the operations.

In addition, in support of the company’s “Anything, Anytime, Anywhere” approach to making tools available to the workforce where and when they are needed, a majority of user-assigned desktop computers (approximately 185 in total) were replaced with notebook computers. This helped contribute to overall reductions in employees’ use of printed paper.

Key efforts were also focused on physical cleanup of onsite paper records at existing administrative facilities, in preparation for the move to new facilities. This cleanup effort amounted to more than 10,625 boxes being safely disposed, representing a 78% disposal rate. Alleviating Hydro Ottawa of these unnecessary records will reduce operational costs.

Finally, Hydro Ottawa administered a robust change management program with extensive employee engagement and consultation. As of year’s end, the company remained on schedule to begin occupying its new east and south campuses in May 2019.

(iv) CC&B Enhancements¹²

As noted in the 2017 RRF Summary, the most significant planned enhancement to the company’s Customer Care and Billing (“CC&B”) system is scheduled for 2019-2020, at which

¹¹ This initiative is among the seven material General Plant investments included in Hydro Ottawa’s 2016-2020 DSP.

¹² *Ibid.*



time the system will be upgraded to the next full version contemplated by the vendor.

In the interim, Hydro Ottawa continues to pursue and implement other improvements to its CC&B system, in order to achieve greater efficiencies and effectiveness in its billing services. In this regard, key enhancements undertaken in 2018 were as follows:

- **Simplified authentication process:** in an effort to reduce the number of systems to support and maintain CC&B, Hydro Ottawa implemented a change to our security process for user authentication. When CC&B was implemented in 2014, end-users would authenticate themselves to access the system via an interface with multiple third-party systems. In addition, through this process, end-users who required access to the non-production billing environments (e.g. month-end reporting) would need to maintain different passwords for each environment. Accordingly, Hydro Ottawa implemented a change that only requires users to interface with one of the third-party systems, while also allowing end users to use consistent log-ins for the CC&B environments to which they require access. Eliminating the need to support different access requirements for different environments has resulted in a simplified process for users as well as reduced system maintenance costs.
- **Renegotiation of CC&B application hosting and support contract:** in 2018, a decision was made to perform a technical upgrade of CC&B to a more current version, beginning in 2019. This upgrade will allow Hydro Ottawa to benefit from a supported Oracle platform, leverage new base functionality, and provide opportunity for future enhancements that will help with potential new business ventures. It was also decided to enlist the company's current Application Managed Services support vendor as the Systems Integrator for this technical upgrade and to leverage this opportunity to renegotiate the services contract with the vendor. Subsequently, an amendment to the current contract was signed in late 2018 to extend managed services support with the vendor for another five years beyond the original contract end date (up to 2027) with an overall operational cost savings of \$1 million. This will allow for consistency of support from current operations for critical billing system functions and for sustained operations at an overall reduced rate. Additionally, Hydro Ottawa was given the option by the vendor to enter into an extended payment plan financing arrangement for these services. Hydro Ottawa availed itself of this option, as it will allow for deferral of payment for services rendered by the vendor on both the upgrade project and on operational costs, while improving cash flow.

(v) Enterprise Architecture Program¹³

To support achieving the company's vision that information should be accessible when and where it is needed to support customer interaction and ongoing business operations, Hydro Ottawa set out to establish a standard architectural framework. The projected benefits of this initiative included improving integration, facilitating access to key data, re-engineering business processes to improve outcomes, productivity, and efficiency, and implementing master data management.

Hydro Ottawa launched an Enterprise Architecture Program-Enterprise Service Bus project in 2014. However, findings from the pilot indicated that the solution was too complex for the

¹³ This initiative is among the seven material General Plant investments included in Hydro Ottawa's 2016-2020 DSP.



company's needs. Notwithstanding this determination, Hydro Ottawa has continued with the Service Oriented Architecture principles and has adopted Boomi, which is a middle-ware technology leveraging industry best practices and enabling real-time integration of business applications.

In addition, the Enterprise Architecture program sought to advance productivity and efficiency through adoption of standard practices such as release management. Through elevating the visibility of changes in the technology architecture and ensuring solid release plans are in place, the risks to unplanned service interruptions can be reduced.

The Enterprise Architecture program also partnered with internal Cyber Security and Information Management resources to identify sensitive data belonging to customers and employees. This will serve as an integral first step in Hydro Ottawa's efforts related to master data management.

(vi) Fleet Replacement¹⁴

Hydro Ottawa's fleet service is responsible for the maintenance and management of approximately 230 vehicles.

Hydro Ottawa maintains a multiple-year capital plan to effectively manage its fleet assets. This plan is an essential tool for both short- and long-term planning and budgeting. Fleet replacement is required to support the day-to-day business activities and to sustain operations by minimizing down-time and total vehicle lifecycle costs.

Major fleet management developments were few in 2018. The company's Fleet group continued to review industry standards to help inform new projects and practices, including the deployment of additional low- or zero-emission vehicles. (It should be noted, however, that the adoption of fully electrified vehicles is not always a viable option, given the local climate). In addition, the company procured a single elevator, telescopic bucket as a new specification which will allow for extended side reach in tight areas of the downtown core. This capability permits the operator to reach over obstructions on the street, such as cars and patios, in order to access power lines.

(vii) Fleet GPS Installation

As noted in the 2016 and 2017 versions of this RRF Summary, the company launched a GPS Evaluation & Implementation Project in 2016 to install and configure a new fleet service Global Positioning System ("GPS") solution.

Following final integration and training, the project was closed-out in 2018. As of the end of the year, monitoring was underway to track progress against the original targeted outcomes of fleet optimization, increased fuel savings, improved health and safety of field personnel, enhanced compliance with provincial regulations, and reduced maintenance costs. Measurable benefits had already been achieved with respect to paperwork reduction for commercial vehicle operator's registration compliance-related activities, improvements in real-time location of vehicles on Hydro Ottawa's situational awareness map, and reduction of connection costs with WiFi mobile hotspots in vehicles.

¹⁴ This initiative is among the seven material General Plant investments included in Hydro Ottawa's 2016-2020 DSP.



(viii) Smart Grid Deployment

Consistent with the commitments set forth in the company's *2016-2020 Strategic Direction* and its "Grid Transformation Action Plan," Hydro Ottawa continued the roll-out of flagship Smart Grid projects over the course of 2018. Key highlights in this regard included the following:

- a. *SCADA System Upgrade* – Supervisory Control and Data Acquisition ("SCADA") systems are critical to the reliable operation of a local distribution network, as they equip system operators with real-time access to system status and control, and play an essential role in the monitoring and controlling of distribution stations and equipment. As highlighted in the Distribution System Plan, Grid Transformation Plan, and Reliability Plan supporting Hydro Ottawa's 2016-2020 Custom IR application, the company's SCADA system required wholesale renewal. The system had not undergone any major upgrades or patching since its installation in 2006, and was thus employing outdated technology, with ongoing vendor support becoming increasingly challenging to secure.

September 2018 marked the completion of a project launched in 2015 to upgrade this core asset. The successful achievement of this milestone was preceded by several years' worth of project planning, training, testing, configuration, and evaluation of data conversion by a dedicated internal team working in concert with the vendor.

Hydro Ottawa's revitalized SCADA capability is set to yield numerous benefits with respect to situational awareness, system control, and system restoration. Within just a few weeks of the final cut-over, the new system had the opportunity to showcase its strengths, following the tornadoes that touched down in the Ottawa-Gatineau region on September 21, 2018. The SCADA system performed exceptionally well in providing system operators with visibility into the condition of Hydro Ottawa's grid and the outages affecting customers.

- b. *Smart Grid Projects*

- **The GREAT DR** – this remains one of Hydro Ottawa's marquee grid modernization projects, representing the future of the electricity marketplace and transactive energy solutions. In 2018, activity focused on developing The GREAT-DR interoperable platform and lab testing the prototype. In the lab, Hydro Ottawa and its partners were able to prove that decentralized demand response through to the grid edge is achievable and can serve as the optimal approach for securely and privately managing "prosumer" devices for democratizing and electrically supporting the grid. Lab tests showed promise in being able to reduce loading and thus change the load shape within seconds (which is a much higher level of performance than the standard five-minute target period). In 2019, the focus of project activity will be on proving the same objectives in a field demonstration and then closing-out the project with lessons learned that will be shared with industry partners and other stakeholders.
- **Ellwood Energy Storage Project** – This project is a 4 MW/2.7 MWh lithium ion battery energy storage facility developed by Canadian Solar as part of a three-year contract with the Independent Electricity System Operator ("IESO") for grid support and voltage control. The facility consists of several lithium ion battery modules that will inject energy into or take energy from the grid, in order to support grid stabilization in response to IESO operational directives. Hydro Ottawa is hosting this



project on-site at its main office location. The original timeframe for project energization was Summer 2017. Following delays encountered in procuring the lithium ion batteries from an overseas vendor, the project was energized in August 2018. The remainder of 2018 was spent performing testing and addressing operational matters, with final in-service commissioning expected for Q1 2019.

- **Starflower Lane Solar Project** – Alongside the main proponents (Ottawa Community Housing and Kingston, Ontario-based SPARQ Systems), Hydro Ottawa served in a collaborator role for this project. This project, which received support from Ontario's Smart Grid Fund, featured the installation of 640 solar panels on the rooftops of 32 townhomes in the Regina Lane housing community and went into service in 2018. Totalling 160 kW of capacity, with the ability to generate 200,000 kWh each year, the installation represents one of the largest solar arrays on social housing in Canada. In addition, it utilizes innovative solar micro-inverter technology, which can adapt to variations in grid conditions, including with respect to the availability of reactive power. This smart inverter complies with the State of California's Rule 21, which is a subset of requirements from the Institute of Electrical and Electronics Engineers' ("IEEE") 1547-2018 "IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces."¹⁵

For its part, Hydro Ottawa upgraded the area's transformers to accommodate the embedded generation, and made in-kind contributions of materials, labour, site recruitment, and utility expertise. Key drivers behind Hydro Ottawa's participation in the project were the commitment to help customers achieve their sustainability goals and the ability to derive lessons learned from monitoring the performance of smart (micro) inverter technology. This technology holds great potential to enable higher penetration of distributed energy resources ("DERs") and to allow the use of embedded generation to play a managed role in supporting the grid's integrity – for example, by easing the power variance from embedded generation (particularly intermittent types like photovoltaic solar) and allowing generation to ride through certain disturbances, rather than switch off and cause supply-demand imbalance problems.

- **Autonomous Intelligent Nanogrid Solution** – Hydro Ottawa is playing a supporting role in this project, which is being led by Solantro Semiconductors (an Ottawa-based firm with expertise in semiconductors and digital power processors) and which has received support through Ontario's Smart Grid Fund. The goal of this project is to demonstrate the viability of an autonomous, intelligent nanogrid through the deployment of eight systems within Hydro Ottawa's service area: six in private residences and two at the National Research Council of Canada's research facility consisting of twin test houses. The project is also aimed at increasing understanding around the challenges and opportunities (primarily technical and financial) involved in customers becoming more self-sufficient in on-grid and off-grid scenarios. Hydro Ottawa's responsibilities as a project collaborator consist of facilitating interconnection and providing technical and regulatory expertise. As of the end of 2018, the project was scheduled to conclude by December 2019.

¹⁵ <https://www.cpuc.ca.gov/Rule21/>.



(ix) Distribution System Climate Risk and Vulnerability Assessment

As a matter of practice, Hydro Ottawa routinely examines opportunities and threats to its distribution grid to ensure assets are able to operate effectively and deliver value throughout their lifecycle. In order to drive continuous improvement in its existing asset management system, Hydro Ottawa initiated a project in 2018 to perform a distribution system climate risk and vulnerability assessment and, based upon the results of this assessment, develop a Climate Change Adaptation Plan. In Q4 2018, the company launched a competitive procurement process to select an external service provider to prepare the following deliverables: (i) an overview of how climate change impacts are likely to affect Hydro Ottawa's distribution system; (ii) processes by which Hydro Ottawa can continue efforts to better understand its risks, take proactive steps to manage risks, and enhance the resilience of its distribution system to climate change; and (iii) an Adaptation Plan, following a recognized protocol for climate impact assessment, to improve the resilience of Hydro Ottawa's system.

As of the end of 2018, Hydro Ottawa had evaluated proposals from proponents, selected a successful proponent, and was set to initiate project work in early 2019.

(x) Planned Outage Communications

As noted in the 2017 RRF Summary, Hydro Ottawa launched an initiative that year to complete customer notifications using an alternative solution that would allow the company to utilize an existing platform (TouchLogic) to make outbound calls to all phone numbers associated with a customer account in order to inform them of the planned outage.

As of the end of August 2018, the total cost incurred for outbound calls to over 15,000 customers was less than \$1,200, while the cost savings totaled approximately \$80,000. This latter figure is based upon the assumption that, for every outbound call, the company saves one hour of work each for two Power Line Maintainers, along with a truck roll, to hand deliver notifications. Moreover, Hydro Ottawa is now able to redirect those skilled resources to core capital, maintenance, and other project work.

Early experience with the new solution has featured only a modest number of customer escalations (less than five). In several instances, these were related to customers not having maintained up-to-date contact information with the company.

Overall, this initiative has achieved several key outcomes, including reduced operating costs, greater efficiency through leveraging of existing technology, timely communication of information to customers, and enhanced customer convenience.

Based upon the success of this program, Hydro Ottawa expanded the program in 2018 to include auto-dialer notification for vegetation management work taking place in the neighbourhoods of affected customers. What's more, in step with the company's commitment to communicating with customers through a channel of their choice, the auto-dialer service is set for further expansion to text message/SMS and email channels in Fall 2019.

(xi) Cybersecurity Program

In recognition of the growing exposure of information systems to cybersecurity risks, Hydro Ottawa continues to take seriously its need to strengthen the protection of its critical infrastructure against the threats emanating from cyberspace. Several accomplishments from 2018 are noteworthy in this regard.



To begin, as noted below on page 33, the company published an updated corporate policy on cybersecurity which reflects the current landscape of cyber risks. The policy serves several broad purposes, including informing all users of mandatory requirements and acceptable user practices for protecting the company's cybersecurity assets, as well as ensuring that all electronic assets are protected and comply with essential security principles. In addition, the updated policy enshrines an expectation of compliance with the OEB's new certification and attestation requirements for electricity distributors.

A second major initiative was the retention of an external expert (PwC) to provide a suite of cybersecurity-related services:

- **Program Maturity & Gap Assessment:** Hydro Ottawa's information technology ("IT") and operational technology networks were assessed against the U.S. National Institute of Standards and Technology's Cyber Security Framework, which the company has been implementing for several years, and a maturity ranking was provided in comparison to other electric utilities. Among the key findings was a determination that Hydro Ottawa's performance exceeds the industry average with respect to IT protections, although targeted improvements are required around "people" and "process."
- **Privacy Impact Assessment Framework:** As part of the maturity assessment, a privacy assessment was also performed. The results highlighted that privacy controls have not yet matured into a core competency for Hydro Ottawa and that more work is therefore required to enhance the company's controls and plans in this regard.
- **Incident Response Retainer:** The establishment of a retainer will allow Hydro Ottawa to enlist the services of experts to help contain and mitigate the effects of a cybersecurity event or breach.
- **Penetration Testing:** A penetration test and social engineering attack was performed on Hydro Ottawa's employees to test the resiliency of the company's controls (both technical and non-technical) for its public-facing web applications. Overall, the results were favourable, although greater employee awareness is needed to combat phishing.

A third milestone was the completion of a pilot project with an external service provider (Stratejm) for managed security services. Based on the positive results, Hydro Ottawa has retained the firm to serve as a fully managed security service provider for the company, with the aim of ensuring 100% coverage of all server assets.

Finally, several process improvements were implemented to strengthen the company's overall cybersecurity posture. For example, Hydro Ottawa instituted new processes and guidelines for third-party contractors, the incorporation of cybersecurity practices into IT technology, and supply chain management.

(xii) Cybersecurity Program – External Email Tagging

As part of its enterprise-wide cyber security program, the company has been tagging all incoming external emails to Hydro Ottawa email accounts since 2016. This tagging has taken the form of inserting "Notice: External Email" in grey text at the top of the body of the email message. This provides Hydro Ottawa employees with a clear indication that the email received has originated from an external source and not from a Hydro Ottawa account.



The adoption of this solution served as a response to the growing number of email spam and phishing campaigns that are being launched against electric utilities. On average, 70% of the emails received by Hydro Ottawa are marked as spam. Moreover, the sector across North America has observed a significant uptick in cyber security incidents, including ransomware attacks in which personal and corporate data are held for ransom.

A common feature of many of these incidents is that the vector of penetration into the organization was a phishing email. Phishing is described by the Canadian Centre for Cyber Security as a “a general term for emails, text messages and websites fabricated and sent by criminals and designed to look like they come from well-known and trusted businesses, financial institutions and government agencies in an attempt to collect personal, financial and sensitive information.”¹⁶ Phishing remains one of the most popular and most successful methods utilized by malicious actors to compromise organizations’ information systems and data.

Best practice in critical infrastructure sectors such as electricity call for the use of tagging external emails as one of the most effective defenses against phishing. Tagging enables employees and users to easily differentiate between an internal email and an external email.

In 2018, in step with the company’s continuous improvement efforts, Hydro Ottawa introduced enhancements to its external tagging techniques. These modifications were intended to ensure greater visibility to employees of the tag and to provide more useful information pertaining to opening attachments or clicking on links. In lieu of the previous “Notice: External Email” text, the following banner is now employed for tagging purposes at the top of the body of the message of every external email received by a Hydro Ottawa employee:

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

(xiii) Underground Field Crew Operational Efficiencies

The underground (“U/G”) portion of Hydro Ottawa’s network encompasses all of the infrastructure and equipment that is used to distribute power to customers which is located beneath ground level. Approximately 52% of the company’s total circuit kilometres of line are underground, with the majority of this located downtown and in suburban areas. Given the unique demands of operating and maintaining infrastructure of this nature, and the resources required to fulfill these core functions, realizing efficiencies in this area of the business remains an enduring priority for the company.

In this regard, continuous improvement and productivity measures that were undertaken in 2018 included the following:

- **Digitization of cable chamber inspection scheduling** – Hydro Ottawa utilizes a staggered schedule for routine inspections of the U/G cable chambers in its service territory. Each chamber is inspected approximately once every three years, with the inspection cycle originating in the eastern portion of the service territory and moving steadily across to the western perimeter. On an annual basis, Hydro Ottawa inspects upwards of 400 U/G cable chambers. As part of the ongoing digitization of its business

¹⁶ <https://cyber.gc.ca/en/cyber-incidents>.



processes and practices, the company has adopted an electronic solution to enhance the efficiency of this work. Hydro Ottawa has now recorded the GPS coordinates for the location of each cable chamber and downloads this information to mobile tablet devices which are provided to field personnel. These devices help reduce travel time and location inaccuracies, ensure the most up to date information is available to crews, and facilitate the scheduling of any repair or upgrade work in conjunction with inspections.

- **Elimination of fossil fuel-powered equipment and tools** – in step with its commitment to environmental protection and sustainable business practices, Hydro Ottawa looks for opportunities to reduce the use of fossil fuels in as many aspects of its operations and activities as possible. In applying this objective to U/G field crew work, some key milestones were achieved in 2018. For example, hand-held tools and other equipment utilized by U/G field personnel – such as saws, drills, cutters, and lights – have been transitioned to rechargeable battery-powered units. In addition to being lighter and easier to maneuver and handle, these units eliminate the exposure of crew personnel and members of the public to fumes and noise, while maintaining a high degree of performance and reliability. Similarly, for purposes of recycling old or unusable lead cable, personnel are able to use electrically-powered reels at Hydro Ottawa's operations centres, as opposed to diesel-powered units, thereby contributing to further reductions in harmful emissions.
- **Re-purposing of fleet vehicle for snow clearance at U/G work sites** – during the lengthy winter season in Ottawa, access to U/G cable chambers can be challenging on account of high levels of snow accumulation. On occasion, access to certain chambers across the service territory can either require contracting third-party services for snow removal or be impeded altogether. In 2018, Hydro Ottawa was able to re-purpose one of its fleet pick-up trucks, install a snow plow and salter assembly, and deploy it in support of snow clearance at U/G chamber sites. This allowed for increased work time during the winter months, while avoiding the cost of purchasing a dedicated vehicle for this activity.
- **Streamlined internal communications process for cable fault responses** – the previous internal process for communicating the discovery of cable faults on Hydro Ottawa's grid and assigning resources to respond relied upon the use of a mass email notification approach. Over time, it was recognized that a more appropriate course of action would be to target a select subset of responsible supervisors and staff. This approach was implemented in 2018 and has led to improved efficiency and timeliness in the scheduling and dispatching of crews to respond to cable faults, with enhanced accountabilities for communications and execution.

(xiv) Billing & Meter Data Services Operational Efficiencies

In 2018, Hydro Ottawa successfully completed numerous productivity and continuous improvement activities in its Billing and Meter Data Services ("MDS") departments – both of which fulfill essential back-office functions in support of the provision of reliable distribution services to customers. These enhancements included the following:



a. Billing

- **Enhanced CCB exception reports** – For a small handful of customer accounts which are not billed according to standardized processes, or for accounts for which there may have been a glitch encountered in the execution of the billing process, Hydro Ottawa's CC&B system generates exception reports. In 2018, the company implemented a series of enhancements to assist billing agents in identifying the root causes of exceptions more quickly and in improving control points. For example, these enhancements included a new feature that automatically groups exceptions into defined segments. In turn, this facilitates the assignment of specific billing agents to specific segments and allows exceptions to be resolved more efficiently. In addition, there is new functionality that excludes legitimate non-billable accounts from the report, thereby eliminating false positives from the reports and ensuring agents can focus attention on those accounts which actually require review. Hydro Ottawa will have the extra benefit of being able to use this feature for purposes of the anticipated increase in the number of aggregated suite metered accounts. At certain times, these accounts may have a meter but no customer. As such, these accounts will be captured by the characteristic flag that has been put in place and will be excluded from CC&B exception reports.
- **Integration of high/low exception list** – in collaboration with its CC&B service provider, Hydro Ottawa developed new functionality that allows for flagging customer accounts which have either exceeded or fallen below expected consumption, based on historical consumption patterns. If the account falls outside the established parameters, it is automatically flagged for manual review by a billing agent. This is intended to serve as a safeguard against potential metering issues and as a means for ensuring accuracy of customers' bills.
- **Enhanced unbilled reporting** – similar to exception reports, CC&B also generates a list of all accounts that have not been billed on their regular cycle, for any number of reasons. Alongside the aforementioned enhancements, Hydro Ottawa also adopted a series of measures in 2018 to improve the quality of these reports and to assist billing agents in reviewing them more efficiently and expeditiously. For example, in order to allow for effective grouping of unbilled reports, data sets were added for billing cycle, service cycle, and Universal Service Delivery Point Identifier. What's more, functionality now permits the oldest unbilled accounts to be prioritized for initial review. With these enhancements in place, Hydro Ottawa is able to reduce unbilled revenue and better ensure that all customers are billed in a timely manner.
- **Revamped ICI reports** – the Industrial Conservation Initiative ("ICI") is a provincial demand response program allowing participants to manage and reduce their Global Adjustment ("GA") costs by reducing their demand during peak periods. The program is administered by the IESO, with electricity distributors like Hydro Ottawa tasked with various program requirements such as reporting and adjustments to customer accounts and invoices. In 2018, with the aim of supporting more efficient ICI implementation, Hydro Ottawa consolidated and standardized its various internal reports related to ICI. Going forward, there will be one master report that will assist functional areas (Billing, MDS, Meter to Cash, Conservation and Demand Management, Regulatory, and Finance) in achieving their respective operational mandates related to ICI.



b. MDS

- **Improved IESO reconciliation process** – Hydro Ottawa employs Lodestar Profiling and Settlement Software (“LPSS”) to reconcile financial statements and invoices received by the IESO on a daily and monthly basis, respectively. All wholesale accounts in LPSS are reviewed rigorously for accuracy – in particular, with respect to loss calculations. The company enacted several process changes which resulted in enhanced accuracy of statement and invoice reconciliation. In turn, this strengthened the ability of Hydro Ottawa’s Finance group to validate kWh received from the IESO with much higher level of accuracy, while MDS’ targets were also improved through tightened dollar-level tolerances.
- **Improved validations of IESO invoices** – Hydro Ottawa undertook several modifications to the programs used for importing and converting IESO invoices into LPSS. These changes allowed for automated additions of new charge types, when necessary (typically two to three times per year). The previous process required manual configurations at the time of implementing new charges, thereby presenting risk to data accuracy. With the new program modifications, the need to manually pass-through charges that could not be calculated by LPSS has been eliminated, thus improving overall data accuracy.
- **Enhanced functionality of meter change database** – The purpose of this database is to track and send meter installation information from the Metering department to MDS. Originally developed in 2008, it required upgrades for performance, security, and usability. Enhancements were applied in 2018, allowing users to login using Windows security credentials, make changes to existing entries, sort and search more effectively, and eliminate old forms that were no longer in use. These modifications have improved the accuracy of information exchanged between the teams, resulting in reduced errors and operational efficiencies.
- **Reduced field visits for new commercial meter installations** – MDS staff collaborated with Metering to implement a process for the installation of new commercial meters, with the goal of reducing the number of field visits required for commissioning the equipment. It was observed that, on average, three (3) site visits were being performed during the commissioning of equipment and services for large retail customers. MDS and Metering examined their respective business processes and requirements with an eye towards gaining efficiencies, where possible. Emerging from this effort was a solution for reducing the average number of field visits to 1.5 for purposes of this work. In turn, this has reduced operating expenses and time for the company, while producing savings and more efficient commissioning of service for customers.

(xv) Automated Net Metering Billing Solution

In addition to the billing-related initiatives discussed in the foregoing subsection, Hydro Ottawa wishes to highlight a separate billing project that was undertaken in 2018. Given the nature of this project and the length of the description below, this item has been assigned its own unique subsection in this summary.

For more than 10 years, the provincial net metering program has allowed customers to reduce their monthly electricity costs by generating their own electricity from a renewable energy



source. As of the end of 2018, Hydro Ottawa had 27 customers that were registered as net metered generators. While this number is small compared to the total number of customers served by the company (~335,000), it is expected to grow as the following events occur in the coming years: costs of self-generation using renewable technology (especially rooftop solar panels) continue to decline; contracts for Feed in Tariff ("FIT") and MicroFIT generators begin to expire, with many of those generators expected to transition to net metering arrangements; and the number of participants increase in Hydro Ottawa's GREAT-DR smart grid project (see page 20 above for details).

Net metering is a convenient option for customers to generate their own electricity supply and earn credits for surplus generation sold into the grid. Notwithstanding the benefits derived by customers, however, the administrative challenges posed by net metering arrangements to local distribution companies ("LDCs") from a billing perspective can be significant.

Since the inception of the net metering program in 2005, LDCs in Ontario have had to rely upon onerous manual procedures to perform the requisite billing and settlement processes. This is the result of limitations in LDCs' billing systems – such as the CC&B system employed by Hydro Ottawa and other large distributors – which are not configured to perform the complex calculation, application, and tracking of credits associated with net metering. Examples of the manual procedures that the company has to undertake include, but are not limited to, the following:

- obtaining the preliminary consumption (kWh) and net generation (kWhr) meter reads for an account;
- entering data into a standardized spreadsheet template maintained by Hydro Ottawa, which serves as a template for net metering billing for customers of different rate classes;
- verifying the accuracy of information for a customer's Net Metering Opening Balance, Net Metering Current Generation, and Net Metering Carried Forward Credit, and ensuring that any Net Metering Applied Credit is limited to and does not exceed a customer's variable charges;
- applying the Net Metering fixed service charge and related taxes;
- executing necessary transfers between the billable charge service agreement and the master service agreement; and
- recording a message in the customer's profile regarding the opening balance, billable charges, and accumulated credits (the latter of which cannot be displayed on a customer's bill, due to system limitations), so that this information is available to Hydro Ottawa employees and agents, should any inquiries be received from the customer.

All told, the manual process described above can consume anywhere from 15-30 minutes of an employee's time, depending upon the various circumstances and the complexity of the customer's net metering arrangement. Over time, this approach has resulted in the suboptimal use of staff time and resources.

Accordingly, Hydro Ottawa initiated a project in 2018 to enhance its billing system platform to enable automation of the billing process for net metered customers in all customer classes. The initial phase of the project involved multiple discovery sessions with internal stakeholders and the external provider. These sessions involved identification and validation of essential functional requirements (e.g. credit tracking, financial transactions, billing, service agreements, meter reads, bill print extract, and bill presentment), along with examination of a preliminary



solution design and automation prototype. By year end, the project had successfully secured all of the requisite internal approvals and was set to transition into its next phase in early 2019, at which time implementation of the solution for residential customers was set to begin. (With respect to expanding this solution to other customer classes, this is likewise planned to occur in 2019 for small commercial customers, while late 2019 is the projected timeframe for large commercial customers, contingent upon the successful completion of an LPSS replacement project).

This project will result in positive outcomes for customers and the company alike. For net metered customers, they will enjoy much more transparency with their billing, through presentment of information on net metering-related balances and credits, and a summary of their net generation. Hydro Ottawa call centre agents will also have access to a credit tracking portal, which will better assist in responding to customer inquiries. For the company, there will be significantly greater efficiencies in the billing process for net metered customers, along with greater confidence in the accuracy of the billing data (including for IESO settlement purposes). What's more, the solution will enable re-deployment of staff resources in support of other core business activities and functions.

(xvi) Promoting Public Safety in Municipal Building Permit Applications

Hydro Ottawa's distribution design team began working more closely with the City of Ottawa's Building Permits and Inspection group to identify potential conflicts with energized overhead lines early on in the permitting application process. As part of this initiative, when an application is submitted to the City, any proposed development in the vicinity of the lines is sent to Hydro Ottawa's Service Layout group for review and for customer education on clearance requirements. Options to relocate and reconfigure lines are also presented. This has resulted in closer collaboration not with only the City, but with customers, contractors, developers, and architects. Potential challenges and concerns are identified at an early phase of the planning process, leaving ample time for developers and customers to adjust any project plans, as required, and thereby producing favourable outcomes from a public safety perspective.

(xvii) New HR Service Delivery Model

In conjunction with the implementation of Workday as a digital solution for the HCM component of Hydro Ottawa's enhanced ERP system (see pages 13-15 for more details), the company rolled out a new service delivery model for HR services in early 2018. The new, more agile HR Service Delivery and Operating Model is aligned to the business, leverages the self-service capabilities of Workday, and better enables HR and its stakeholders to execute on the company's Strategic Direction.

Tailored to address the needs of Hydro Ottawa's continually evolving business, the rapid pace of shifting employee demographics, and increasing access to technology, the new service delivery model consists of the following tiered service delivery approach:

- **HR Technology:** Workday and other employee-focussed technologies will provide employees and management with direct access to their information anytime, anywhere through self-service on any device.



- **HR Service Centre:** this centre will serve as the first point of contact for employees and managers for all HR inquiries, with a dedicated phone extension and email address.
- **HR Centres of Expertise:** these will serve as teams of functional HR experts and specialists who design and develop strategies to drive policies, programs, processes and tools, and provide solutions to customer/business needs.
- **HR Partners:** this new role of business-facing strategic partner provides advisory and consultative services to managers, bringing solutions on employee-related matters. HR Partners are assigned to specific divisions and groups across the company, with the HR Partner leveraging the HR Centres of Expertise to bring the right combination of services to their client groups. HR Partners serve alongside an HR Safety Partner, who likewise is dedicated to a certain division or group within the company.
- **HR Leadership:** senior HR leadership will help establish and implement a roadmap in alignment with the company's *2016-2020 Strategic Direction*, so as to ensure an effective and constantly learning organization, with the right skill sets and organizational capacity to deliver on existing and new businesses.

The adoption of an enhanced Human Resources Service Delivery Model will lend valuable capacity and support to fostering a culture of innovation, continuous improvement, productivity, and customer service within Hydro Ottawa.

(xviii) Legal Services Group Operational Efficiencies

This group is responsible for the coordination of legal services across the corporate enterprise. Continuous improvement and productivity measures that were undertaken in 2018 included the following:

- **Elimination of paper copies of legal report binders for jurisprudence and legal updates** – in step with the company's broader objective of going paperless, Legal Services adopted Lexis Nexis, an online database featuring a robust repository of information. Cost savings totalled approximately \$7,000, as well as reduced space required for physical binders and reduced time to manually update these materials on a monthly basis.
- **Precedent agreements for procurement** – a precedent database allows for greater coordination and standardization of the company's position on legal risks in contracts. The increased standardization can reduce the uncertainty in interpreting clauses, thereby minimizing the prospects for disputes arising with service providers. In addition, by creating and using precedents, both business and legal professionals become familiar with the documents. In turn, this reduces the amount of time needed to prepare and negotiate procurement materials.

(xix) Extended Trim Program

In conjunction with established business practices to seek ongoing efficiencies in program delivery and execution, a pilot program was initiated in 2018, providing customers with the benefit of scheduling trimming or removal of trees and branches through Hydro Ottawa. This service is intended to offer a safe and reliable vegetation management option in and around the



home owner's secondary service. Any revenue derived from the program is applied towards offsetting the company's annual vegetation management costs.

(xx) Cost Savings in Vegetation Management Services

Hydro Ottawa has used third-party vegetation management contractors to complete regular cycle trim, as well as project and emergency vegetation work for a number of years. In 2018, a new request for standing offer was issued to cover the five year period from 2019-2023. As a result of the strict enforcement of Hydro Ottawa's trim standards through our Forestry Inspector audits and excellent contractor relationships, the company awarded a contract to a vendor that will produce annual savings of approximately \$300,000 in its regular cycle trim program. These savings can be used to offset expenses related to emergency or unplanned vegetation costs associated with major storm events, such as the September 2018 tornadoes.

(xxi) Residential Electric Vehicle Charging Program

In step with the company's commitment to innovation, sustainability, and customer value, Hydro Ottawa announced the launch of a pilot program in April 2018 aimed at helping to increase understanding around the impacts of electric vehicles ("EVs") on the grid, while responding to customer preferences for EV transportation options. This pilot program was established in partnership with FLO, Canada's largest EV charging network provider, and targeted the deployment of 100 Level 2 EV charging stations at the residential customer level.

As part of the pilot, Hydro Ottawa assumed responsibility for pilot participant recruitment, marketing the project, and managing the installation of charging stations for eligible participants. FLO assumed responsibility for the provision of 100 FLO Home X5 charging stations, along with the provision of software services for the duration of the project term, including real-time monitoring, and reporting and analysis of infrastructure impacts. In addition, FLO's role in future phases of the pilot will encompass enabling Hydro Ottawa to initiate demand response events on the charging stations and determining requirements related to the integration of EV charging technology with renewable resources.

The selection of FLO's Home X5 residential charger was a conscious choice by Hydro Ottawa, seeing as it gives customers control over their charging behaviour and preferences. Through the use of this particular piece of equipment, customers are able to track their usage data, as well as customize and manage their settings from a private FLO account.

As part of this pilot, Hydro Ottawa also has access to participating customers' charging data. This data serves as valuable information to help the company's engineers assess and plan for the changes and challenges on the electrical grid that will accompany mass EV adoption. Over the course of the pilot roll-out, Hydro Ottawa monitored and assessed the available data, and will seek to integrate it with the company's technical standards and long-term planning in 2019.

Roll-out of the pilot project occurred over the course of Q2-Q4 2018. As of the end of 2018, Hydro Ottawa had successfully recruited approximately 50 participants. Of these, approximately 20 had charging stations installed and operating by year's end, while the remainder were at an earlier stage in the pre-installation process.

(xxii) Alternate Locate Agreements

Hydro Ottawa implemented Alternate Locate Agreements ("ALAs") in 2018. An ALA is an agreement between a utility and an excavator, in which the excavator may work using specific



digging methods without requiring a locate from the utility. A locate identifies the location of utility plant buried in an excavation area. However, under an ALA, an excavator agrees to use hand digging or a hydro vac in specific low-risk situations. The practical effect of such an arrangement is OM&A cost savings for the utility and administrative and time savings for excavators.

The ALAs were implemented part way through 2018 and achieved approximately \$55,000 in OM&A savings for the year. Extrapolating these savings to a full 12 months of ALA implementation, it is anticipated that the annual cost savings may be higher in 2019 and beyond.

(xxiii) Field Crew Operational Efficiencies

In November 2017, the OEB amended the licenses of all electricity distributors in Ontario to prohibit the disconnection of residential customers by reason of non-payment from November 15th in one year to April 30th in the following year.

Consequently, Hydro Ottawa had excess capacity in its collections field representatives group during the segments of the disconnection ban periods in effect in 2018. Hydro Ottawa therefore used its Mobile Workforce Management system to allocate low-risk, non-electrical maintenance work to Field Collectors during this period. This is work that is often identified during the infra scans and other inspections and that typically takes extended periods of time to complete, inasmuch as it is regularly displaced on the priority list of tasks for Operations resources. In light of the efficiencies gained through this practice, Hydro Ottawa anticipates sustaining – and potentially expanding – it on a go forward basis.

(xxiv) Information Management Program

In 2018, a large communication and education campaign was undertaken to accompany the physical cleanup of records (see page 17 above) to ensure staff were aware of what constitutes a corporate record and were supported through cleanup efforts.

The Information Management program also spent significant time defining the company's Information Classification & Scheme and Retention Schedule ("ICSRs"), which involved interviewing all divisions and groups to understand their business functions and leveraging models implemented by peer organizations.

A refreshed corporate policy on Information Management was also published (see page 33 below).

(xxv) Electronic Document Signature Tool

In late 2018, Hydro Ottawa deployed a new tool – DocuSign – to facilitate employee review and approval of documents. With DocuSign, approvers are able to review and sign document(s), and gain instant visibility into the document status. Each electronic signature is unique, documentable, encrypted, and tamper-proof. The software is compatible with computers, smartphones, and tablets, and allows for signing of documents in common formats, including Microsoft Word and PDF. What's more, the tool enables archiving of electronic documents.

One concrete example of the efficiencies gained through the implementation of DocuSign is the paperless processing by the MDS department of all generation, wholesale (i.e. IESO and Hydro One), weather, and miscellaneous invoices. For this group, DocuSign has led to paper



reduction and more expeditious processing of invoices, as responsible individuals are able to authorize their approval remotely.

This tool serves as an example of the company's commitment to achieving greater efficiencies and continuous improvement across all of its business processes and practices, and to moving towards a paperless work environment.

(xxvi) New Corporate Policies

In step with the overarching objective of Organizational Effectiveness set forth in the company's *2016-2020 Strategic Direction*, as well as with its commitment to continuous improvement, productivity, and safety, Hydro Ottawa instituted a package of new corporate policies over the course of 2018:¹⁷

- **Cybersecurity:** defines a formal set of cybersecurity requirements which must be met by all users who are given access to Hydro Ottawa's electronic assets, including directives for acceptable user practices. (For further details, please see page 22).
- **Information Management:** identifies the principles and directives that guide information management at the company, and establishes safeguards and parameters to the information that Hydro Ottawa holds in its custody or control in the conduct of its business transactions and activities.
- **Safe Use of Mobile Devices in the Workplace Policy:** aims at preventing incidents and injuries directly or indirectly related to inappropriate use of mobile devices in the workplace, and establishes parameters for the use of mobile devices in the workplace, with the goal of increasing employees' concentration on the task at hand, improving the quality of employees' work, and decreasing the number of incidents associated with distractions caused by using mobile devices.
- **Workplace Drug and Alcohol Policy:** sets out Hydro Ottawa's expectations regarding the use of substances that could impact an employee's ability to perform their duties safely, competently, and efficiently. The policy provides the potential consequences for non-compliance and the support available to employees who are dealing with a substance use disorder. This policy was intended, in part, to be responsive to the legalization of cannabis. (For further details on this matter, please see pages 36-37).

¹⁷ These policies were adopted at the holding company level and have enterprise-wide applicability across the Hydro Ottawa group of companies, including Hydro Ottawa Limited.



3. Public Policy Responsiveness

"Utilities are expected to consider public policy objectives in their business planning and to deliver on the obligations required of regulated utilities. These obligations may evolve over time and therefore this Handbook does not provide a comprehensive list of all requirements. Utilities are expected to demonstrate that they have considered Conservation First in their investment decisions. The OEB will expect to see proposals for how distributors are supporting low income customers through programs such as LEAP and/or OESP, or through other distributor-specific programs. Electricity distributors and transmitters are expected to expand or reinforce their systems to accommodate the connection to their system for renewable energy generation facilities and the OEB expects their system plans to include details on how they will meet this requirement. Natural gas utilities are expected to identify investments or programs that have been planned to meet obligations under Ontario's cap and trade program."

This section of the Annual Summary highlights how Hydro Ottawa is (a) delivering on obligations mandated by government through legislation, Ministerial directives, and regulatory requirements; and (b) achieving outcomes that are aligned with the RRF's Public Policy Responsiveness category.

(i) Conservation Results

In 2018, Hydro Ottawa achieved 59 GWh of net energy savings. This represents 15% of the 395 GWh energy savings target assigned to the utility under the province's Conservation First Framework ("CFF"). As of the end of 2018, with two years remaining in the CFF program, Hydro Ottawa had achieved a cumulative total of 335 GWh of energy savings – equivalent to 85% of its six-year target.

Based on its overall robust performance in delivering energy efficiency savings for its customers, Hydro Ottawa earned a one-time, mid-term incentive payment from the CFF program of \$4.1 million. (This payment was based on achieving 276 GWh of final verified savings for the 2015-2017 period).

(ii) Affordability Fund Trust

The Government of Ontario's Fair Hydro Plan established an Affordability Fund Trust ("AFT") in 2017 to assist customers who do not qualify for low-income conservation programs and are unable to undertake energy efficiency improvements without financial assistance. Through a competitive procurement process, Hydro Ottawa retained an external service provider in 2018 to administer and deliver AFT programs in its service territory. Hydro Ottawa collaborated with the external provider in validating program applications and referrals, and in tracking the delivery of Home Energy Kits to program participants. In 2018, 370 customers participated in AFT programs.

(iii) Energy and Water Reporting and Benchmarking

With July 1, 2018 marking the initial reporting deadline under O.Reg. 20/17: Reporting of Energy Consumption and Water Use, Hydro Ottawa undertook numerous actions – both in the lead-up to this date and beyond it – to support customers and building owners in achieving compliance:

- Throughout 2018 – ongoing engagement in the stakeholder working groups convened by Ministry of Energy ("MOE") to offer guidance on numerous technical matters related



to the provision of electricity consumption data to building owners, as well as feedback on lessons learned from EWRB data delivery and reporting for Year 1.

- January 2018 – preparation of a formal communications plan that structured and sequenced Hydro Ottawa’s EWRB-related outreach to target audiences and key stakeholders. Activities and deliverables that fell under the scope of this plan included the posting of a dedicated EWRB page and data request form on Hydro Ottawa’s website¹⁸; email correspondence to affected customers; posting of information, tips, and MOE sharable materials on social media platforms; and preparation of key messages and information for Hydro Ottawa call centre agents.

Hydro Ottawa received positive feedback on the online form that was established to allow building owners to request their data. This tool proved to be popular and user-friendly with data requesters, and was likewise acknowledged as such by MOE staff.

- January-March 2018 – participation in two events hosted by the Building Owners and Managers Association (“BOMA”) that were intended to educate the building sector on the requirements of the EWRB regulation, the timetable for reporting, and the information and tools which would be necessary to fulfill reporting obligations. The first event on January 24 was a webinar hosted by BOMA Toronto, in which Hydro Ottawa joined other electricity and gas utilities in highlighting plans to assist building owners in obtaining necessary data. The second event was a detailed seminar on EWRB for Ottawa-area building owners, co-sponsored by BOMA Ottawa and Hydro Ottawa.
- January-June 2018 – extensive planning by internal stakeholders to develop, test, and refine business processes for Hydro Ottawa’s intake and data collection activities related to EWRB requests.

(iv) Regulatory Compliance Project

As noted in the 2017 RRF Summary, Hydro Ottawa completed Phase 1 of its regulatory compliance program review in 2017. Hydro Ottawa was able to create a compliance catalogue to document OEB (and IESO) compliance requirements and the associated RACI matrix. (“RACI” stands for “responsible, accountable, consulted, or informed”). The RACI matrix establishes stakeholder roles and responsibilities for each compliance requirement.

As part of Phase 2 of this initiative, Hydro Ottawa developed and implemented a compliance review pilot in 2018. The cross-functional compliance review pilot applied the tools developed in Phase 1, such as the RACI matrix and compliance catalogue to assess the quality and accuracy of reported information from internal business units. Hydro Ottawa reviewed selected businesses processes and solicited stakeholder input to identify opportunities for improvement and make recommendations. The compliance review process led to an updated “RACI” matrix, incorporating the additional role of “supporting.” This effort also reinforced to stakeholders the importance of compliance monitoring within their business activities.

At the conclusion of the compliance review pilot, results and recommended next steps to

¹⁸ <https://hydroottawa.com/accounts-and-billing/business/request/ewrb>. Hydro Ottawa established a dedicated email address to manage all customer inquiries and requests related to EWRB reporting (ewrb@hydroottawa.com).



enhance the Hydro Ottawa compliance program were identified and communicated to all stakeholders.

(v) Low-Income Customer Support

In 2018, 14,562 Hydro Ottawa customers collectively received \$9.3 million in financial assistance through the Ontario Electricity Support Program ("OESP"), while 246 customers accessed emergency relief through the Low-Income Energy Assistance Program ("LEAP") for an average grant of \$407.

With respect to the Home Assistance Program ("HAP"), administration responsibility for this program was transferred from electricity distributors to the IESO, effective January 1, 2018, pursuant to a Ministerial directive.¹⁹ Accordingly, Hydro Ottawa is no longer able to track the number of customers participating in CFF programs targeted to the low-income customer segment.

Hydro Ottawa continued to raise customer awareness of these programs through such actions as the inclusion of information for low-income customers on the home page of its public website, maintenance of a page specific to low-income programs, on-bill and on-hold messaging, and outreach via social media. During collections calls and collections field visits, the company makes every attempt to inform customers of available low-income support programs. In addition, in 2018 Hydro Ottawa finalized a financial assistance brochure that covers the entire range of programs available to customers. The brochure is distributed at various community events and was also included in one cycle of disconnection notices in May 2018, following the expiration of the disconnection ban period. The brochure is set to be updated annually.

(vi) Integration of Renewable Energy Generation

Hydro Ottawa has remained active in facilitating the connection of renewable energy facilities since the passage of the *Green Energy and Green Economy Act* in 2009 and the predecessor Renewable Energy Standard Offer Program in 2006. In 2018, Hydro Ottawa connected over 140 embedded generation facilities to its distribution system, representing the equivalent of 32 kW of generation capacity. As of the end of 2018, embedded generation in the company's service territory totaled 112,745 kW. In addition, the number of net metered customers nearly doubled (from 14 to 27), while the total installed capacity of net metered generation increased approximately 900% (from just under 100 kW to approximately 900 kW), relative to 2017.

(vii) Preparation for the Legalization of Cannabis

On October 17, 2018, federal legislation governing the legalization and regulation of cannabis came into force. In preparation for this major shift in public policy, Hydro Ottawa enacted a Workplace Drug and Alcohol Policy and implemented an internal communications and training program to support introduction and roll-out of the policy, and to help safeguard workplace, employee, and public safety. Training sessions included an overview of the new policy and program, related changes to Hydro Ottawa's Code of Business Conduct, a presentation on the details of the legislation, and a seminar from one of Canada's leading certified addiction medicine physicians on a range of topics, including cannabis potency, short and long term

¹⁹ Ministerial Directive re: 2015-2020 Conservation First Framework and Partnering with Green Ontario Fund; Delivery of Conservation and Demand Management Programs Targeted to the Low-Income Customer Segment (August 4, 2017).



effects, medical vs. recreational cannabis use, fitness for duty in safety sensitive positions, and duty to accommodate.

(viii) Participation in OEB, Government & IESO Working Groups

Hydro Ottawa strives to support the development and implementation of robust public policy that will enable movement towards a smart, sustainable energy future for Ontario. As evidence of this commitment, Table 1 below identifies representatives from the company who constructively contributed to the formulation of effective regulations and policies through formal participation on OEB, government, and IESO working groups over the course of 2018.



Table 1 – Hydro Ottawa Participants in OEB, Government & IESO Working Groups

Name	Title	Working Group	Government/Sector Organization
Raed Abdullah	Distribution Engineer	Smart Grid	Ministry of Energy
April Barrie	Manager, Rates & Revenue	Energy Retailer Service Charges (EB-2015-0304)	Ontario Energy Board
Susan Barrett	Manager, Communications	Redesign Action Plan	Ministry of Energy
Shawn Carr	Manager, Conservation Programs	Conservation First Implementation Committee	Independent Electricity System Operator
		CFF Task Committee – High Performance New Construction	
Patrick Brown	Manager, Regulatory Policy & Research	EWRB Stakeholder Working Group	Ministry of Energy
Mark Fernandes	Chief Information & Technology Officer	Data Strategy Advisory Council	Independent Electricity System Operator
		EWRB Stakeholder Working Group	Ministry of Energy
Benjamin Hazlett	Manager, Distribution Policies & Standards	Cyber Security Steering Committee – Protecting Privacy of Personal Information and the Reliable Operation of the Smart Grid in Ontario (EB-2016-0032)	Ontario Energy Board
		Energy Transformation Network of Ontario	Independent Electricity System Operator
Shane Labrash	Program Officer, CDM	Pole Attachment Working Group (EB-2015-0304)	Ontario Energy Board
		CFF Task Committee – Prescriptive Measures	Independent Electricity System Operator



Name	Title	Working Group	Government/Sector Organization
Jojo Maalouf	Manager, IT Security	Cyber Security Working Group – Protecting Privacy of Personal Information and the Reliable Operation of the Smart Grid in Ontario (EB-2016-0032)	Ontario Energy Board
Matthew McGrath	Supervisor, Asset Management	Regional Planning and Cost Allocation Review (EB-2016-0003)	Ontario Energy Board
Michel Provost	Manager, Billing, Collections & MDS	Smart Metering Entity Steering Committee	Independent Electricity System Operator
		Financial Assistance Working Group	Ontario Energy Board
Gregory Van Dusen	Director, Regulatory Affairs	Regulatory Affairs Standing Committee	Ontario Energy Board
Charles Zaloum	Supervisor, Conservation	CFF Task Committee – Retrofit	Independent Electricity System Operator



4. Financial Performance

"Utilities are expected to demonstrate sustainable improvements in their efficiency and in doing so will have the opportunity to earn a fair return. The OEB will monitor the financial performance of each utility to assess continuing financial viability and to determine whether returns are excessive. Utilities have a choice of rate-setting methods to meet their particular needs. Additional tools are available to support infrastructure investment. Utilities must report comprehensive and consistent information, allowing for comparisons over time and across utilities. The OEB will act on its obligations to ensure a financially viable sector where performance indicates that a regulatory response is needed."

This section of the Annual Summary highlights how Hydro Ottawa is (a) creating sustainable growth in its business and earnings; and (b) achieving outcomes that are aligned with the RRF's Financial Performance category.

As noted on page 12, this section does not include information on capital spending undertaken by Hydro Ottawa. Hydro Ottawa is obligated to submit annual reports to the OEB on its actual capital spending on a program level. Please consult these annual reports for information on the progress in Hydro Ottawa's capital expenditures against its DSP.²⁰

(i) Financial Results

The third year of its approved Custom IR rate plan once again marked a robust level of financial performance by the company. Distribution revenue continued its trend of steady year-over-year growth, increasing \$9.2 million (or 5.4%) over 2017. The company also increased its net income by \$0.7 million over the previous year, for a total of \$37.2 million. In turn, Hydro Ottawa was able to achieve a strong return on equity ("ROE") result of 9.14%.

With respect to Hydro Ottawa's debt to equity ratio, the year 2018 concluded with the company continuing to carry a ratio higher than the OEB's deemed capital structure. Similar to the previous years within the Custom IR term, this was a result of the ongoing capital expenditure program required to replace aging distribution system infrastructure. Although Hydro Ottawa is more highly leveraged than the deemed capital structure, the company has been able to keep its cost of borrowing very low due to favourable interest rates on its long-term debt.

(ii) Dividend

For the second consecutive year, the strength of Hydro Ottawa's financial performance helped support the establishment of a new record in terms of the dividend payment made at the holding company level to the City of Ottawa, the enterprise's sole shareholder.

Hydro Ottawa's 2018 performance generated a dividend of \$18.3 million for the holding company.²¹ In turn, this positioned the holding company to be able to return a dividend of \$22.3 million to the shareholder, representing an approximate 2% increase over the 2017 dividend. The holding company's 2018 dividend was likewise \$2.3 million higher than the \$20 million floor for the

²⁰ These reports are available on Hydro Ottawa's website: <https://hydroottawa.com/about/regulatory-affairs/reports>.

²¹ The annual dividend paid by Hydro Ottawa to the holding company is based on the previous year's results. Accordingly, the dividend based on 2018 results was paid in 2019. The same applies for the dividend paid by the holding company to the shareholder.



dividend payment, which was established pursuant to a revised dividend policy adopted by the shareholder in 2016. This policy stipulates that annual dividends from the holding company will be the larger of either (i) 60% of the net income of Hydro Ottawa Limited (i.e. the regulated LDC), or (ii) \$20 million.

The aforementioned results bode well for Hydro Ottawa's ability to continue providing strong value to the holding company, the enterprise's shareholder, and its customers into the future.



III. Conclusion

This 2018 RRF Summary describes the numerous outcomes achieved by Hydro Ottawa over the course of 2018 that were guided by RRF objectives and expectations.

Hydro Ottawa is pleased to be able to highlight a broad range of outcomes that underscore a strong level of performance across the four areas of focus underpinning the RRF. These include, but are not limited to, the effective mobilization and deployment of restoration resources following the historic September 2018 tornado event, robust customer satisfaction levels, the first deployment of a Smart Speaker skill by an electric utility in Canada, improvements to the flow of information and the availability of innovative services to customers, implementation of an enhanced ERP system, installation of a new SCADA system, and strong financial performance for the third consecutive year within the company's current five-year rate plan.

Hydro Ottawa is confident that the 2018 RRF Summary serves to illustrate the company's commitment to continuous improvement and to the incorporation of RRF principles across its business operations.

Hydro Ottawa looks forward to preparing and presenting the next version of its annual summary for the year 2019.



Version History Tracking

Version	Author	Date Revised	Description of Changes
Version 1	Regulatory Affairs	October 2019	N/A – initial release
Version 2	Regulatory Affairs	December 2019	Revisions to section II., 2. Operational Effectiveness, (vi) Fleet Replacement (addition of clarifying language).

PROPOSED ANNUAL REPORTING – 2021-2025

1. INTRODUCTION

As described by the OEB, the Renewed Regulatory Framework (“RRF”) is fundamentally a “comprehensive performance-based approach to regulation that promotes the achievement of performance outcomes that will benefit existing and future customers.”¹ In its roll-out of the RRF, the OEB underscored the importance of public reporting by electricity distributors of their performance under the RRF’s core outcome categories. This level of importance was demonstrated in the OEB’s adoption of a standardized Electricity Utility Scorecard, which is intended to provide open and transparent reporting and monitoring of individual distributors’ performance, and allow for comparisons across the sector. Alongside the standards and measures set out in the Electricity Utility Scorecard, the OEB also signalled interest in distributors reporting their progress against the goals laid out in their network investment plans.²

While maintaining an emphasis on the standardized annual scorecard for electricity distributors, the OEB has also confirmed an expectation that distributors will incorporate supplementary reporting measures that will speak to unique aspects of distributors’ strategic plans and performance. For example, the *Handbook for Utility Rate Applications* issued in 2016 includes the following language in its discussion of specific considerations for the Custom Incentive Rate-Setting (“Custom IR”) method:

“Performance Metrics: The OEB has established a scorecard for electricity distributors, however, additional performance metrics should also be proposed so that expected outcomes can be monitored. All other utilities must propose a comprehensive scorecard that is informed by the scorecard for electricity distributors, but specifically includes other performance metrics aligned to the outcomes identified in the application. This is required for both Custom IR and cost of service rate applications.”³

¹ Ontario Energy Board, *Report of the Board - Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* (October 18, 2012), page 55. This report is hereafter referred to as the “RRFE Report.”

² *Ibid*, page 58.

³ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 26.

1 In addition, the OEB has begun examining the possibility of instituting activity and program
2 based ("APB") benchmarking for electricity distributors. The launch of the APB Initiative
3 positioned the proposal as an evolution of the OEB's toolkit for monitoring utility performance.⁴
4 Of note, the OEB acknowledged that the success of any APB framework would be contingent
5 upon improvements to reporting and data quality, which the OEB had previously identified as a
6 need in light of its experience with several years' worth of reporting from the distribution sector.⁵

7
8 A final example of the OEB's interest in ongoing refinement of performance reporting by utilities
9 was the inclusion in the OEB's *2019-2022 Business Plan* of a specific initiative focused on
10 updating the Electricity Utility Scorecard, in order to ensure that it was continuing to provide
11 value to consumers.⁶

12
13 In step with the foregoing discussion, this Schedule will identify the following: (i) the various
14 performance measures which Hydro Ottawa committed to report on an annual basis as part of
15 its 2016-2020 Custom IR application, and (ii) those performance measures which the utility is
16 committing to report against on an annual basis for the 2021-2025 period. Consistent with the
17 prescriptions of the RRF, these reporting requirements are intended to provide the OEB,
18 customers, and other stakeholders with the ability to better monitor and understand diverse
19 aspects of Hydro Ottawa's performance, and to demonstrate the utility's accountability in
20 transparently communicating the outcomes achieved under its performance management
21 framework.

22 23 **2. 2016-2020 ANNUAL REPORTING (CURRENT)**

24 As part of the adjudication of Hydro Ottawa's 2016-2020 application, the utility agreed to report
25 the following information on an annual basis:⁷

⁴ Ontario Energy Board, Letter re: *Activity and Program Based Benchmarking (ABP) Initiative*, EB-2018-0278 (October 10, 2018), page 2.

⁵ Ontario Energy Board, Staff Discussion Paper, *Activity and Program Based Benchmarking for Electricity Distributors*, EB-2018-0278 (February 25, 2019), page 47.

⁶ Ontario Energy Board, *2019-2022 Business Plan*, page 13.

⁷ Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-Setting Approved Settlement Proposal*, EB-2015-0004 (December 7, 2015), page 24.

- (i) Electricity Utility Scorecard results, as well as Reporting and Record-keeping Requirement ("RRR") data;
- (ii) Annual update on actual capital expenditures by program type (i.e. System Access, System Service and System Renewal, and General Plant) vs. budgeted capital expenditures by program type and appropriate variance analysis;⁸
- (iii) Key Performance Indicators ("KPIs") that were incorporated into the 2016-2020 Distribution System Plan ("DSP") to measure continuous improvement in several categories of asset management planning, capital investment planning, and customer-oriented performance; and
- (iv) System Average Interruption Duration Index ("SAIDI") and System Average Interruption Frequency Index ("SAIFI") by cause code.

Items (ii) and (iii) have been reported through the filing of an annual report ("CIR Annual Report") to the OEB and parties to the Approved Settlement Agreement governing Hydro Ottawa's 2016-2020 rate plan.⁹ Item (iv) is reported through annual RRR filings.

3. 2021-2025 ANNUAL REPORTING (PROPOSED)

Hydro Ottawa's proposals for annual performance reporting to the OEB are comprised of two essential elements: (i) a Custom Performance Scorecard and (ii) updates on the progress of capital spending in key categories.

In addition to these customized mechanisms for annual reporting, Hydro Ottawa will comply with mandatory reporting mechanisms that are applicable to all electricity distributors, such as the annual Electricity Utility Scorecard and RRR requirements.

⁸ The System Renewal and System Service categories were merged into one category to reflect Hydro Ottawa's standard operating practice to shift funds between the two categories, as warranted by customer and operational requirements.

⁹ These reports are available on Hydro Ottawa's website:
<https://hydroottawa.com/about-us/regulatory-affairs/custom-incentive-reports>.

1 **3.1. CUSTOM PERFORMANCE SCORECARD**

2 Hydro Ottawa is proposing to include 26 measures in its Custom Performance Scorecard for the
3 2021-2025 rate term. Of these measures, 10 are part of the existing CIR Annual Reports. The
4 other 16 are new, insofar as this Application represents the first instance in which Hydro Ottawa
5 is proposing to formally report against their progress to the OEB.

6
7 When combined with the number of measures contained in the Electricity Utility Scorecard, this
8 amounts to a total of 49 outcomes to be monitored annually as part of the utility's 2021-2025
9 Custom IR plan.¹⁰

10
11 Targets for each measure were informed by recent historical data. It is generally Hydro Ottawa's
12 intent for the targets to be assessed as five-year targets, stretching over the duration of the
13 2021-2025 rate period. Where possible and appropriate, the utility has provided specific,
14 quantitative targets for particular measures. As Hydro Ottawa progresses through each year of
15 its rate term, it will continue to assess the feasibility of setting annual targets for other measures.

16
17 Hydro Ottawa's proposed Custom Performance Scorecard is presented in Table 1 below.

¹⁰ The total number of outcomes includes the Net Cumulative Energy Savings measure that has been included in the Electricity Utility Scorecard in recent years. Hydro Ottawa acknowledges that the inclusion of this measure on the Electricity Utility Scorecard going forward may be subject to change, in light of the discontinuance of the Conservation First Framework in 2019.

1

Table 1 – Custom Performance Scorecard Measures (2021-2025)

RRF Outcome	OEB Reporting Category	Hydro Ottawa Custom Measures	New/ Existing	Target
Customer Focus	Customer Satisfaction	Contact Centre Satisfaction – Transactional Feedback	New	Maintain
		Number of MyAccount Customers	New	Increase
		Number of Online Billing Accounts	New	Increase
Operational Effectiveness	Safety	All Injury/Illness Frequency Rate	New	Reduce
		Lost Workday Severity Rate	New	Reduce
	System Reliability	Customer Average Interruption Duration Index	Existing	Monitor
		Feeders Experiencing Multiple Sustained Interruptions	Existing	Maintain
		Worst Feeder Analysis – Number of Feeders with Very Poor Performance	Existing	Reduce
		Stations Exceeding Planning Capacity	Existing	≤5%
		Feeders Exceeding Planning Capacity	Existing	≤10%
		Stations Approaching Rated Capacity	Existing	0%
		Feeders Approaching Rated Capacity	Existing	0%
	Cost Control	Productive Time	Existing	Maintain
		Labour Allocation	Modified	Maintain
		3-Year Average Cost per Pole – Wood Pole Replacement	New	Monitor
		3-Year Average Cost per Meter – Underground Cable	New	Monitor
		Average Cost per Kilometer – Vegetation Management	New	Monitor
		Average Cost per Pole – Pole Test and Inspection	New	Monitor
	Asset Efficiency	Technology Infrastructure Cost per Employee	New	Monitor
Public Policy Responsiveness	Environment	Annual Oil Spills & Costs of Remediation	Existing	Reduce
		Non-Hazardous Waste Diversion Rate	New	Maintain
		Percentage of Green Suppliers	New	Maintain
Financial Performance	Financial Metrics	OM&A per Customer	New	Monitor
		Bad Debt as a Percentage of Total Electricity Revenue	New	Monitor
		Cumulative Capital Additions per Investment Category	New	Monitor
		Annual Capital Spending per Investment Category	New	Monitor

3.1.1. Description of Custom Performance Scorecard Measures

In order to ensure that the OEB, customers, other stakeholders and Hydro Ottawa are aligned in their understanding of the nature of the reporting measures that are proposed for inclusion in the utility's Custom Performance Scorecard, a description of each measure is included below.

- **Contact Centre Satisfaction – Transactional Feedback:** the level of satisfaction expressed by customers with the service received from Hydro Ottawa's customer contact centre.¹¹
- **Number of MyAccount Customers:** the total number of customers registered in the utility's online customer account portal.¹²
- **Number of Online Billing Accounts:** the total number of customers registered to receive and pay their bills electronically.
- **All Injury/Illness Frequency Rate:** the number of work-related injuries and illnesses, multiplied by 200,000 hours, and divided by total number of actual hours worked.
- **Lost Workday Severity Rate:** the number of workdays lost due to work-related injuries and illnesses, multiplied by 200,000 hours, and divided by total number of actual hours worked.
- **Customer Average Interruption Duration Index:** the annual average time required to restore power to the average customer per sustained outage.
- **Feeders Experiencing Multiple Sustained Interruptions:** the number of feeders that experienced 10 or more sustained outages greater than one minute in duration.

¹¹ This measure applies to customer interactions with the contact centre that occur through phone, email, or web chat channels.

¹² MyAccount is a web-based customer preference electronic dashboard. Among other things, it allows customers to view their consumption data, pay their bills, compare bills, receive alerts and notifications, and manage their customer profile.

- 1
- 2 • **Worst Feeder Analysis – Number of Feeders with Very Poor Performance:** the
- 3 number of feeders whose performance is determined to be very poor, as assessed from
- 4 the worst performing feeder analysis.
- 5
- 6 • **Stations Exceeding Planning Capacity:** the percentage of stations with a summer
- 7 peak operating above 100% of their planned capacity rating.
- 8
- 9 • **Feeders Exceeding Planning Capacity:** the percentage of feeders with a summer
- 10 peak operating above 100% of their planned capacity rating.
- 11
- 12 • **Stations Approaching Rated Capacity:** the percentage of stations at or above 90% of
- 13 their rated capacity.
- 14
- 15 • **Feeders Approaching Rated Capacity:** the percentage of feeders at or above 90% of
- 16 their rated capacity.
- 17
- 18 • **Productive Time:** the total regular hours charged to a work order as a ratio of total
- 19 regular hours.¹³
- 20
- 21 • **Labour Allocation:** the amount of labour spent on maintenance and administrative work
- 22 as a ratio of total productive time.¹⁴
- 23
- 24 • **3-Year Average Cost per Pole – Wood Pole Replacement:** the three-year average
- 25 cost to replace a single wood pole.¹⁵

¹³ The target of this indicator is to maximize this index by identifying and improving efficiencies.

¹⁴ Historically, this metric represented the amount of labour spent on capital activities as a ratio of total regular hours. However, starting in 2020, Hydro Ottawa has modified this metric in order to support broader performance management objectives. Accordingly, the target under the modified metric is to stabilize the amount of labour allocated to maintenance and administrative work.

¹⁵ Components such as risers and underground cable are excluded.

- 1 • **3-Year Average Cost per Meter – Underground Cable:** the three-year average cost to
2 replace a meter of underground cable.¹⁶
3
- 4 • **Average Cost per Kilometer – Vegetation Management:** the average cost to clear
5 vegetation along one kilometer of distribution line.
6
- 7 • **Average Cost per Pole – Pole Test and Inspection:** the average cost to test and
8 inspect a single pole.
9
- 10 • **Technology Infrastructure Cost per Employee:** the sum of external IT support costs,
11 computer hardware, and software depreciation divided by the number of employees.
12
- 13 • **Annual Oil Spills & Costs of Remediation:** the total amount of oil (in litres) from Hydro
14 Ottawa infrastructure and equipment spilled into the environment, and the corresponding
15 costs of remediation (represented in external contractor costs only).
16
- 17 • **Non-Hazardous Waste Diversion Rate:** the rate at which non-hazardous waste is
18 successfully diverted from landfills, measured as a percentage.
19
- 20 • **Percentage of Green Suppliers:** the percentage of goods and services that are
21 procured from local suppliers (i.e. suppliers located within a 100 km radius of the
22 National Capital Region).
23
- 24 • **OM&A per Customer:** the total operations, maintenance, and administration expenses
25 divided by the total number of customers that Hydro Ottawa serves.¹⁷
26
- 27 • **Bad Debt as a Percentage of Total Electricity Revenue:** the percentage derived by
28 dividing total bad debt by total electricity revenue.

¹⁶ Civil duct banks and associated secondary devices are excluded.

¹⁷ This definition is intended to align with the definition of "Total O&M per Customer" that is utilized in Appendix 5-A, which can be found in Attachment C of Exhibit 2-4-3: Distribution System Plan.

- **Cumulative Capital Additions per Investment Category:** the cumulative actual capital additions over the 2021-2025 period for each of System Access, System Service and System Renewal, and General Plant, as compared to the amounts submitted in Hydro Ottawa's 2021-2025 Custom IR application.¹⁸

- **Annual Capital Spending per Investment Category:** the actual total annual capital expenditure amount for each of System Access, System Service and System Renewal, and General Plant, as compared to the amounts submitted in Hydro Ottawa's 2021-2025 Custom IR application.

3.1.2. Rationale for Inclusion of Custom Performance Scorecard Measures

The OEB's *Handbook for Utility Rate Applications* makes clear that there must be sound reasoning in support of the inclusion of specific outcomes and metrics in a utility's performance measurement framework:

*"A utility is accountable for identifying specific outcomes valued by its customers and explaining how the utility's plans and proposed expenditures deliver those outcomes. These outcomes are linked to performance metrics, which will be used to show whether the outcomes have been achieved. Utilities are expected to consider cost trends, benchmarking of comparable utilities, and learnings from their customer engagement in setting outcomes and performance metrics."*¹⁹

The proposed incorporation of the aforementioned metrics into the performance measurement framework for Hydro Ottawa's 2021-2025 Custom IR term is guided by specific rationale and criteria, as follows:

¹⁸ In step with the practice adopted for 2016-2020 reporting, the System Renewal and System Service categories are merged into one category to reflect Hydro Ottawa's standard operating practice to shift funds between the two categories, as warranted by customer and operational requirements.

¹⁹ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 15.

1 ***(i) Responsiveness to Customer Preferences & Priorities***

2 Customer input serves as a key influencer and determinant of the adoption of certain
3 performance metrics. As explored in further detail in Exhibit 1-2-1: Customer Engagement
4 Overview, Hydro Ottawa's consultation with customers on its business plan and proposals for
5 the 2021-2025 period yielded valuable insights into how customers view their interests. From
6 the feedback provided, price, reliability, and investments in new technology topped the list of
7 customer priorities. Accordingly, Hydro Ottawa has endeavoured to integrate performance
8 metrics which reflect these areas of interest.

9
10 With respect to price, all of the measures under the reporting categories of Asset Efficiency,
11 Cost Control, and Financial Metrics are intended to be responsive to customer input. The same
12 applies to the broad range of measures organized around the dedicated category of System
13 Reliability. As for investments in new technologies, the measures under Customer Satisfaction
14 pertaining to the number of customers signed-up for Hydro Ottawa's online offerings, as well as
15 the Technology Infrastructure Cost per Employee measure, can trace their origin, in part, to
16 customer opinion.

17
18 ***(ii) Alignment with Core RRF Outcomes & Hydro Ottawa Strategic Objectives***

19 Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework illustrates how the principal
20 strategic objectives of the utility closely mirror the chief performance outcomes championed
21 under the RRF. Hydro Ottawa therefore believes that it is appropriate to include performance
22 metrics which converge with the key points of intersection between the RRF and the utility's
23 corporate strategy.

24
25 Given the paramount focus on customer value under both frameworks (i.e. the RRF and the
26 utility's business strategy), the addition of more explicitly customer-focused measures is a clear
27 imperative. Hence the inclusion of three targeted measures under the reporting category of
28 Customer Satisfaction (Contact Centre Satisfaction - Transactional Feedback, Number of
29 MyAccount Customers, and Number of Online Billing Accounts). Moreover, the shared
30 emphasis in the RRF and Hydro Ottawa's corporate strategy on continuous improvement and

1 productivity translates into a proposed performance measurement framework for the utility in
2 which the majority of measures are aimed at tracking Operational Effectiveness. Likewise, the
3 overlap between the RRF's support for Public Policy Responsiveness and Hydro Ottawa's
4 commitment to Corporate Citizenship has fostered an interest on the utility's part in assuring a
5 heightened level of accountability for reporting on actions related to environmental protection. In
6 turn, additional measures are proposed for incorporation in this regard.

7
8 ***(iii) Responsiveness to Benchmarking Results***

9 Exhibit 1-1-12: Benchmarking highlights the take-aways from numerous benchmarking analyses
10 that Hydro Ottawa either performed or commissioned, in support of the formulation of the plans
11 and proposals set forth in this Application. Consistent with best industry practices, as well as the
12 expectations of the RRF, Hydro Ottawa wishes to ensure the presence of robust linkages
13 between key outcomes in the benchmarking studies and the composition of the performance
14 measurement framework for the 2021-2025 period.

15
16 Consequently, the Custom Performance Scorecard includes several measures with correlations
17 to Hydro Ottawa's benchmarked costs and performance. For example, the four measures under
18 the reporting category of Cost Control which evaluate the average costs of certain asset
19 categories and maintenance programs fall within the scope of the unit costs benchmarking
20 study prepared by the UMS Group. Similarly, the metric pertaining to Technology Infrastructure
21 Cost per Employee is influenced, in part, by the areas of focus in the IT Budget Assessment
22 Benchmark authored by Gartner.

23
24 ***(iv) Alignment with Hydro Ottawa's Corporate Productivity Scorecard***

25 As part of its commitment to productivity, Hydro Ottawa has previously developed a Corporate
26 Productivity Scorecard. Intended for internal use, this scorecard is populated with certain KPIs
27 that are monitored for the purpose of measuring continuous improvement in areas of strategic
28 interest to the utility. A prior version of this Corporate Productivity Scorecard was included in
29 Hydro Ottawa's 2016-2020 Custom IR application and an updated version is included in this
30 Application (please see Attachment 1-1-13(A): Productivity Scorecard).

1 Certain metrics from Hydro Ottawa's Corporate Productivity Scorecard have been included in
2 the group of KPIs against which the utility has been reporting during the 2016-2020 period –
3 namely, Productive Time and Labour Allocation. In the spirit of demonstrating accountability and
4 providing more insights to the OEB, customers, and other stakeholders, and of achieving
5 greater alignment between its internal tracking and the planned external reporting for
6 2021-2025, Hydro Ottawa is migrating an additional set of metrics from the Corporate
7 Productivity Scorecard to the proposed Custom Performance Scorecard. These are Technology
8 Infrastructure Cost per Employee and Bad Debt as a Percentage of Total Electricity Revenue.

9
10 ***(v) Support for OEB APB Initiative***

11 A final motivating factor for the proposed inclusion of the specific number and nature of
12 performance measures in Hydro Ottawa's Custom Performance Scorecard is an interest in
13 lending support to the OEB's initiative to enhance the effectiveness and efficiency of its
14 regulation through benchmarking at the program and activity level. Consistent with the RRF's
15 call for utilities to deliver outcomes in respect of Public Policy Responsiveness, Hydro Ottawa's
16 selection of a diverse and meaningful set of metrics is intended to help inform the OEB's
17 approach to monitoring and benchmarking utility performance at a greater level of granularity.

18
19 **3.2. UPDATES ON PROGRESS OF CAPITAL SPENDING BY CATEGORY**

20 Alongside the Custom Performance Scorecard, the second major component of Hydro Ottawa's
21 tailored performance reporting regime for 2021-2025 is a continuation of the filing of annual
22 updates on the progress of capital spending in key categories. These updates track actual
23 capital expenditures by program type (i.e. System Access, System Service and System
24 Renewal, and General Plant) versus budgeted capital expenditures, and include variance
25 analysis, where appropriate.

26
27 As part of the Approved Settlement Agreement, Hydro Ottawa committed to annual reporting of
28 this nature for the duration of the 2016-2020 Custom IR term. This commitment was in
29 accordance with the following expectations articulated in the RRFE Report regarding
30 rate-setting through the Custom IR method:

1 *"Once rates have been approved, the Board will monitor capital spending against the*
2 *approved plan by requiring distributors to report annually on actual amounts spent. If*
3 *actual spending is significantly different from the level reflected in a distributor's plan,*
4 *the Board will investigate the matter and could, if necessary, terminate the*
5 *distributor's rate-setting method."*²⁰
6

7 In Hydro Ottawa's view, the filing of these updates has helped to maximize transparency and
8 accountability in the utility's execution of its capital programs. The CIR Annual Reports have
9 provided the OEB, customers, stakeholders, and the general public the ability to evaluate the
10 utility's capability to fulfill the commitments made around capital spending in its 2016-2020
11 Custom IR application.

12
13 Accordingly, Hydro Ottawa will maintain a robust level of compliance with this reporting
14 requirement over the course of its 2021-2025 rate term.

15 16 **4. CONCLUSION**

17 Hydro Ottawa is confident that the annual reporting program outlined above will serve as the
18 basis of a rigorous performance management framework for its impending five-year rate plan.

²⁰ RRFE Report, page 20.

BENCHMARKING

1. INTRODUCTION

A key tool in the Renewed Regulatory Framework (“RRF”) performance measurement toolkit is benchmarking. In its *Report of the Board - Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* (“RRFE Report”), the OEB determined that “[e]xpanded use of benchmarking will be necessary to support the Board’s renewed regulatory framework policies.”¹ This finding is affirmed in the *Handbook for Utility Rate Applications*, which conveys the OEB’s expectation for utilities “to provide benchmarking analysis which supports their proposed plans and programs and demonstrates continuous improvement.”²

This Schedule contains several pieces of benchmarking evidence, which are intended to serve multiple purposes:

- The inclusion of benchmarking information will assist the OEB in evaluating Hydro Ottawa’s patterns of performance and in assessing the proposals set forth in the utility’s capital and operational plans.
- The benchmarking that has either been conducted or commissioned by Hydro Ottawa has helped inform the establishment and incorporation of specific outcomes into the performance measurement framework for the 2021-2025 rate period. It has also influenced the development of the Custom Price Escalation Factor, which is a defining feature of the Custom Incentive Rate-Setting (“Custom IR”) framework underpinning this Application.
- The use of benchmarking studies and analyses is directed at supporting the achievement of the utility’s own corporate strategic objective of Organizational Effectiveness, which is interpreted as the pursuit of performance excellence through the cultivation of a culture of innovation and continuous improvement.

¹ Ontario Energy Board, *Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* (October 18, 2012), page 59.

² Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 18.

1 Together, these functions will help ensure that Hydro Ottawa remains accountable to the OEB,
2 its customers, and other stakeholders with respect to providing value for money and
3 cost-effective delivery of outcomes.

4
5 Consistent with OEB requirements, the benchmarking evidence appended to this Application
6 takes two forms – external and internal. The external benchmarking consists of a series of
7 reports commissioned from third parties, for the purpose of analyzing the utility's performance in
8 a range of categories and measures relative to comparator groups of utilities located either in
9 Ontario, Canada, and/or the United States. It also consists of benchmarking analysis conducted
10 by Hydro Ottawa itself, in which the utility's performance is juxtaposed against that of a select
11 subset of the electricity distributor community in Ontario. The internal benchmarking primarily
12 relies upon metrics utilized in the annual Electricity Utility Scorecard as well as the OEB's
13 annual *Yearbook of Electricity Distributors* to assess Hydro Ottawa's performance and
14 continuous improvement over time.

15
16 In the sections below, and in the accompanying Attachments to this Schedule, Hydro Ottawa
17 explains in greater detail the specific rationale for conducting the respective benchmarking
18 exercises, what insights were yielded into recent trends in the utility's performance and
19 efficiency, how the utility is interpreting the findings, and what actions the utility is taking as a
20 result.

22 **2. EXTERNAL BENCHMARKING – THIRD-PARTY STUDIES**

23 In support of the objectives identified above (i.e. assisting the OEB in evaluating Hydro Ottawa's
24 recent performance and Application proposals; informing the development of the Custom Price
25 Escalation Factor and specific outcomes for inclusion in the 2021-2025 performance
26 measurement framework; and advancing the utility's own strategic objective of Organizational
27 Effectiveness), the utility commissioned the following benchmarking studies from third-party
28 experts:

Table 1 – Benchmarking Studies Filed in this Application

Benchmarking Review	External Consultant	Application Attachment
Econometric Benchmarking Study of Hydro Ottawa's Total Cost & Reliability	Clearspring Energy Advisors	Attachment 1-1-12(A)
Unit Costs Benchmarking Study	UMS Group	Attachment 1-1-12(B)
IT Budget Assessment Benchmark	Gartner	Attachment 1-1-12(F)
Compensation Benchmarking Study	Mercer Canada	Attachment 1-1-12(G)

The results from these studies consistently revealed that Hydro Ottawa is a strong performer relative to its peers in numerous categories, and that the utility is well-positioned to sustain ongoing improvements in key areas of performance.

2.1. TOTAL COST AND RELIABILITY BENCHMARKING STUDY

Section 2.1.8 of the *Chapter 2 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019 ("Filing Requirements"), stipulate that a distributor must provide a forecast of its efficiency assessment for the purposes of providing the OEB with a directional indication of efficiency and discuss how the results of this assessment have informed the distributor's business plan and application. The tool that is prescribed for conducting this efficiency assessment is the total cost econometric benchmarking model developed by the Pacific Economics Group ("PEG").

Notwithstanding the aforementioned stipulation, the OEB has also signalled that an electricity distributor which is filing a Custom IR application is not compelled to adhere to standardized filing requirements.³ Accordingly, Hydro Ottawa has undertaken a two-pronged approach in this Application.

First, the utility has completed the Benchmarking Spreadsheet Forecast Model, with the results set forth in Attachment 1-1-12(E): PEG Benchmarking Forecast. In addition, as a customized feature of this Application and based upon rationale that is more explicitly articulated in

³ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 25: "A Custom IR application is by its very nature custom, and therefore no specific filing requirements have been established."

Attachment 1-1-12(E) and Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework, Hydro Ottawa has opted to submit and incorporate the results of a separate econometric benchmarking study in lieu of the PEG model results.

Hydro Ottawa retained Clearspring Energy Advisors (“Clearspring”), a leading expert in econometric benchmarking, to prepare a total cost and reliability study. The purpose of this study was three-fold: first, to assess the reasonableness of Hydro Ottawa’s cost forecasts; second, to analyze the utility’s historical reliability performance; and third, to assign a stretch factor for inclusion in the Custom Price Escalation Factor formula that serves to reflect the expected efficiency level of the utility, and to anchor the rate-setting framework for this Application.

Of note, the study utilized a robust and populous dataset. The peer group consisted of 88 utilities – 81 located in the U.S. and seven located in Ontario. Data samples for the U.S. utilities stretched from 2002-2017, while the sample years for Ontario utilities stretched from 2006-2017 (with the exception of Hydro Ottawa itself, for which data was provided through 2025). Altogether, the study is underpinned by 1,370 data observations – a sufficiently rigorous number to ensure the statistical significance and robustness of the model.

2.1.1. Key Findings

2.1.1.1. Total Cost Benchmark

With respect to Hydro Ottawa’s performance against the benchmark for total costs, Clearspring’s study reached the following conclusions:

- “The total cost results provide evidence that Hydro Ottawa’s historical and projected cost levels are reasonable.”⁴
- The most recent three-year average of historical total costs (2016-2018) for Hydro Ottawa are below benchmark expectations. The average benchmark score for Hydro Ottawa from 2016 to 2018 is -9.0%.

⁴ Attachment 1-1-12(A): Econometric Benchmarking Study of Hydro Ottawa’s Total Cost and Reliability, page 31.

- The projected total cost levels during Hydro Ottawa's Custom IR period (2021-2025) remain below the benchmark predictions. Under a certain set of parameters, the average benchmark score for Hydro Ottawa during the Custom IR period is -12.5%.

With respect to the third conclusion in the foregoing list, the parameters in question are the exclusion of two major capital projects that will have an appreciable impact on rates over the 2021-2025 timeframe. The first project is the pair of new administrative and operational centres that Hydro Ottawa has constructed as part of its Facilities Renewal Program and constitute a generational investment by the utility. The second is the Cambrian Municipal Transformer Station ("MTS"), which is required to accommodate customer load growth and increase supply capacity in the South Nepean area of Ottawa.⁵ Its development will necessitate upgrades to existing transmission facilities and construction of a segment of new transmission line by Hydro One Networks Inc. Seeing as the underlying need for the Cambrian MTS project is driven by Hydro Ottawa and its customers, the bulk of the project costs (both station and line) have been apportioned to Hydro Ottawa. In turn, this has the practical effect of making this project one of the most expensive capital projects in the utility's history.

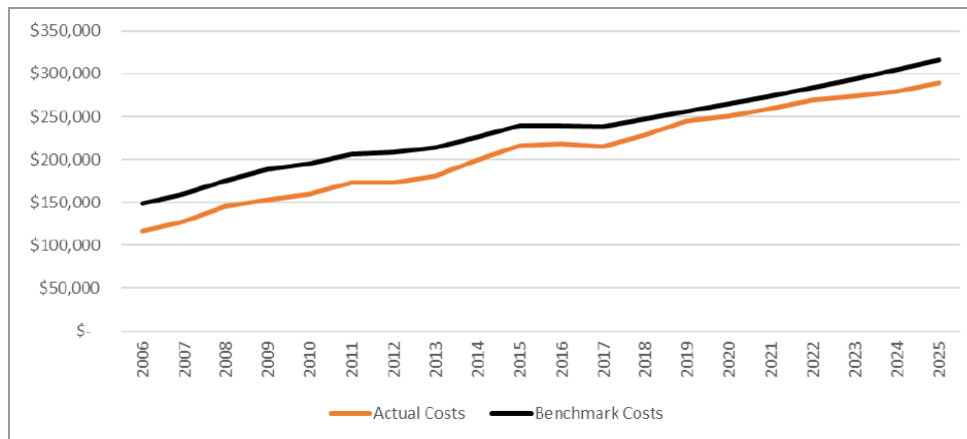
In the absence of these unique, once-in-a-generation investments, the projected average total cost benchmark score for Hydro Ottawa during its Custom IR period would be -12.5%. Conversely, the inclusion of these projects in the benchmarking analysis results in an average total cost score of -7.1%. As explained in greater detail in section 2.1.2 below, Hydro Ottawa strongly believes that the use of the former figure (-12.5%) as a benchmarking score is more appropriate, as it serves to normalize what are otherwise extremely rare circumstances impacting the utility (i.e. the confluence of two generational capital projects).

Figure 1 below, which is sourced from Clearspring's study, compares Hydro Ottawa's historical and projected total costs with the model's benchmark costs. In the graph, the costs projected for the 2021-2025 period correlate to the average benchmark score of -7.1%. At the same time, the

⁵ This station was previously referred to as South Nepean MTS, but has since been re-named. The total cost and reliability study prepared by Clearspring retains the original nomenclature of South Nepean MTS.

graph is directionally consistent with the alternative score of -12.5%, which is the result that Hydro Ottawa maintains should be granted more weight.

Figure 1 – Hydro Ottawa Total Cost Benchmarking Results 2006-2025: Actual vs. Benchmark (\$'000s, C\$)



2.1.1.2. Reliability Benchmark (SAIFI and CAIDI)

As noted in Clearspring's report, the vast majority of jurisdictions that require reporting of reliability indicators by electric utilities include the metrics of SAIFI and CAIDI (which, respectively, stand for "System Average Interruption Frequency Index" and "Customer Average Interruption Duration Index").⁶ Likewise, the report observes that in Ontario, Major Event Days ("MEDs") are excluded from reliability statistics, so as to reduce year-over-year volatility in reported data which might otherwise be attributable to extreme weather events. What is included in the dataset, however, are outages caused by loss of supply, so as to ensure consistency with U.S.-sourced data.

With respect to the measurement of Hydro Ottawa's recent reliability performance using these metrics, Clearspring's analysis indicated the following:

⁶ Attachment 1-1-12(A): Econometric Benchmarking Study of Hydro Ottawa's Total Cost and Reliability, page 25.

- 1 • The most recent three-year average (2016-2018) for SAIFI is 11.3% above benchmark
- 2 expectations.
- 3 • The most recent three-year average (2016-2018) for CAIDI is 13.7% below benchmark
- 4 expectations.

5

6 Of note, Clearspring's report states that the reliability benchmarking results provide no evidence

7 that Hydro Ottawa is producing better than average cost performance at the expense of

8 reliability outcomes.⁷

9

10 **2.1.2. Recommended Stretch Factor**

11 Based on the findings and scores produced by the total cost benchmarking analysis,

12 Clearspring is recommending a stretch factor of 0.30% for this Application.

13

14 However, as noted above, Clearspring's study also examined how Hydro Ottawa's

15 benchmarking results would have appeared in the absence of "once-in-a-generation"

16 investments whose costs have a lopsided effect on the total cost scoring. As detailed above,

17 Hydro Ottawa finds itself in the rare situation of simultaneously executing two significant projects

18 – the Facilities Renewal Program and the Cambrian MTS – which are generational in nature

19 and which will have a much more acute impact on customer rates than if they had been

20 implemented in isolation at separate junctures over an extended time horizon.⁸ As noted in

21 Clearspring's report, the costs associated with these investments negatively affect the

22 benchmarking score throughout the 2021-2025 Custom IR period. Absent the cost of these

23 projects, Clearspring's recommended stretch factor for Hydro Ottawa would have been 0.15%.

24

25 Accordingly, Hydro Ottawa submits the following: (i) these two projects should be excluded for

26 the purposes of formulating the stretch factor; and (ii) 0.15% is the appropriate stretch factor to

⁷ *Ibid*, page 32.

⁸ For more details on the Facilities Renewal Program, please see Attachment 2-1-1(A): New Administrative Office and Operations Facilities; for Cambrian MTS, please see Exhibit 2-4-3: Distribution System Plan and Attachment 2-4-3(E): Material Investments.

1 utilize. Further context and justification for this approach is articulated in Exhibit 1-1-10:
2 Alignment with the Renewed Regulatory Framework.

3 4 **2.1.3. Incorporating Results into the Application**

5 Throughout this Application, there are several linkages between the plans and proposals set
6 forth by Hydro Ottawa, and the results of Clearspring's analysis.

7
8 Foremost among these is the inclusion of the proposed stretch factor of 0.15% in the utility's
9 Custom Price Escalation Factor.⁹

10
11 Secondly, along with the generally positive and supportive feedback received from customers
12 on Hydro Ottawa's proposed capital and operational plans, the findings yielded from this
13 econometric benchmarking exercise serve as critical validation of the reasonableness of the
14 utility's projected capital and operations, maintenance and administration ("OM&A")
15 expenditures over the course of 2021-2025. This affirmation informed Hydro Ottawa's approach
16 to finalizing its overall envelope of capital projects and OM&A programs, with the utility drawing
17 confidence from the report's findings around what would be viewed as prudent investments by
18 customers, other stakeholders, and the OEB.

19
20 In addition, the results from Clearspring's analysis have helped to inform the proposed inclusion
21 of several measures in Hydro Ottawa's Custom Performance Scorecard. These measures will
22 track different aspects of the reliability performance achieved by the utility and will continue to
23 serve as a key means for ensuring accountability to customers in monitoring, improving, and
24 reporting on system reliability. Please see Exhibit 1-1-11: Proposed Annual Reporting
25 2021-2025 for more details.

⁹ As per the discussion in section 2.1.2 above, please see Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework for further details.

2.2. UNIT COSTS BENCHMARKING STUDY

As part of its efforts to measure and monitor the achievement of productivity gains across the utility, Hydro Ottawa has previously employed unit cost metrics to track its performance and cost trends. For example, its 2016-2020 Custom Incentive Rate-Setting application included a copy of the Corporate Productivity Scorecard that has been utilized for several years by the utility to measure continuous improvement in specific areas of focus.¹⁰ Over the years, this internal scorecard has included several measures that are based on the unit cost of a specific asset class or maintenance program, such as Technology Infrastructure Cost per Employee and Cost per Underground Locate.

Hydro Ottawa has opted to include formal unit cost benchmarking in support of the proposals and evidence set forth in this Application. The reasons for this decision were manifold. To begin, the commissioning of a dedicated study comparing the utility's unit costs in select asset categories and OM&A programs to a sample group of peer utilities represented a logical extension of existing continuous improvement practices. Secondly, Hydro Ottawa viewed the inclusion of unit cost analysis as a valuable complement to the benchmarking of the utility's total cost envelope and as an opportunity to obtain insights into the efficiency of its system investment and OM&A programs at a more granular level. Lastly, Hydro Ottawa regarded the procurement and presentation of such analysis as being consistent with, and supportive of, the Activity and Program Based ("APB") Benchmarking for Electricity Distributors initiative that the OEB launched in 2018.¹¹ In fact, the utility consciously ensured that a majority of the asset categories and OM&A programs selected for inclusion in the unit cost benchmarking study were likewise contained in the OEB's preliminary list of candidates for benchmarking through the APB initiative.

The unit cost benchmarking study included in this Application was prepared by UMS Group ("UMS"), an international utility management consulting firm. Hydro Ottawa provided UMS with

¹⁰ Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-Setting Distribution Rate Application*, EB-2016-0004 (April 29, 2015), Exhibit D-1-4, Attachment D-1(C).

¹¹ Ontario Energy Board, Letter, *Activity and Program Based Benchmarking (ABP) Initiative*, EB-2018-0278 (October 10, 2018).

1 detailed unit cost data in System Renewal capital categories as well as preventative and
2 predictive maintenance categories for the 2016-2018 period (along with a host of other data
3 inputs). In the professional judgment of UMS, the scope of the study served as a relevant proxy
4 for assessing the efficiency and effectiveness of Hydro Ottawa's work. This determination was
5 reached on account of the fact that the six asset categories examined in the report represented
6 more than 70% of the System Renewal budget during the study period, while the six OM&A
7 programs comprised a 48% share of the preventative and predictive maintenance budget during
8 the same timeframe.¹²

9
10 Utilizing multiple normalization factors, UMS compared Hydro Ottawa's costs and performance
11 to those of a peer group consisting of 15 utilities spread across Ontario, Canada, and the United
12 States. Members of the peer group were chosen based upon criteria that would ensure relevant
13 comparisons to an electric utility of Hydro Ottawa's size, complexity, and demographics.

14
15 Importantly, the study includes an affirmation from the authors that the methodology employed is
16 consistent with best industry practices.

17 18 **2.2.1. Key Findings**

19 On the whole, UMS concluded that Hydro Ottawa compares favourably to the peer group. The
20 key take-aways from their analysis are captured in the table below.

¹² The seventh OM&A program included in the study, Meter Maintenance, is a reactive program.

Table 2 – Results of UMS’ Fully Normalized Unit Cost Benchmark Comparisons

Category / Program	Quartile			
	Top	2 nd	3 rd	Bottom
Asset Category (Capital)				
Wood Pole Replacement				
UG Cable (XLPE) Replacement				
OH Switches Replacement				
OH Transformer Replacement				
UG Transformer Replacement				
Station Breaker Replacement				
OM&A Program / Practice				
Vegetation Management				
Pole Test and Inspection				
Overhead Line Patrol				
Station Breaker and Relay Test and Inspection				
Billing-Paper				
Billing-Online				
Meter Maintenance				

As shown in Table 2, within the six asset categories that were selected for inclusion in the study, three of Hydro Ottawa’s unit cost trends fell within the top quartile of the peer group while the other three ranked within the second quartile.

With respect to the seven OM&A program areas, only one of the utility’s unit cost trends placed worse than those of the peer group. However, this finding is accompanied with the caveat that future unit cost analyses of the program in question (Pole Test and Inspection) are expected to yield lower results, on account of modifications to program execution which Hydro Ottawa put in place in 2018 (i.e. use of more junior employees with lower hourly rates to complete the work). For two other programs (Billing-Online and Meter Maintenance), Hydro Ottawa’s average unit costs were identical to the values of the peer group median, and are therefore characterized as straddling the second and third quartiles for these categories.

1 Alongside its presentation of the principal results of the study, UMS specifically highlighted two
2 areas of strength at Hydro Ottawa, contending that they will serve as a strong platform for
3 continuous improvement at the utility: a performance management framework that espouses
4 line-of-sight between corporate strategy and individual performers, and strong competence with
5 financial management tools.

6 7 **2.2.2. Incorporating Results into the Application**

8 Together with the generally complimentary feedback received from customers on its proposed
9 capital and operational plans, as well as the findings from the total cost benchmarking report
10 discussed above, Hydro Ottawa has interpreted the results of UMS' unit cost analysis as an
11 attestation of the overall efficiency and cost-effectiveness of the utility's capital and maintenance
12 activities. Through this study, the rigour, discipline, and transparency that Hydro Ottawa strives
13 to apply to its cost calculations and reporting has been affirmed, along with its focused efforts to
14 ensure alignment between corporate strategic objectives, divisional plans, and individual
15 performance goals.

16
17 At the same time, Hydro Ottawa acknowledges that the results identify opportunities for
18 continuous improvement. Accordingly, as a direct upshot of the study's findings, the utility is
19 adding specific measures and outcomes to its performance management framework for the
20 2021-2025 period. More specifically, unit cost metrics that were subject to analysis in UMS'
21 benchmarking study have been integrated into the Custom Performance Scorecard which will
22 serve as a cornerstone of Hydro Ottawa's performance management framework for its
23 upcoming five-year Custom IR term. The applicable unit cost metrics are as follows (with the
24 corresponding asset category or maintenance program identified in parentheses):

- 25
26
- 27 • Cost per wood pole (Wood Poles Replacement)
 - 28 • Cost per meter of underground cable (UG Cable [XLPE] Replacement)
 - 29 • Cost per kilometer (Vegetation Management)
 - Cost per pole (Pole Test and Inspection)

1 For additional details on Hydro Ottawa's proposed performance measurement framework for its
2 Custom IR rate plan, please see Exhibit 1-1-10: Alignment with the Renewed Regulatory
3 Framework and Exhibit 1-1-11: Proposed Annual Reporting 2021-2025.

4 **2.3. INFORMATION TECHNOLOGY BENCHMARKING STUDY**

6 Hydro Ottawa's business performance is dependent upon complex Information Technology
7 ("IT") systems, covering both frontline operations (e.g. geographic information system, outage
8 management system, supervisory control and data acquisition system) as well as back office
9 processes (e.g. customer information and billing systems, and an enterprise resource planning
10 system). Moreover, the growing complexity of these systems remains on an upward trajectory,
11 given the broader trend across the electricity distribution sector of the convergence between
12 core operational systems and enterprise information systems.

14 In light of these realities, and in view of Hydro Ottawa's proactive approach to leveraging
15 innovative technologies to enhance the customer experience and improve productivity, the utility
16 saw fit to commission a benchmarking study with a dedicated focus on IT spending. This was
17 deemed to be a valuable means of assessing the reasonableness of Hydro Ottawa's IT
18 expenditures, with the study thereby serving as a valuable addition to the body of evidence in
19 this Application.

21 Accordingly, Hydro Ottawa contracted the services of Gartner to perform an IT Budget
22 Assessment Benchmark. The scope of the study involved assessing the utility's distribution of IT
23 spending as well as overall IT spending in terms of specific metrics. The study also
24 benchmarked IT spending at Hydro Ottawa with a peer group of utilities. This group was
25 comprised of five U.S. utilities, two Canadian utilities, and two Australian utilities whose data
26 was made available from Gartner's benchmarking database. In Gartner's professional
27 judgment, the sample group that was defined for this analysis was a representative set of
28 electricity utility peers and was suitable for purposes of conducting an effective, credible
29 benchmarking study.

Gartner's report consisted of two types of analysis: (i) benchmarking total IT budget envelope; and (ii) benchmarking IT budget based on allocations. This analysis relied upon 2018 fiscal year data supplied by Hydro Ottawa and peer group members.

2.3.1. Key Findings

The results from the study revealed that Hydro Ottawa compared favourably to the peer group under several important metrics, as summarized in Table 3 below.

Table 3 – Results of Gartner's IT Budget Assessment

Metric	Hydro Ottawa	Peer Average	Peer 25 th	Observation
IT Budget as a percentage of Revenue	2.4%	3.7%	2.7%	Below 25 th percentile
IT Budget as a percentage of Operating Expense	2.7%	4.5%	3.4%	Below 25 th percentile
IT Budget per Company Employee	\$39,947	\$39,151	\$34,757	Similar to peer average

The study showed that Hydro Ottawa had more streamlined IT operations than the peer group, evidenced by both the IT budget as a percentage of revenue and operating expense metrics falling below the 25th percentile relative to the peer group average.

What's more, this observation was accompanied by the finding that Hydro Ottawa's IT budget allocation differed from the peer group average in some important ways. Gartner examines IT budget allocations using the Run, Grow, Transform paradigm, in which "run" is a category that captures essential business processes and investments, "grow" relates to improvements in operations and performance within existing business models, and "transform" pertains to new markets, new products, and new business models.¹³ Gartner found that, while Hydro Ottawa allocates 47% of its IT budget to "run", the peer group average was 69%. Similarly, the utility allocates 8% of its IT budget to "grow" and 45% to "transformation," whereas the peer group benchmark was 22% and 9% in the respective categories.

¹³ Attachment 1-1-12(F): Hydro Ottawa IT Budget Assessment Benchmark, page 21.

1 One additional take-away from the report merits attention. Compared to the peer group average,
2 Gartner found that Hydro Ottawa has a lower ratio of IT full-time equivalent employees (“FTEs”)
3 to total company employees, and that the peer group uses less outsourcing and more contract
4 staff augmentation for IT than Hydro Ottawa. All of these factors can be interpreted as having
5 helped to contribute to an above-average level of streamlined IT operations within the utility.
6

7 **2.3.2. Incorporating Results into the Application**

8 In this Application, Hydro Ottawa has applied the insights yielded from Gartner’s study in
9 several instances and for several purposes.
10

11 First, Hydro Ottawa believes that Gartner’s study has confirmed that the utility’s IT strategy and
12 investments are generally consistent with the top quartile performers of a representative sample
13 of the industry. On a comparative basis to the peer group, Hydro Ottawa runs a streamlined IT
14 business across the utility, with substantially fewer employees. Although having fewer
15 employees can inversely impact a metric like IT budget per employee, Hydro Ottawa’s metric is
16 consistent with the peer group average.
17

18 Secondly, Hydro Ottawa interprets the findings from Gartner’s study as validation of a
19 successful execution of a five-year technology plan which focused on building a digital
20 workplace to improve productivity and operational excellence, and to yield value for the
21 customer. Hydro Ottawa is encouraged by the study’s conclusion that the utility’s IT strategy and
22 budget allocation are in line with the emerging best practice in the industry of shifting IT budgets
23 away from maintaining infrastructure and instead concentrating on “digital initiatives that support
24 optimization of the core business processes and digitally enabled innovation and
25 transformation.”¹⁴
26

27 This is arguably the greatest differentiator between Hydro Ottawa and the peer group. With over
28 half of its IT budget allocated to growth and transformation, Hydro Ottawa has fostered an IT
29 culture focused on innovation and customer service, as evidenced by initiatives aimed at

¹⁴ *Ibid*, page 13.

1 facilitating process automation and upgrading or replacing key business applications, so as to
2 maximize the level of resources available for developing new solutions for customers. The
3 utility's focus has been to simplify infrastructure, invest in foundational technologies, and
4 leverage cloud services. Hydro Ottawa's strategy of outsourcing commodity work with a
5 cloud-first approach, using external hosting services, leveraging an ecosystem of partners,
6 primarily using contractors for project work (not for staff augmentation), and focusing
7 employees' time on higher-value, customer-oriented work has enabled the utility to maintain
8 streamlined IT operations and has resulted in an expense model with significant scalability and
9 flexibility.

10
11 Hydro Ottawa therefore intends to sustain this approach to IT budget allocation over the course
12 of its 2021-2025 rate plan. This course has been charted through the utility's formal *Digital*
13 *Strategy*.¹⁵ (It merits observation that the Digital Strategy's goal of working within the existing IT
14 headcount envelope is bolstered by Gartner's findings of Hydro Ottawa running streamlined
15 operations with a lower IT employee ratio than the industry average). In addition, the blueprints
16 for numerous IT and technology initiatives have been designed accordingly, as reflected in the
17 project summaries for several of the IT-related General Plant Material Investments in the
18 Distribution System Plan.¹⁶

19
20 Lastly, consistent with the discussion above in section 2.2 regarding benchmarking of unit costs,
21 the findings from Gartner's study reveal opportunities for ensuring continuous improvement in
22 the utility's performance and in the delivery of cost-effective, meaningful outcomes for
23 customers. To that end, Hydro Ottawa believes that it is appropriate to include a metric in its
24 Custom Performance Scorecard that is related to IT spending and that will help demonstrate
25 accountability in the tracking and reporting of IT-related costs incurred by the utility. Technology
26 Infrastructure Cost per Employee is therefore proposed for inclusion among the mix of custom
27 performance measures against which Hydro Ottawa will report on an annual basis over the

¹⁵ Please see Attachment 1-1-13(B): Digital Strategy.

¹⁶ Examples in this regard include items 1.3 (Service Automation) and 2.2 (ERP Program) under the General Plant category of the Material Investments included in Attachment 2-4-3(E).

2021-2025 Custom IR period. Please see Exhibit 1-1-11: Proposed Annual Reporting 2021-2025 for further details.

2.4. COMPENSATION BENCHMARKING STUDY

The fourth and final benchmarking study commissioned by Hydro Ottawa pertained to the utility's compensation and benefits program for employees.

Several factors prompted the preparation of this study. To begin, consistent with historical and industry trends, compensation costs continue to represent a significant share of Hydro Ottawa's overall OM&A expenses. In addition, the OEB has signalled interest in utility benchmarking of compensation costs. In the *Handbook for Utility Rate Applications*, the OEB establishes an expectation that utilities will address several matters in their descriptions of compensation strategies and policies, including "how target salaries are compared to external benchmarks..."¹⁷

Accordingly, Hydro Ottawa retained Mercer Canada ("Mercer") to evaluate the competitiveness of the utility's cash compensation and benefits for unionized and management group employees against relevant market comparators. Comparators were drawn from both the utility industry and from the general market (i.e. other economic sectors). The study reviewed a total of 15 positions, consisting of a blend of jobs that are core to the business, as well as technical, professional, and para-professional roles that support the business. Of these 15 positions, five were drawn from the pool of management employees while 10 were from the unionized segments of the utility's workforce.¹⁸ The positions selected for inclusion are representative of the two categories of employees (i.e. unionized and management). Likewise, they stretch across the different classification levels for positions in each category.

¹⁷ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 19.

¹⁸ All of the positions from the management group of employees that were within the scope of the study were non-executive positions.

1 **2.4.1. Key Findings**

2 In keeping with best practices for statistical integrity and standard reporting requirements,
3 Mercer's study defined the "competitiveness" of salaries and total cash compensation as falling
4 within +/- 10% of the median job rate for each market and industry comparator.¹⁹

5
6 The study found that Hydro Ottawa jobs which are core to the operational business (e.g.
7 Manager, Distribution Operations; Supervisor, Distribution Operations; Distribution Engineer;
8 Power Line Technician; and System Operator) were all well-aligned with the utility market
9 comparators. Similarly, key professional roles such as Network Administrators and Management
10 Accountants were also found to be in alignment with comparators in the utility and general
11 industry markets.

12
13 The average base salary for several jobs – generally unionized support roles – were found to be
14 higher than the general industry market comparators. However, in almost all cases, these job
15 rates fell within +/-10% of P50 of the utility market comparators. What's more, the job rates for a
16 handful of positions were more than 10% below P50.

17
18 With respect to employer-paid benefits (i.e. insurance, wellness benefits, and pension), Mercer
19 found that Hydro Ottawa's contributions were generally aligned with what is typically observed in
20 the market for non-executive employees. In particular, when compared to the Ontario Public
21 Sector, where such benefits account for 20%-22% of base salary, Hydro Ottawa's benefits were
22 found to be within 19%-21% of base salary.

23
24 Taken together, these results reflect a general posture of alignment on the part of Hydro Ottawa
25 with market and utility industry comparators, with respect to cash compensation and
26 employer-paid benefits for employees.

¹⁹ The market median job rate is also referred to as P50.

1 **2.4.2. Incorporating Results into the Application**

2 Hydro Ottawa has interpreted the results of Mercer's benchmarking analysis as general
3 validation of the utility's approach to the management of compensation costs. The bulk of the
4 findings from the study underscore broader alignment between the average base salary for a
5 range of Hydro Ottawa positions and comparable jobs in utility industry and market
6 comparators. The results of the study serve as an impetus for the utility to continue exercising
7 prudence in controlling total compensation costs, while balancing its formulation of
8 compensation packages with the need to attract and retain a highly-skilled workforce and to
9 foster a performance-driven workplace culture.

10
11 For those positions whose job rates were more than 10% above P50 in a given comparator
12 category, Hydro Ottawa will continue to monitor any increases in compensation and will
13 periodically seek affirmation from external sources that average base salaries remain in general
14 alignment with the median rate in the companion comparator category.

15
16 As acknowledged in the OEB's *Handbook for Utility Rate Applications*, the comparison of target
17 salaries to external benchmarks serves as only one component in a utility's strategy for
18 managing employee compensation. Other components may include formal policies governing
19 the establishment and periodic review of salary scales, as well as performance pay structures.
20 Alongside external benchmarking, these elements likewise comprise different pieces of Hydro
21 Ottawa's larger approach to employee compensation. For a more detailed description of the
22 utility's compensation philosophy and associated components, including the framework in place
23 for evaluating employees' performance and contributions to the utility's achievement of its
24 strategic objectives, please see Exhibit 4-1-5: Workforce Staffing and Compensation and the
25 accompanying information in Attachment 4-1-5(A): Employee Compensation Strategy,
26 Attachment 4-1-5(B): Workforce Planning Strategy, and Attachment 4-1-5(C): OEB Appendix
27 2-K - Employee Costs.

2.5. CONCLUSION

The foregoing third-party external benchmarking analyses have yielded important insights into Hydro Ottawa's performance and efficiency over the last several years, and into the costs of key programs relative to the utility's peers. In varying measures, the results from these studies have been reflected in different aspects of this Application, whether serving to validate certain proposals and plans or prompting modifications to others, such that the ongoing achievement of efficiencies and productivity improvements can be ensured over the course of the 2021-2025 rate period.

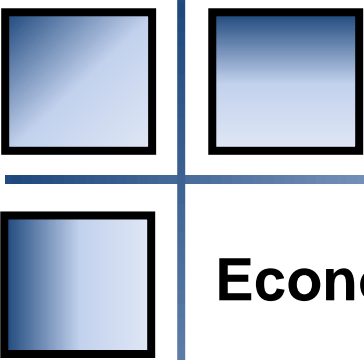
3. EXTERNAL BENCHMARKING & INTERNAL BENCHMARKING – HYDRO OTTAWA ANALYSIS

In addition to commissioning studies from third-party experts, Hydro Ottawa has performed its own benchmarking analysis related to various performance outcomes over the last five-year period. These analyses are intended to support the various proposals and plans set forth in this Application, and to provide evidence attesting to the utility's strong patterns of performance and continuous improvement over time.

The analysis, and the results thereof, encompass both external and internal benchmarking – namely, comparing the utility's performance to a peer group as well as evaluating the utility's year-over-year performance in isolation. This blended approach underpins the analysis contained in Attachment 1-1-12(C): Electricity Utility Scorecard and Attachment 1-1-12(D): Ontario Energy Board Electricity Distributor Yearbook and Performance Dashboard. Attachment 1-1-12(C) explores Hydro Ottawa's performance in each of the Electricity Utility Scorecard's measures over the 2014-2018 period, while Attachment 1-1-12(D) examines various distributor data identified by the OEB as key metrics in the Electricity Distributor Yearbook and on its online Performance Dashboard.

Taken together, these two Attachments assess Hydro Ottawa's effectiveness in achieving the four performance outcomes under the RRF: Customer Focus, Operational Effectiveness, Public Policy Responsiveness, and Financial Performance. Through juxtaposition against a defined

1 group of comparable Ontario distributor peers, as well as to all distributors in the province where
2 possible, it can be seen that Hydro Ottawa compares favourably to its peers and exceeds the
3 average utility score in the majority of industry performance measures. In particular, Hydro
4 Ottawa has shown marked continuous performance improvement in Service Quality, Safety, and
5 System Reliability. At the same time, Hydro Ottawa's OM&A per customer and distribution
6 revenue per customer remains below the industry average in Ontario.



Econometric Benchmarking Study of Hydro Ottawa's Total Cost and Reliability

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(WITH MINOR REVISIONS MADE IN NOVEMBER 2019)



Clearspring Energy Advisors LLC

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1 Executive Summary

Hydro Ottawa Limited (“Hydro Ottawa” or “Company”) engaged Clearspring Energy Advisors, LLC (“Clearspring Energy”) to conduct an econometric benchmarking study of Hydro Ottawa’s past and projected total costs and its historical reliability metrics. The lead researcher of the study is Mr. Steven A. Fenrick.

Mr. Fenrick has led numerous benchmarking studies in Ontario and throughout North America, including Hydro Ottawa’s prior total cost and reliability benchmarking study, found in Ontario Energy Board (“OEB” or the “Board”) docket EB-2015-0004.¹ Other studies conducted by Mr. Fenrick in Ontario include:

- Benchmarking and productivity studies for Hydro One Network’s distribution and transmission utilities,²
- Research for the Coalition of Large Distributors during the 4th Generation Incentive Regulation (“4GIR”) proceeding,³ and
- Benchmarking studies for the last two Toronto Hydro custom incentive regulation (“Custom IR”) applications.⁴

Clearspring Energy uses the results of this study to determine the appropriate stretch factor for Hydro Ottawa in its 2021-2025 Custom IR application. The study results can also provide useful information to the OEB and stakeholders. The benchmarking research uses the econometric approach to evaluate total costs. This approach aligns with the Board Decision in the 4GIR proceeding.

1.1 Overview of Clearspring Energy’s Benchmarking Process

The benchmarking study evaluates Hydro Ottawa’s historical and projected total cost amounts. It also evaluates the Company’s historical system reliability metrics: the system average interruption frequency index (“SAIFI”), and the customer average interruption duration index (“CAIDI”).

These evaluations are conducted by comparing Hydro Ottawa’s actual or Custom IR forecasted values with the econometric model’s predicted values for each year.⁵ For example, the total cost model

¹ Mr. Fenrick conducted the prior Hydro Ottawa and the other Ontario studies while employed at Power System Engineering, Inc. (“PSE”). Mr. Fenrick is now a Principal Consultant at Clearspring Energy. PSE continues to contribute to the research, now in a subcontractor role to Clearspring Energy.

² Cases EB-2017-0049, EB-2018-0218, and EB-2019-0082.

³ Case EB-2010-0379.

⁴ Cases EB-2014-0116 and EB-2018-0165.

⁵ In this report we will use “forecasted” or “projected” costs to refer to Hydro Ottawa’s estimates of those values in 2019 to 2025. We will use “predicted,” “expected,” or “benchmark” costs and reliability to refer to the econometric model’s predictions for those metrics.

produces a custom “expected” total cost for Hydro Ottawa for each studied year, and Hydro Ottawa’s actual costs for a given year are compared to the expected costs for that year. The total cost model produces expected total costs for past years (based on the parameter estimates and the actual values of the drivers of total costs, e.g. number of customers) and future years (based on the same parameter estimates and the projected values of those same drivers). Clearspring Energy developed three econometric models: total cost, SAIFI, and CAIDI.

Clearspring Energy recommends econometric benchmarking because of its enhanced accuracy relative to unit cost and peer group approaches. The econometric benchmarking method contains the ability to statistically test included variables, includes a relatively large number of variables, and does not require the researcher to select a peer group or exclude large portions of the available data to fashion an appropriate benchmark. The benchmarking method adjusts for service territory conditions and other factors that affect the studied metrics, so that each utility in the study can have custom benchmarked values for those metrics.

Using a large sample of utilities, the econometric model produces an industry-wide estimation of how certain factors (e.g. number of customers, peak demand, etc.) affect the studied metric (e.g. total costs). For the present study, the sample used to estimate the models includes both U.S. and Ontario observations from multiple utilities for multiple years. A dataset which includes U.S. and Ontario observations provides a sample with diversity in the number of customers and other explanatory variables. It is a robust sample that produces an accurate benchmark assessment of Hydro Ottawa’s total cost and reliability metrics.

The high-level method for the three models is similar. In each case, the model uses the industry data over the studied period to determine the relationship between the metric and the factors that drive it. For example, the total cost model estimates the industry-wide relationship between total costs and certain variables, based on the utilities included in the sample. The model is then used to predict Hydro Ottawa’s “expected” (benchmarked) costs for each year, using the same estimated relationship between total costs and the explanatory variables, and using Hydro Ottawa’s values for the variables. The approach for the reliability metrics is similar, although a different set of explanatory variables is used for each model.

The overall approach of our benchmarking process is:

1. We assembled a dataset that includes the historical costs (or reliability) of all the observations, along with the variables that affect cost (or reliability), such as customer totals, peak demands, forestation, congested urban, wage levels, customer density, etc.
2. Using the sample data, Clearspring Energy estimated three econometric models. Each model expresses the relationship between the variables and one of the metrics (total cost, SAIFI, or CAIDI).
3. We can then produce “benchmark” values for Hydro Ottawa for any given year. The benchmarks denote the expected value for an average-performing utility with identical explanatory variable values for that year. For example, if the SAIFI model predicted a value of X for Hydro Ottawa for 2010, that can roughly be translated as: “Given the industry-wide relationship between SAIFI

and the variables that drive it (number of customers, % forestation, rural density, etc.), and given Hydro Ottawa's specific variable values for that year, we would expect an average-performing utility to have a SAIFI of X in 2010."

4. A comparison between the actual values and the benchmarks can then be made for each year.
5. Future years for Hydro Ottawa are also benchmarked and compared to projected costs, using the same model parameter estimates, and *projected* explanatory variable values (instead of *actual* variable values for historical years).

When making the comparison between the actual costs and benchmark costs of Hydro Ottawa, we use the logarithmic percentage difference.⁶ A percentage difference finding below zero implies Hydro Ottawa's costs are below the benchmark level for that year, and a positive value means that Hydro Ottawa's costs are above the benchmark level for that year. Similarly for SAIFI and CAIDI, a negative logarithmic percentage difference means that Hydro Ottawa's values are below the benchmark for that year. The equation for the percentage difference is:

$$\% \text{ Difference} = \text{Natural Log} \left(\frac{\text{Actual Total Cost}}{\text{Benchmark Total Cost}} \right)$$

1.2 Total Cost Benchmark Findings

The first model benchmarks total costs for Hydro Ottawa. Total costs are defined as the sum of OM&A expenses and capital costs. The capital cost portion is constructed based on net plant and historical plant additions over time, and includes the estimated economic depreciation and opportunity costs of capital. The components within the calculation of total costs are similar to the components in the distribution portion of revenue requirements.⁷ In this study, we use total cost benchmarking. This method is preferred to partial cost benchmarking approaches, such as OM&A benchmarking, which exclude large portions of pertinent costs.

Our total cost econometric benchmarking study results indicate the following:

1. The most recent 3-year average of historical total costs (2016 to 2018) of Hydro Ottawa are below benchmark expectations. The average benchmark score for Hydro Ottawa from 2016 to 2018 is -9.0%.
2. The projected total cost levels during the Custom IR period (2021 to 2025) remain below the benchmark predictions. The average benchmark score for Hydro Ottawa during the Custom IR period is -7.1%.

The following table and graph provide the comparison between Hydro Ottawa's historical and projected total costs and the model's benchmark total costs.

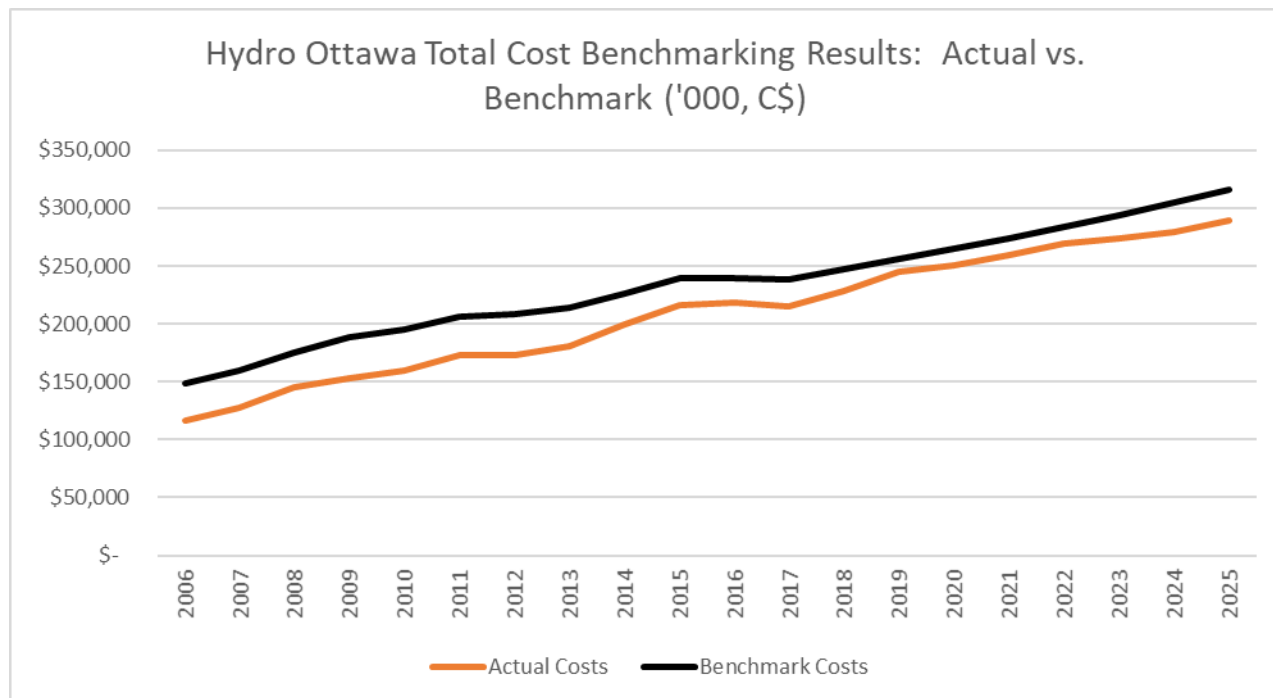
⁶ We use the logarithmic percentage rather than the arithmetic percentage because it is the convention within the benchmarking industry. It is the same method used by the Board Staff's benchmarking consultant, Pacific Economics Group. ("PEG")

⁷ Total costs are not exactly analogous to revenue requirements because of the generalizations needed to offer a fair analysis between utilities with varying depreciation rates, rate of returns, capital addition patterns, and cost definitions.

Table 1 Hydro Ottawa's Total Cost Performance 2006-2025

Year	% Difference from Total Cost Benchmark
2006	-24.1%
2007	-22.2%
2008	-18.7%
2009	-20.7%
2010	-20.2%
2011	-17.5%
2012	-18.5%
2013	-16.9%
2014	-12.5%
2015	-10.4%
2016	-9.3%
2017	-10.2%
2018	-7.6%
2016-2018 average score	-9.0%
2019	-4.5%
2020	-5.6%
2021	-5.6%
2022	-5.3%
2023	-7.1%
2024	-8.7%
2025	-8.9%
2021-2025 average score	-7.1%

Figure 1 Historical and Projected Total Costs vs. Benchmarked Costs



1.3 SAIFI and CAIDI Benchmark Findings

Clearspring Energy additionally conducted econometric reliability benchmarking of Hydro Ottawa’s SAIFI and CAIDI. The reliability study benchmarks Hydro Ottawa’s historical (2010 to 2018) data after major event day (“MED”) exclusions are made. The metrics include loss of supply outages to remain consistent with the U.S. dataset definition. The reliability benchmarking used a U.S. and Ontario sample composed of the same utilities as the total cost benchmarking (unless reliability data was not available).⁸

Excluding MEDs from the calculation of the metrics enables the study to gauge reliability performance during normal operating conditions. Clearspring Energy gathered U.S. reliability data and their MED definitions from publicly-available regulatory filings. The Ontario data is gathered from Reporting and Record Keeping Requirements (“RRR”) filings.

Clearspring Energy’s reliability benchmarking analysis indicates the following:

1. The most recent 3-year average (2016 to 2018) for SAIFI is 11.3% above benchmark expectations.
2. The most recent 3-year average for CAIDI is 13.7% below benchmark expectations.

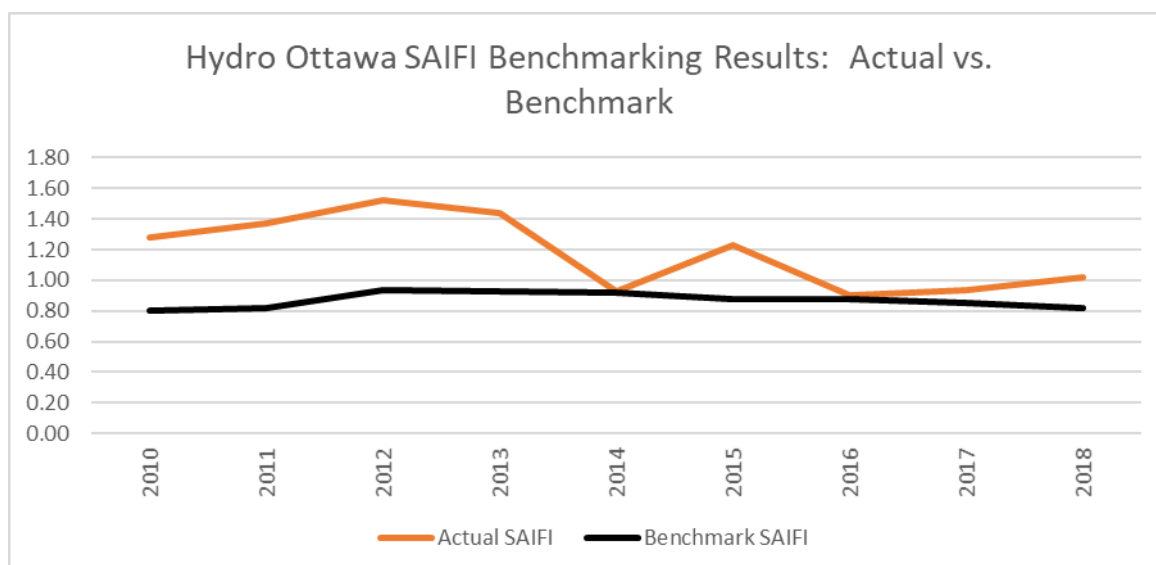
The following table and graph provide the comparison between Hydro Ottawa’s actual SAIFI and the model’s benchmark SAIFI value.

⁸ Ontario distributors began reporting reliability data with MEDs excluded in 2016. We therefore only include Ontario data starting in that year.

Table 2 Hydro Ottawa's SAIFI Performance 2010-2018

Year	% Difference from SAIFI Benchmark
2010	46.5%
2011	51.2%
2012	49.1%
2013	43.7%
2014	1.5%
2015	33.0%
2016	3.0%
2017	9.2%
2018	21.7%
2016-2018 average score	11.3%

Figure 2 Actual SAIFI vs. SAIFI Benchmark

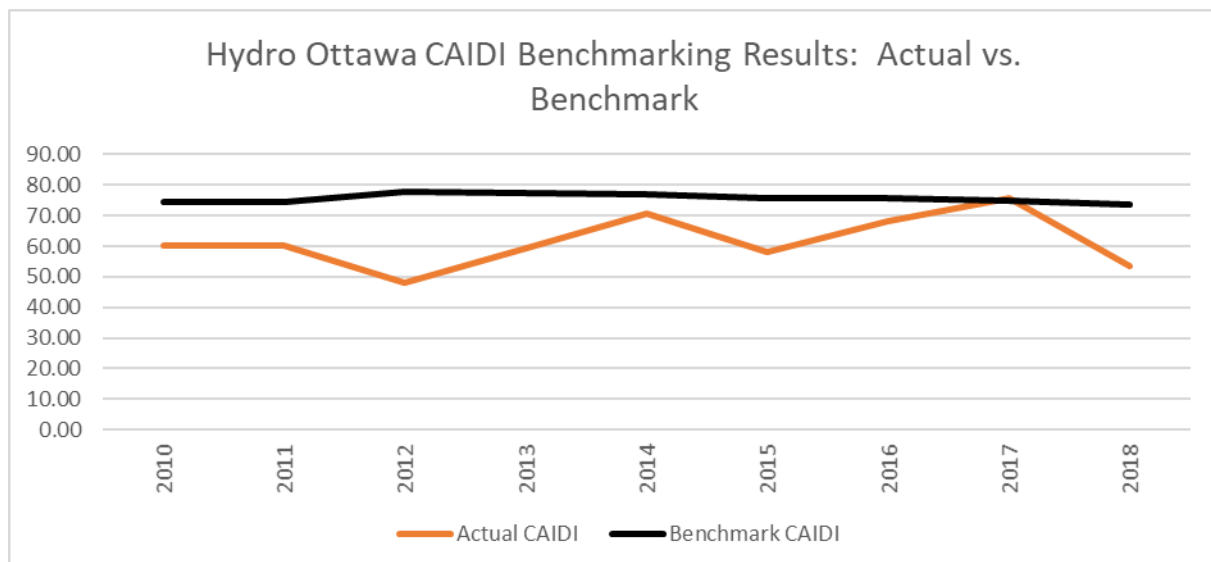


The following table and graph provide the comparison between Hydro Ottawa's actual CAIDI and the model's benchmark CAIDI value.

Table 3 Hydro Ottawa's CAIDI Performance 2010-2018

Year	% Difference from CAIDI Benchmark
2010	-21.7%
2011	-21.6%
2012	-48.2%
2013	-26.7%
2014	-8.8%
2015	-26.7%
2016	-10.4%
2017	1.2%
2018	-31.7%
2016-2018 average score	-13.7%

Figure 3 Actual CAIDI vs. CAIDI Benchmark



1.4 Stretch Factor Recommendation

In the 4th Generation IR proceeding, five stretch factor groupings (cohorts) were established based on the most recent average three-year total cost benchmarking scores. A score better than -25% (i.e. costs were more than 25% below benchmark) received the lowest stretch factor of 0.00%. A score

between -25% and -10% received a 0.15% stretch factor. Scores that are +/- 10% received 0.30%. Scores between 10% and 25% received a 0.45% stretch factor, and scores exceeding 25% (i.e. costs were 25% or more than benchmark) received the highest stretch factor of 0.60%.

Our total cost study findings for Hydro Ottawa show that during the Custom IR period, the Company's total cost benchmarking score is -7.1%. Based on the 4th Generation IR stretch factors, this suggests a stretch factor of 0.30%. The reliability benchmarking results provide no clear evidence that Hydro Ottawa is producing this better than average cost performance at the expense of reliability outcomes. Therefore, Clearspring Energy's recommended stretch factor for Hydro Ottawa's Custom IR application is 0.30%.⁹

⁹ The company requested Clearspring Energy examine how the total cost benchmarking results would change if the "once in a generation" Facilities Renewal Program and the South Nepean Municipal Transformer Station projects had not been pursued. In that hypothetical, the average 2021-2025 score would be -12.5%. This would have changed our stretch factor recommendation from 0.3% to 0.15%. Please see the Appendix for more background and the benchmarking scores with and without these project investments.

2 Total Cost Benchmarking Details

The benchmarking study employed the econometric benchmarking approach. This is the most accurate and fair method when comparing utility cost and reliability levels, because it explicitly adjusts for the quantifiable differences between utility service territories and business conditions. It is also the same method preferred by the Board in the 4GIR Decision.

Simple comparisons of metrics such as rates, unit costs, or reliability indices do not typically allow regulators to compare utilities in a fair manner. For example, comparing a utility's costs to those of a peer group utilities' costs usually presents an inaccurate picture of the target utility's performance. Factors that cannot be controlled by the utility affect costs and reliability performance. Such factors include geographical size, regional wage levels, rural density, or serving a congested urban territory. It is often difficult or impossible to account for these factors using a peer group approach.

Adjusting for these and other influencing factors is necessary to accurately evaluate performance. With this concept in mind, Clearspring Energy has estimated three econometric models from a large sample of utilities (total cost, SAIFI, and CAIDI) using variable parameters that are statistically influential on distribution utility costs and reliability indexes. The benchmarking method adjusts for service territory conditions and other factors that affect the studied metrics.

Using a large sample of utilities, the econometric model produces an industry-wide estimation of how the variables (e.g. number of customers, peak demand, etc.) affect the studied metric (e.g. total costs). For the present study, the sample used to estimate the models includes both U.S. and Ontario observations from multiple utilities for multiple years. A dataset which includes U.S. and Ontario observations provides a sample with diversity in the number of customers and other explanatory variables. It is a robust sample that produces an accurate benchmark assessment of Hydro Ottawa's total cost and reliability metrics.

The high-level method for the three models is similar. In each case, the model uses the industry data over the studied period to determine the relationship between the metric and the factors that drive it. For example, the total cost model estimates the industry-wide relationship between total cost and certain variables, based on the utilities included in the sample. The model is then used to predict Hydro Ottawa's "expected" (benchmarked) costs, using the same estimated relationship between the costs and the explanatory variables, and using Hydro Ottawa's particular values for the variables. The approach for the reliability metrics is similar, although a different set of explanatory variables is used for each model.

Total cost and reliability predictions are calculated by inserting company-specific variable values into the estimated equation for the metric at hand (total cost, SAIFI, or CAIDI) for each year in the study. The benchmark score is defined as the logarithmic percentage difference of the observed data to the predicted value of the data for a given year, as shown below.

$$\text{Benchmark Score} = \text{Natural Log} \left(\frac{\text{Observed or Projected Cost Data}}{\text{Predicted Cost Data}} \right)$$

2.1 Total Cost Sample

The sample includes Ontario and U.S. utilities that, individually, serve more than 59,806 customers.¹⁰ The total cost sample is comprised of 88 utilities, including Hydro Ottawa. There are 81 U.S. utilities and 7 Ontario distributors in the sample. The sampled years for the U.S. observations include 2002 through 2017.¹¹ The sampled years for the Ontario observations include 2006 through 2017 except for Hydro Ottawa which has observations through 2025.¹² There are a total of 1,370 observations in the dataset. This is more than suitable for the estimation of a statistically robust econometric model.

The distributors included in the dataset are provided in the following table. The number of customers provided is the number of customers for the utility in 2017 and the utilities that are listed in bold operate in Ontario.

¹⁰ This specific cut-off was used for the Ontario distributors so that it would be consistent with the U.S. sample. The smallest customer count in the U.S. sample is from Black Hills Power, which served 59,807 customers in 2002.

¹¹ We began the U.S. sample in 2002 because this was the starting period used in the prior Hydro Ottawa sample and the latest Toronto Hydro benchmarking study that our team conducted. Beginning in 2002 provides a sufficiently large sample size, while providing observations that are more contemporary than observations from the 1990s.

¹² Given the definition of the ratcheted peak demand variable as the highest peak demand for the utility in the last five years, 2006 becomes the first available year for the variable, since the peak demand data for Ontario distributors is available starting in 2002. Hydro Ottawa's data is actual through 2018 and then projected from 2019 to 2025.

Table 4 Total Cost Sampled Utilities

Company Name	Number of Customers	Company Name	Number of Customers
Alabama Power Company	1,475,042	London Hydro Inc.	157,188
Alectra Utilities Corporation	982,022	Louisville Gas and Electric Company	408,738
ALLETE (Minnesota Power)	146,353	Madison Gas and Electric Company	152,601
Appalachian Power Company	961,229	Metropolitan Edison Company	566,695
Arizona Public Service Company	1,214,627	Mississippi Power Company	193,954
Atlantic City Electric Company	551,332	Monongahela Power Company	400,554
Avista Corporation	379,027	Nevada Power Company	918,452
Baltimore Gas and Electric Company	1,281,044	New York State Electric & Gas Corporation	893,783
Black Hills Power, Inc.	71,977	Niagara Mohawk Power Corporation	1,522,893
Central Hudson Gas & Electric Corporation	293,201	Northern Indiana Public Service Company	466,688
Central Maine Power Company	624,511	Northern States Power Company - MN	1,466,398
Cleco Power LLC	290,212	Northern States Power Company - WI	261,029
Cleveland Electric Illuminating Company	761,997	Ohio Edison Company	1,046,760
Commonwealth Edison Company	3,991,358	Oklahoma Gas and Electric Company	838,252
Connecticut Light and Power Company	1,245,042	Orange and Rockland Utilities, Inc.	231,065
Consolidated Edison Company of New York	3,446,102	Pacific Gas and Electric Company	5,479,889
Consumers Energy Company	1,816,438	PECO Energy Company	1,626,898
Delmarva Power & Light Company	520,657	Pennsylvania Electric Company	589,852
Duke Energy Carolinas, LLC	2,558,843	Pennsylvania Power Company	165,130
Duke Energy Florida, LLC	1,775,327	Portland General Electric Company	870,333
Duke Energy Indiana, LLC	819,569	Potomac Electric Power Company	862,921
Duke Energy Kentucky, Inc.	141,273	PPL Electric Utilities Corporation	1,429,090
Duke Energy Ohio, Inc.	712,328	Public Service Company of Colorado	1,459,152
Duke Energy Progress, LLC	1,547,496	Public Service Company of New Hampshire	513,304
Duquesne Light Company	594,106	Public Service Company of Oklahoma	550,022
El Paso Electric Company	415,602	Public Service Electric and Gas Company	2,243,761
Empire District Electric Company	171,835	Puget Sound Energy, Inc.	1,135,036
Entergy Arkansas, Inc.	708,863	San Diego Gas & Electric Co.	1,434,024
Entergy Mississippi, Inc.	449,068	South Carolina Electric & Gas Co.	715,592
Entergy New Orleans, Inc.	200,137	Southern California Edison Company	5,071,773
EnWin Utilities Ltd.	88,422	Southern Indiana Gas and Electric Company	148,429
Florida Power & Light Company	4,901,871	Southwestern Public Service Company	410,400
Gulf Power Company	459,049	Tampa Electric Company	744,691
Hydro One Networks Inc.	1,320,085	Toledo Edison Company	313,960
Hydro Ottawa Limited	331,777	Toronto Hydro-Electric System Limited	767,946
Idaho Power Co.	539,590	Tucson Electric Power Company	422,650
Indiana Michigan Power Company	591,984	Union Electric Company	1,236,974
Indianapolis Power & Light Company	491,347	United Illuminating Company	333,518
Jersey Central Power & Light Company	1,122,087	Virginia Electric and Power Company	2,574,679
Kansas City Power & Light Company	539,408	West Penn Power Company	724,589
Kansas Gas and Electric Company	327,143	Western Massachusetts Electric Company	210,928
Kentucky Power Company	175,705	Wisconsin Electric Power Company	1,142,983
Kentucky Utilities Company	550,636	Wisconsin Power and Light Company	469,631
Kitchener-Wilmot Hydro Inc.	95,757	Wisconsin Public Service Corporation	449,877

2.2 Total Cost Definition

Total cost is defined as the sum of that year's OM&A and the calculated capital costs. OM&A and capital costs for the U.S. distributors are derived using FERC Form 1 filing data.¹³ U.S. electric utilities are required to file FERC Form 1 data annually, which includes operation and maintenance expenses broken down into specific cost categories (e.g. distribution, transmission, generation, customer billing, administrative and general). Form 1s also include plant in service and accumulated depreciation information that is used in constructing capital costs. The OM&A and capital cost data for the Ontario distributors comes from RRR filing data or from the OEB's 4GIR benchmarking Excel files.

Projected Hydro Ottawa OM&A data for the years 2019 through 2021 was provided to Clearspring Energy from the Company. OM&A projections subsequent to 2021 use the projected inflation factor index minus a stretch factor. Plant additions projections for Hydro Ottawa through 2025 have been provided to Clearspring Energy by the Company and used to calculate projected capital costs through 2025.

We used a cost definition that is consistent between both the U.S. and Ontario distributors in the sample. The cost definition is the same as the latest one used in the Toronto Hydro total cost benchmarking study led by Mr. Fenrick. Clearspring Energy began with the benchmark-based cost definition used by the Board Staff's consultant ("PEG") in the 4GIR proceeding. To be consistent with the U.S. sample, we then added high-voltage expenses to the cost definition for the Ontario distributors. The FERC Form 1 does not break down high- versus low-voltage distribution expenses, as Ontario reporting does. For the same reasons, contributions in aid of construction ("CIAC") have been excluded from the Ontario distributors' cost definition, due to those expenses not being included in the U.S. Form 1 data. Bad debt expenses (called uncollectible expenses in the FERC Form 1) have been excluded for all utilities, to match the 4GIR benchmark-based definition.

Pension and benefit costs have remained in the cost definition, because these costs appear to not be accurately disaggregated for the Ontario distributors.¹⁴ If we excluded pension and benefit costs, this would likely create an inconsistent treatment between the U.S. and Ontario distributors.

The cost definition also excludes customer service and information ("CSI") expenses from total costs for all utilities. This is due to the possibility that the U.S. utilities include conservation demand management ("CDM") expenses in the CSI expense category. This assures cost consistency between the U.S. sample and the Ontario distributors. The table below summarizes the cost definition treatment.

¹³ All FERC Form 1 data was downloaded from SNL Energy's database tool.

¹⁴ In the trial balance data, numerous distributors report zero pensions and benefits in accounts 5645 and 5646 (or if not zero, then implausibly low values).

Table 5 Cost Definitions

Cost Element	Treatment
4th Generation IR Benchmark-Based Costs	This is the starting point for the sample.
CIAC	We subtracted from all Ontario distributor costs, since U.S. cost data does not include CIAC.
High Voltage Expenses	We added to Ontario distributor costs, since U.S. cost data includes distribution high voltage costs.
Customer Service and Information (CSI) Expenses	We excluded CSI expenses for both the U.S. and Ontario distributors given the possible inconsistency in CDM reporting.

2.2.1 Perpetual Inventory Capital Cost Method

Total cost is defined as the sum of the annual OM&A expenses plus capital costs. Clearspring Energy's calculation of capital cost is based on the capital service price approach. This approach has a solid basis in economic theory; it is the same method used in all of the Ontario benchmarking and productivity studies conducted by Mr. Fenrick, and is the same method chosen by PEG in its 4GIR research.¹⁵ The approach allows for a consistent way to account for differences between utilities with respect to historical plant additions and depreciation rates. The service price approach is also prominent in government-sponsored cost research. The Bureau of Labor Statistics of the U.S. Department of Labor uses the capital service price approach in computing multi-factor productivity indexes for the U.S. private business sector and for several subsectors, including the utility services industry.

The cost of capital in each year (t) is the product of the capital service price index and capital quantity index at the end of the prior year ($t-1$). The formula for this is given by:

$$CK_t = WKS_t \cdot XK_{t-1}$$

CK_t is the cost of capital, WKS_t is the capital service price index, and XK_{t-1} is the capital quantity index value in the prior period.

The capital quantity index (XK) is constructed based on the value of net plant in a benchmark year, and on gross plant additions in years subsequent to the capital benchmark year. We use 1989 for all U.S. sampled utilities as the capital benchmark year because this is the first available year of publicly available

¹⁵ See Hall and Jorgensen (1967) for a seminal discussion of the use of service price methods for measuring capital cost.

data from SNL Energy. Years prior to 1989 would require extensive effort and could not be easily verified or replicated by another consultant. We used 2002 as the capital benchmark year for the Ontario sampled utilities because this is the first year where data can be readily verified.

A “triangulated weighted average” (“TWA”) is used to divide the net plant value in order to adjust the net plant value for inflation. This results in an estimate of the capital stock in 1989 or 2002. Subsequent years use the previous year’s capital stock and escalate it by that year’s plant additions minus a geometric depreciation assumption. This same method is used both for the Ontario and U.S. distributors. The formulas for the capital quantity index in 1989 and in subsequent years are provided below.¹⁶

$$XK_{1989}^i = \frac{Net\ Plant_{1989}^i}{TWA_{1989}^i}$$

$$XK_t^i = XK_{t-1}^i * d + \frac{Add_t^i}{WKA_t^i}$$

The capital service price (WKS) has two components: opportunity cost and depreciation. The capital service price index is thus given by the formula:

$$WKS_t = r_t * WKA_{t-1} + d_t * WKA_t$$

Here, r_t is the allowed rate of return based on the Board’s historical calculated returns. This same annual value is also used in the capital service price computation for the U.S. utilities in the dataset. Setting the same rate of return for all distributors provides consistency in determining the capital costs, so that decisions by regulators do not enter the benchmark evaluation, which is attempting to assess the performance of the utility itself. The parameter d_t is the economic depreciation rate. We use the same value as PEG did in the 4GIR proceeding, 4.59%, for this parameter in the study.

The asset price deflator (WKA) is an index of the price of capital assets in each year used in power distribution. We compute this index using data on differences in the cost of constructing utility plant between regions over time. For U.S. distributors, we use the Handy-Whitman indexes for total power distribution plant, which vary over time and across six geographic regions.¹⁷ For the Ontario distributors, we use the same Handy-Whitman index for total distribution plant in the North Atlantic region and then adjust for the Canadian purchasing power parity in the given year. For future years, we escalate the WKA index using a 50/50 calculation of the projections for the average weekly earnings in Ontario and the GDP-IPI index from the Conference Board of Canada.

We determine the relative levels of utility plant asset prices for 2011 by using the City Cost Indexes for

¹⁶ For the Ontario distributors, the subscripts would change to 2002 in the first equation.

¹⁷ Handy-Whitman indexes are widely used throughout the U.S. utility industry. They measure the construction cost trends for specific utility functions in six different regional areas of the U.S. For more information, please see: <https://wralp.com/about-us/handy-whitman-index>

electrical work in the 2012 edition of RSMeans' *Heavy Construction Cost Data*. This is a modification from our research in the last Toronto Hydro case in response to PEG's concerns that the data in the 2012 edition is representative of 2011 rather than 2012. These indexes measure differences among cities in the cost of labour needed to install electrical equipment and differences in equipment prices. The construction service categories covered are raceways; conductors and grounding; boxes and wiring devices; motors, starters, boards, and switches; transformers and bus ducts; lighting; electric utilities; and power distribution. The level of the asset price index for each utility is the RSMeans index value for the headquarter city in the service territory (or the closest available city). This same source is used for both U.S. and the Ontario distributors. The index is already adjusted for currency differences between the two countries.

2.3 Summary of Variables

In general, there are two types of variables used in econometric cost benchmarking: output variables and business condition variables. Output variables measure the output of the utility in question (i.e. what the utility "produces"). Business condition variables quantify the factors that drive costs in a particular service territory, such as regional input prices, highly congested urban areas, forestation, etc.

2.3.1 Output Variables

The two output variables for the study are the total number of customers and the ratcheted peak demand variable. The ratcheted peak demand variable is defined as the system's maximum annual peak demand over the most recent five years.¹⁸ For the U.S. utilities, the output variables are calculated from FERC Form 1s. The historical output data for the Ontario distributors comes from the Board's 4GIR data and RRR data. Hydro Ottawa's projected outputs come from forecasts provided to Clearspring Energy by Hydro Ottawa.

2.3.2 Business Condition Variables: Input Prices

The majority of the business condition variables are discussed in the following section. However, one important business condition variable merits detailed discussion: input prices. Input prices are divided into two categories: capital and OM&A. The capital input price calculation is discussed in detail in the prior section. The OM&A input price captures the regional market price level that each distributor encounters when procuring OM&A inputs, such as employees or materials and services. There are two components used to construct the OM&A input price. These are labour and non-labour.

The labour component is calculated by taking wage levels of numerous job occupations and weighting them based on the U.S. Bureau of Labor Statistics ("BLS") estimates of job occupation weights in the Electric Power Generation, Transmission, and Distribution Industry. The BLS has estimates for wage levels for each job occupation by city and metropolitan area. For the Ontario distributors, we gathered job occupation wage estimates from the 2011 Canadian Census, using wage data from each headquarter or closest available city, translated job occupations to match their U.S. counterparts, and then weighted

¹⁸ For example, the maximum peak demand variable in 2010 for a given utility will be the highest annual peak demand in the years of 2006, 2007, 2008, 2009, or 2010.

the job occupation wages by the BLS estimates. This provides consistency from the U.S. and Ontario regarding labour input prices and also puts the input price in terms of each country's currency. We then escalated labour prices for U.S. utilities using BLS employment cost indexes for the utility sector and escalated Ontario prices using the Ontario average weekly earnings estimates.

The non-labour component of the OM&A input price uses the U.S. gross domestic product price index for the U.S. utilities. The Ontario non-labour component uses the same GDP-PI in each year, but adjusted for the purchasing power parity ("PPP") index. This translates the non-labour input price component into Canadian dollars. To construct the overall OM&A input price we weighted each index using a 70% labour and a 30% non-labour rate. This was the same weighting used by PEG in its 4GIR benchmarking research. Using the capital and OM&A cost shares, Clearspring Energy calculated a total input price index.

Total cost is divided by this comprehensive input price index to adjust for regional input price differences between utilities and to account for annual inflation. Dividing total cost by the input price index imposes the requirement that total costs display linear homogeneity with respect to input prices. As the prices of inputs increase by X%, total cost should increase by that same percentage. For example, if all utility input prices (including labour) increase by 10%, its costs would also increase by 10%. This is derived from economic production theory, which states that costs equal input quantity multiplied by input price.

2.3.3 Other Business Condition Variables

Beyond the two output variables and input prices, the model also contains business condition variables that provide cost adjustments for given service territory conditions. Each variable included in the model is discussed briefly below.

The **percentage of electric customers** measures the percentage of electric customers served by a utility out of total gas and electric customers. This variable measures the economies of scope available from serving both electric and gas customers. Billing and other customer-related activities can be shared between the gas and electric divisions when a utility serves its customers with both commodities. The value is set to 100% for the Ontario observations, since they do not serve natural gas customers.

The **standard deviation of elevation** variable is calculated based on geographic information system ("GIS") elevation topography maps. A higher standard deviation of the elevation indicates increased elevation changes and variance within the utility's service territory. We would expect that a service territory with more hills, mountains, and other elevation changes would be more challenging and costly to serve, ceteris paribus. Therefore, a positive parameter estimate is expected (indicating a positive correlation between standard deviation of elevation and costs).

The **percentage of forestation** variable is based on GIS land cover maps. We used the GlobCover 2009 product produced by the European Space Agency ("ESA") and the Université Catholique de Louvain. These maps are matched with the areas served by each utility to create the forestation variable. We would expect that the higher the level of forestation, the higher OM&A costs required for right-of-way

clearing and service restoration activities. GIS variable data is available for all sampled U.S. utilities and for the Ontario distributors included in the sample.

The **congested urban** variable measures the percentage of a utility's service territory that consists of a major urban load center that is "congested." Congested urban areas have physical constraints that necessitate complex and costly subterranean civil infrastructure for housing and operating electric distribution plant. Congested urban areas also often necessitate electrical equipment unique to such subterranean infrastructure. The variable is constructed using a combination of the following factors:

- Engineering knowledge of the physical constraints necessitating a complex and costly subterranean civil infrastructure,
- Classification of geographical areas developed from aerial imagery of urban areas with populations over 200,000, and
- GIS analysis of area classifications within a utility service territory.

The variable measures the percentage of service territory classified as "congested urban" area.

We expect a utility that has a congested urban area within its service territory would experience substantial incremental costs as compared to a utility that does not have such an area within its service territory. The parameter value for this variable is expected to be positive, indicating a positive correlation of percent congested urban with total costs. We also included a quadratic term on the congested urban variable, similar to the quadratic used for the rural density variable below.¹⁹ As a utility has more congested urban service territory, it will have increased "economies of scale" in the special circumstance of serving a highly congested urban territory. We would therefore expect cost impacts to decelerate as the congested urban variable gets larger. This translates into a negative coefficient on the congested urban quadratic term.

The **percentage of smart meters** variable measures the percentage of customers that have an installed smart meter. Smart meters enable hourly or sub-hourly interval use data to be collected from the meter. While installing more capable meters and the necessary infrastructure is expected to increase distribution costs, these meters enable time-of-use ("TOU") electricity rates that can create efficiencies mainly in the realm of power supply. Since this study is focused on distribution total costs, we would expect a positive coefficient on the percent smart meter variable.

The **rural density** variable measures the amount of square kilometres served per customer. As the amount of service territory increases, assets become more spread out and drive times increase. We would expect that costs would increase as the amount of service territory per customer increases. Similar to the congested urban variable, we also included a quadratic term for this variable, because as the rural density becomes more extreme, cost impacts accelerate.

¹⁹ Mr. Fenrick also inserted a quadratic variable on the percentage congested urban variable in his benchmarking research in Toronto Hydro's latest custom incentive regulation application in EB-2018-0165. Pacific Economics Group (PEG) inserted a quadratic variable on the rural density variable in its benchmarking research in Hydro One Distribution's latest custom incentive regulation application in EB-2017-0049.

The **temperature** variable measures the amount of cooling degree days over a base of 80 degrees Fahrenheit (26.667 degrees Celsius) plus the number of heating degree days over a base of 10 degrees Fahrenheit (-12.222 degrees Celsius) in each year of the sample. As extreme weather increases, we would expect costs to also increase.

2.4 Benchmarks for Future Years

The same econometric model and its associated parameter values that are estimated using historical data (and used to develop Hydro Ottawa's historical benchmarks) are also used to calculate the Company's benchmarks for future years. These parameter values are combined with projected variable values to calculate the expected total costs of Hydro Ottawa in the future years of the Custom IR period.

Clearspring Energy was provided OM&A expense, plant addition, customer counts, and peak demand projections from Hydro Ottawa. We then inserted these projections for each future year into the estimated econometric model.

Although some business variables have projections provided by Hydro Ottawa, others do not (e.g. Hydro Ottawa does not project percent forestation of its territory into the future). For the variables with no Hydro Ottawa projections, when projecting costs for future years, the values that enter the total cost model were set at their most recently available historical value. The exception was the temperature variable, which was set at the average cooling degree day and heating degree day value from 2002 to 2018, since 2002 is the first data value we gathered for Hydro Ottawa and 2018 is the last historical observation.

2.5 Model Estimation Procedure and Specification

We assume that the relationship between a utility's cost and the conditions that affect it, called "cost drivers," can be quantified and captured by a statistical function. This function, called a "cost function," allows Clearspring Energy to specify cost as a dependent variable that can be explained by relevant independent or explanatory variables and associated parameters; the latter capture the effect of the independent variables on cost. Such a cost function is estimated using econometric techniques that rest on certain fundamental assumptions.

As implied by the term "independent," one of these assumptions is that the explanatory variables used in the model are factors that are outside the control of utility decision-makers. For instance, the wage paid to labour is driven by market conditions in the service territory and is largely outside the control of a firm's managers. On the other hand, the number of employees hired is within management's control, and thus should not serve as an independent variable.

The data used to estimate this cost relationship can be from a single firm with multiple time observations (time series data), from many firms observed at a single time period (cross-sectional data), or from many firms with multiple time observations (cross-sectional time-series or panel data). The estimation procedure used to estimate model parameters is affected by the type of data used to estimate the model. In our present study, we have a panel dataset with cost data from multiple firms

with observations starting in 2002 and extending to 2017.²⁰ For benchmarks of past years, we use the model to produce benchmarks for each year and compare Hydro Ottawa's benchmark costs with its actual costs.

Additionally, for future years we can take Hydro Ottawa's cost projections through 2025, allowing us to also benchmark those forecasts "out of sample."²¹ We use the model (which is based on historical data) and apply the estimated coefficients and projected independent variable values for Hydro Ottawa to calculate a predicted benchmark value. This predicted benchmark value is then compared to Hydro Ottawa's projected total cost amount.

2.5.1 Statistical Tests on Parameter Estimates

The precision of parameter estimates is an important dimension of the cost estimation exercise. It identifies business condition variables that have a statistically significant effect on cost. Standard errors of parameter estimates, which measure the precision with which a parameter is estimated, are used to construct a test of a relevant hypothesis. The hypothesis to be tested is "the explanatory variable in question has no statistically significant effect on cost." This procedure is called the *t*-test. A variable is statistically significant if this hypothesis is rejected at a pre-specified level of confidence. We use a 90% confidence threshold in our research.

A cost model with plausibly signed and statistically significant parameter estimates is ultimately used to assess the cost performance of each firm in the sample. By "plausibly signed" we mean that its sign (positive/negative) accords with our intuitive understanding of the relationship between that parameter and the variable. For example, we would "expect" to see costs rise as the number of customers served increases (i.e. the customer parameter would be positively signed).

Once the industry cost model is estimated, the cost model with estimated parameters is fitted with the business conditions of each utility to generate cost benchmarks, against which actual cost is evaluated. A cost benchmark for a particular utility reflects the performance we would expect from an average hypothetical utility facing the business conditions of that particular utility.

If a given utility's actual cost is below the benchmark cost, its cost performance is better than average—it spent less than a hypothetical utility (with the same particular characteristics) would be expected to spend. If its actual cost is above the benchmark cost, its cost performance is worse than average. A statistical test of a cost efficiency hypothesis, based on the *t*-test, can also be constructed to identify whether the cost performance identified by the above exercise is statistically significantly different from average.

²⁰ The data extends to 2025 for Hydro Ottawa.

²¹ For Hydro Ottawa's OM&A, Clearspring Energy was given projections until 2021 and then we applied the I-X formula to escalate OM&A amounts in years 2022 to 2025.

2.5.2 Model Specification

A translog function is selected for the total cost model estimated in this study. The translog cost function was the same functional form chosen by PEG in its 4GIR benchmarking research. The function's general form, after suppressing time and firm subscripts, is given by:

$$\ln C = \alpha_o + \sum_i \alpha_i \ln Y_i + \sum_j \beta_j \ln W_j + \sum_h \gamma_h \ln Z_h + \frac{1}{2} \left[\sum_i \sum_k \alpha_{ik} \ln Y_i \ln Y_k + \sum_j \sum_n \beta_{jn} \ln W_j \ln W_n \right] + \sum_i \sum_j \alpha_{ij} \ln Y_i \ln W_j + \alpha_t t + \varepsilon$$

In this specification, α 's and β 's are model parameters, and ε is the random noise term. In addition, Y_i quantifies output, W_j input prices, Z_h other business condition variables, and t is a time trend term. This form has been widely used in cost function research.²² A major advantage is its flexibility, which permits it to provide a good approximation for the wide range of functional forms that the data can reflect.²³

2.5.3 Estimation Approach

The estimation procedure used to estimate model parameters is affected by the type of data used to estimate the model. In our present study, we have an unbalanced panel dataset with cost data from multiple utilities with multiple observations starting in 2002 and extending to 2017 (or 2025 for Hydro Ottawa).

In multivariate regression analysis, the constructed model is designed to use a set of independent (often called explanatory or right-hand-side) variables to "explain" movement in the dependent (often called the left-hand-side) variable. The numerical relationship between an independent variable and the dependent variable is provided through an estimated coefficient value. Under the assumptions of the model, this coefficient value is considered an unbiased estimator of the relationship. Multivariate regression analysis also makes statements about the precision of each coefficient value. Precision in this context is a statement about how confident or statistically valid the coefficient value is. When all the assumptions of multivariate regression are satisfied, the coefficient values are the best (or most precise) unbiased estimators that are available.

Two common issues arise in multivariate regression using real world data: heteroscedasticity and autocorrelation. Neither of these issues cause the coefficient values to be biased. This is important because it means the researcher does not need to worry about correcting the coefficient values: they are not misleading. However, both conditions render the statements about precision problematic. Specifically, the problem with heteroscedasticity and autocorrelation is that they increase the regression

²² In their Monte Carlo studies of functional forms' performance, Gagne and Ouellette (1998) use the translog as a benchmark because "it is the most widely used" functional form.

²³ See Guilkey, et al. (1983)

variance calculations, which means the researcher is less confident in the calculated coefficient values. For decades, the standard correction procedure involved trying to figure out the nature of each problem and strategically weighting the regression to render heteroscedasticity and autocorrelation less of a problem. One key issue with this strategy is that the researcher may have a hard time truly understanding how to reweight the regression. Additionally, the coefficient values will be different after the reweighting.

More recent treatments for dealing with heteroscedasticity and autocorrelation focus the correction procedures on methods that do not alter the regression or the coefficient values. Instead of reweighting the regression itself, these strategies leave the regression unaltered and focus on altering the way the variances of the coefficients are calculated. These procedures are systematic and do not depend on understanding the underlying reason for the heteroscedasticity and autocorrelation.

For our analysis, we have chosen to estimate the precision of our coefficients using Driscoll-Kraay standard errors.²⁴ Driscoll-Kraay standard errors have been coded and available in the STATA software suite since 2007.²⁵ The computer software calculates information crucial to understanding whether each relationship as described by each coefficient can be supported statistically.

²⁴ Driscoll, J., and A. C. Kraay, 1998. "Consistent covariance matrix estimation with spatially dependent data," *Review of Economics and Statistics* 80: 549–560.

²⁵ Hoechle, Daniel, 2007 "Robust standard errors for panel regressions with cross-sectional dependence," *The Stata Journal* 7(3): 281-312.

3 Total Cost Benchmarking Model and Scores

The parameter estimates from the total cost model are presented in Table 6. We note that all the parameter estimates are plausibly signed and have reasonable magnitudes. The first order terms of all variables have the theoretically expected signs and are statistically significant at a 90% level of confidence. In fact, all the explanatory variables are statistically significant at a 99% confidence level. The adjusted R-Squared of the model equals a robust 0.966.

Table 6 Total Cost Model Estimates

Variable	Coefficient	Standard Error	T-Statistic	P-Value
Constant	13.012	0.021	615.256	0.000
Number of Customers (N)	0.567	0.009	66.513	0.000
Ratcheted Peak Demand (D)	0.442	0.010	43.586	0.000
N*N	0.991	0.122	8.097	0.000
D*D	1.164	0.156	7.478	0.000
N*D	-2.120	0.277	-7.641	0.000
% Electric Customers in Gas + Electric	0.080	0.025	3.193	0.004
Standard Deviation of Elevation	0.030	0.003	9.800	0.000
% Forestation	0.043	0.003	16.081	0.000
% Congested Urban (CU)	25.912	3.897	6.650	0.000
% AMI	0.040	0.014	2.786	0.010
Rural Density (RD)	0.082	0.003	26.049	0.000
Temperature	0.000	0.000	3.193	0.004
Trend	-0.004	0.001	-4.211	0.000
CU*CU	-763.329	144.403	-5.286	0.000
RD*RD	0.029	0.002	15.834	0.000

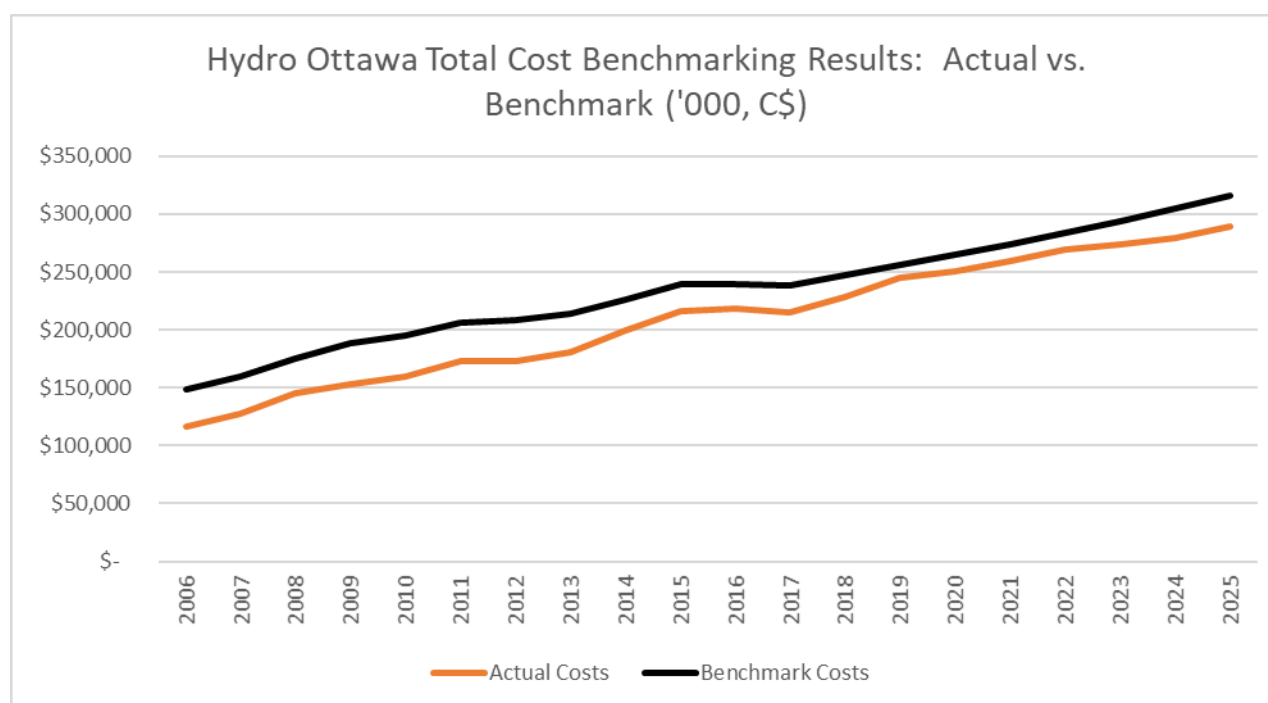
The following table breaks down the historical and forecast year benchmark and Company total costs from 2006 through 2025. The years 2019 to 2025 use the projected and proposed spending during the Custom IR period. We note that the benchmark scores assume that all of the proposed spending will actually be incurred. If spending is less than the proposed amounts, the scores will improve; if spending is more than the proposed amounts, the scores will get worse.

Table 7 2006-2025 Total Cost Benchmark Score for Hydro Ottawa

Year	% Difference from Total Cost Benchmark
2006	-24.1%
2007	-22.2%
2008	-18.7%
2009	-20.7%
2010	-20.2%
2011	-17.5%
2012	-18.5%
2013	-16.9%
2014	-12.5%
2015	-10.4%
2016	-9.3%
2017	-10.2%
2018	-7.6%
2016-2018 average score	-9.0%
2019	-4.5%
2020	-5.6%
2021	-5.6%
2022	-5.3%
2023	-7.1%
2024	-8.7%
2025	-8.9%
2021-2025 average score	-7.1%

The following graph displays how Hydro Ottawa's actual and projected total costs have compared to the benchmark costs over time and through the Custom IR period, respectively.

Figure 4 Hydro Ottawa Total Cost Actual vs. Benchmark



4 Reliability Benchmarking Models and Scores

Most, if not all, jurisdictions that require reporting of reliability indicators include the metrics of SAIDI, SAIFI, and CAIDI.²⁶ SAIDI measures the average duration of sustained interruptions per utility customer. SAIFI is a gauge of the average frequency of sustained interruptions per customer. CAIDI evaluates the average duration time per sustained interruption. SAIDI is thus the product of SAIFI and CAIDI.

$$SAIDI = SAIFI * CAIDI$$

The reliability benchmarking study performed by Clearspring Energy focused on the reliability indexes of SAIFI and CAIDI. SAIFI measures the average number of outages a customer experiences per year. It indirectly measures the propensity of the distribution grid to fail. CAIDI measures the average restoration time when an outage does occur. It indirectly measures the Company's response time and preparedness for outage restoration.

Several jurisdictions, including Ontario in recent years, exclude extraordinary events from reliability statistics, with the goal of reducing year over year volatility due primarily to extreme weather. If a day is excluded, it is denoted as a major event day ("MED"). The bulk of MEDs stem from major storms. These severe storms vary in number and intensity from year to year. MED definitions vary by jurisdiction and/or utility; some use the Institute of Electrical and Electronics Engineers ("IEEE") standard 1366 to determine what constitutes a MED.²⁷ The industry appears to gradually be shifting towards the IEEE standard; however, considerable differences across utilities remain.

The reliability benchmarking study excluded MEDs from the SAIFI and CAIDI metrics but includes loss of supply outages in order to be consistent with the U.S. data. By excluding MEDs from the reliability indexes, we reduce the variance in the indexes associated with large and uncontrollable weather occurrences. The benchmark evaluation in this study is measuring the performance of utilities during the normal operations and not during severe weather events.

The industry reliability data for U.S. utilities is gathered through reports and rate case filings made public by state commissions and, recently, through the EIA Form 861. The Ontario observations are from RRR filings since 2016, which have included reliability data with MEDs excluded.

The following table lists the utilities included in the reliability dataset. All of these utilities were also included in the cost dataset. The reliability dataset is composed of 78 distributors, including Hydro Ottawa.²⁸ The sample spans the years of 2010 to 2017. Some utilities have data available for all years,

²⁶ Some U.S. states only require reporting of two of these measures. However, the excluded indicator can still be determined by the researcher.

²⁷ The IEEE 1366 standard defines the "beta" method. If outages for a certain day exceed 2.5 standard deviations from the normal day, a major event day is declared. A normal day and the standard deviation are determined by the utility's previous five years of normal day data (not including the MEDs).

²⁸ As with the total cost model, the sample excludes Hydro Ottawa's observations when estimating the model used to calculate the Company's benchmarks.

while others have more limited data available. The utilities operating in Ontario are listed in bold. There are 501 observations in the reliability dataset. This is sufficient to estimate statistically robust parameter estimates.

Table 8 Sampled Utilities for Reliability Benchmarking

Company Name	Number of Customers	Company Name	Number of Customers
Alabama Power Company	1,475,042	Louisville Gas and Electric Company	408,738
Alectra Utilities Corporation	982,022	Madison Gas and Electric Company	152,601
ALLETE (Minnesota Power)	146,353	Metropolitan Edison Company	566,695
Appalachian Power Company	955,861	Monongahela Power Company	390,806
Arizona Public Service Company	1,214,627	Nevada Power Company	918,452
Atlantic City Electric Company	551,332	New York State Electric & Gas Corporation	893,783
Baltimore Gas and Electric Company	1,281,044	Niagara Mohawk Power Corporation	1,348,698
Central Hudson Gas & Electric Corporation	257,812	Northern Indiana Public Service Company	459,863
Central Maine Power Company	624,511	Northern States Power Company - WI	257,668
Cleveland Electric Illuminating Company	750,660	Ohio Edison Company	1,046,760
Commonwealth Edison Company	3,991,358	Oklahoma Gas and Electric Company	838,252
Connecticut Light and Power Company	1,245,042	Orange and Rockland Utilities, Inc.	231,065
Consolidated Edison Company of New York	3,446,102	Pacific Gas and Electric Company	5,479,889
Consumers Energy Company	1,816,438	PECO Energy Company	1,626,898
Duke Energy Carolinas, LLC	2,558,843	Pennsylvania Electric Company	586,984
Duke Energy Florida, LLC	1,775,327	Pennsylvania Power Company	165,130
Duke Energy Indiana, LLC	819,569	Portland General Electric Company	870,333
Duke Energy Kentucky, Inc.	141,273	Potomac Electric Power Company	862,921
Duke Energy Ohio, Inc.	712,328	PPL Electric Utilities Corporation	1,429,090
Duquesne Light Company	594,106	Public Service Company of Colorado	1,459,152
El Paso Electric Company	415,602	Public Service Company of New Hampshire	513,304
Empire District Electric Company	171,835	Public Service Company of Oklahoma	550,022
Entergy Arkansas, Inc.	708,863	Public Service Electric and Gas Company	2,243,761
Entergy Mississippi, Inc.	449,068	Puget Sound Energy, Inc.	1,135,036
Entergy New Orleans, Inc.	200,137	San Diego Gas & Electric Co.	1,434,024
EnWin Utilities Ltd.	88,422	South Carolina Electric & Gas Co.	715,592
Florida Power & Light Company	4,901,871	Southern California Edison Company	5,071,773
Gulf Power Company	459,049	Southern Indiana Gas and Electric Company	145,277
Hydro One Networks Inc.	1,320,085	Tampa Electric Company	744,691
Hydro Ottawa Limited	331,777	Toledo Edison Company	310,305
Idaho Power Co.	539,590	Toronto Hydro-Electric System Limited	767,946
Indiana Michigan Power Company	591,984	Union Electric Company	1,215,790
Indianapolis Power & Light Company	491,347	United Illuminating Company	333,518
Jersey Central Power & Light Company	1,122,087	Virginia Electric and Power Company	2,574,679
Kansas Gas and Electric Company	327,143	West Penn Power Company	724,589
Kentucky Power Company	167,599	Western Massachusetts Electric Company	210,928
Kentucky Utilities Company	550,636	Wisconsin Electric Power Company	1,122,771
Kitchener-Wilmot Hydro Inc.	95,757	Wisconsin Power and Light Company	469,631
London Hydro Inc.	157,188	Wisconsin Public Service Corporation	442,246

4.1 Econometric Reliability Benchmarking Variables and Models

The procedure for estimating the two reliability models is much the same as the procedure for the cost models, except that different variables are used. Refer to Section 2 for a general description of the model creation process.

Both the SAIFI and CAIDI models use reliability metrics with MEDs excluded. The SAIFI model's variables, parameter estimates, and statistical tests are presented in the following table. The included variables

are signed according to theory and statistically significant at a 90% confidence level. The adjusted R-Squared of the model is 0.462.

Table 9 SAIFI Econometric Model Coefficients

Variable	Coefficient	Standard Error	T-Statistic	P-Value
Intercept	0.477	0.118	4.057	0.004
Number of Customers	-0.020	0.010	-1.888	0.096
% Forestation	0.040	0.017	2.353	0.046
IEEE MED Definition	-36.509	7.863	-4.643	0.002
% Congested Urban	-1.609	0.073	-21.992	0.000
% Plant Underground	0.477	0.118	4.057	0.004

The CAIDI model statistics are presented in the table below. The included variables are signed according to theory and statistically significant at a 90% confidence level. The adjusted R-Squared of the model is 0.440.

Table 10 CAIDI Econometric Model Coefficients

Variable	Coefficient	Standard Error	T-Statistic	P-Value
Intercept	4.148	0.109	37.914	0.000
Number of Customers	0.046	0.008	5.503	0.001
% Forestation	0.073	0.007	10.384	0.000
% Plant Underground	-0.730	0.095	-7.651	0.000
Rural Density	0.067	0.022	3.048	0.016
Average Wind Speeds Above 20 MPH	0.003	0.002	1.861	0.100
Standard Deviation of Elevation	0.093	0.007	13.528	0.000
% Congested Urban	21.889	3.612	6.059	0.000
% AMI	-0.091	0.035	-2.603	0.031

4.2 Econometric Reliability Scores

We find that Hydro Ottawa's most recent 3-year (2016 to 2018) SAIFI value is 11.3% above the benchmark value. The most recent 3-year CAIDI value is 13.7% below the benchmark value.

Table 11 Year-by-Year Reliability Benchmarks vs. Actual

Year	SAIFI (Actual)	SAIFI (Benchmark)	SAIFI (% Difference)	CAIDI (Actual)	CAIDI (Benchmark)	CAIDI (% Difference)
2010	1.28	0.80	46.5%	60.00	74.57	-21.7%
2011	1.37	0.82	51.2%	60.00	74.48	-21.6%
2012	1.53	0.93	49.1%	47.97	77.71	-48.2%
2013	1.43	0.93	43.7%	59.33	77.46	-26.7%
2014	0.93	0.92	1.5%	70.58	77.06	-8.8%
2015	1.23	0.88	33.0%	58.03	75.80	-26.7%
2016	0.90	0.87	3.0%	68.03	75.52	-10.4%
2017	0.93	0.85	9.2%	75.59	74.70	1.2%
2018	1.02	0.82	21.7%	53.60	73.63	-31.7%
2016-2018 Average			11.3%			-13.7%

Figure 5 Actual and Benchmark SAIFI of Hydro Ottawa Over Time

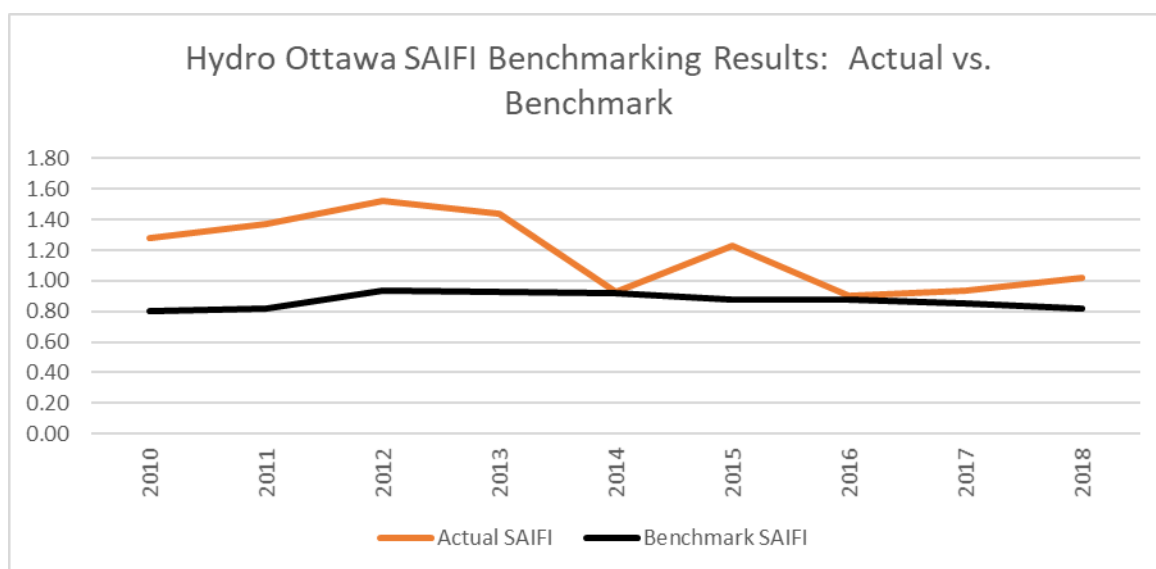
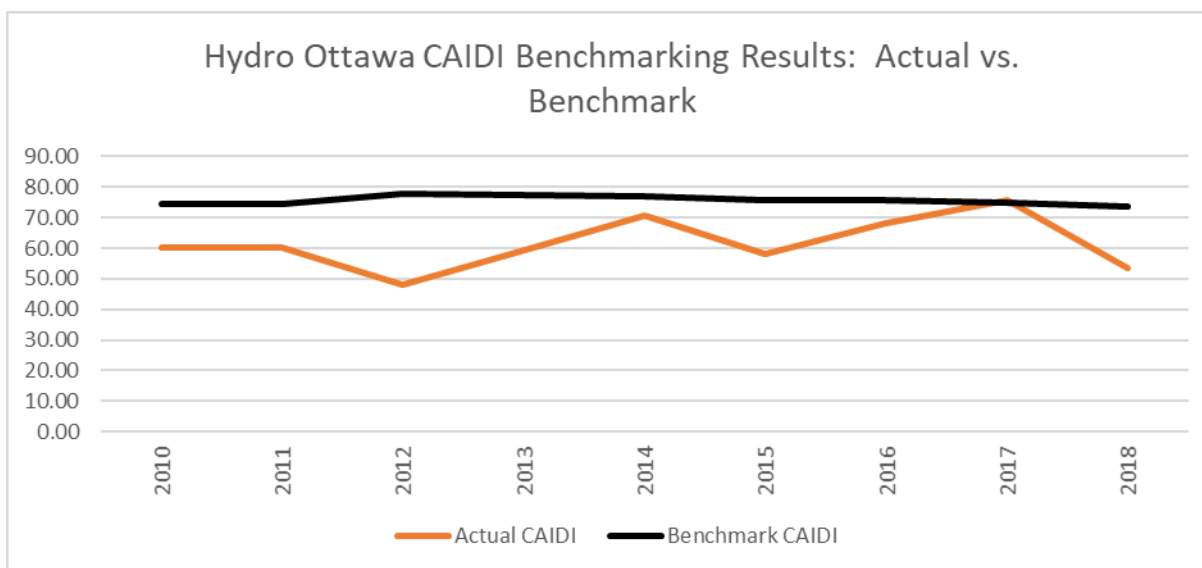


Figure 6 Actual and Benchmark CAIDI of Hydro Ottawa Over Time

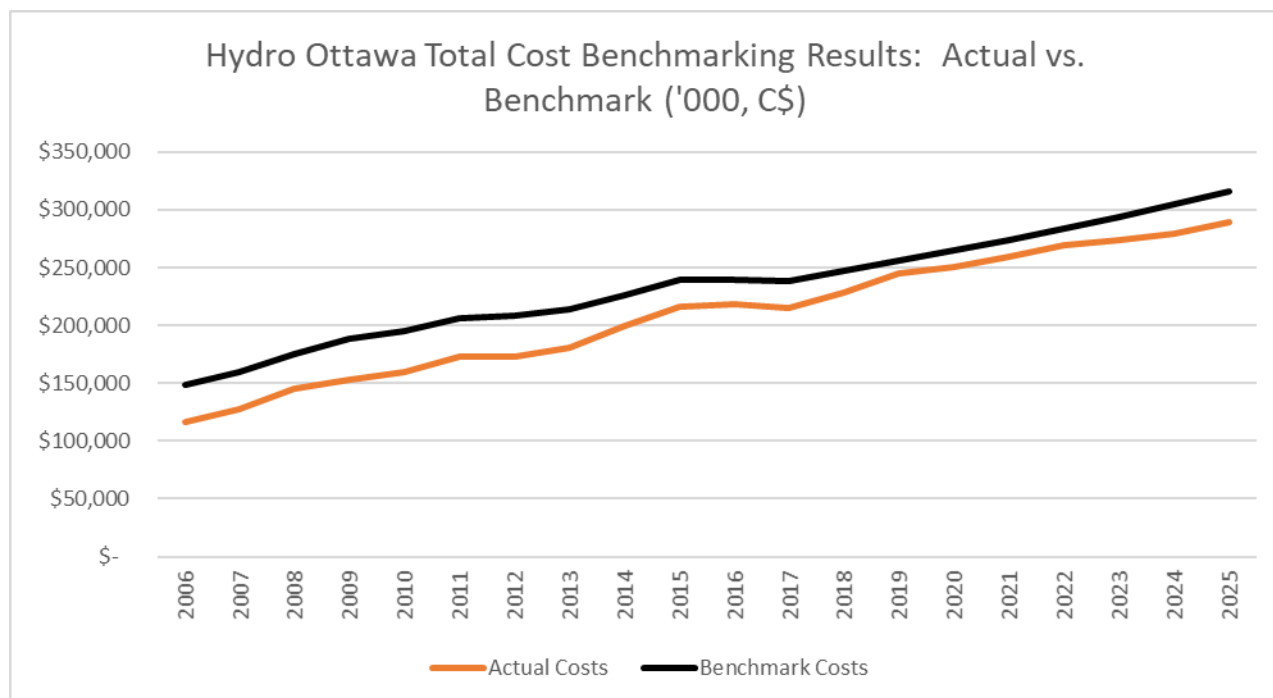


5 Concluding Remarks and Stretch Factor Recommendation

This study provides benchmarking results useful for evaluating Hydro Ottawa's 2021-2025 Custom IR application. The study has estimated total cost and reliability models that explicitly account and adjust for the service territory characteristics of Hydro Ottawa. The models are statistically robust and provide accurate benchmark comparisons.

The total cost results provide evidence that Hydro Ottawa's historical and projected cost levels are reasonable. Hydro Ottawa has consistently remained below its total cost benchmarks and remains below them throughout the Custom IR period, given its proposed spending levels. The graph below illustrates this consistency.

Figure 7 Actual and Benchmark Total Cost of Hydro Ottawa Over Time



The reliability scores show that the Company's SAIFI values are above the benchmarks and their CAIDI values are below the benchmarks. Both metrics have converged towards the benchmarks in recent years.

In the 4th Generation IR proceeding, five stretch factor groupings or cohorts were established based on the most recent three-year total cost benchmarking score. A score better than -25% (i.e. costs were more than 25% below benchmark) received the lowest stretch factor of 0.00%. A score between -25% and -10% received a 0.15% stretch factor. Scores that are +/- 10% received 0.30%. Scores between 10% and 25% received a 0.45% stretch factor, and scores exceeding 25% (i.e. costs were 25% or more than benchmark) received the highest stretch factor of 0.60%.

Our total cost study findings for Hydro Ottawa show that during the Custom IR period, the Company's total cost benchmarking score is -7.1%. Based on the 4th Generation IR stretch factors, this suggests a stretch factor of 0.30%. The reliability benchmarking results provide no evidence that Hydro Ottawa is producing this better than average cost performance at the expense of reliability outcomes. Therefore, Clearspring Energy's recommended stretch factor for Hydro Ottawa's Custom IR application is 0.30%.

Appendix 1: Alternative Results Excluding Large Projects

The Company requested Clearspring Energy to examine what the total cost benchmarking results would be and the impact on our stretch factor recommendation if the Facilities Renewal Program (“FRP”) and the South Nepean Municipal Transformer Station (“South Nepean MTS”) projects had not been pursued. The project descriptions below were provided to Clearspring Energy by the Company.

1. **Facilities Renewal Program** – The purpose of this program is to (a) consolidate operations and administrative staff; (b) move Hydro Ottawa’s operational centers out of high-traffic residential areas to sites with easy access to major highways within the Ottawa area; (c) replace aging buildings; and (d) upgrade operational centers in order to provide better response to customers. Under the program, two parcels of land were purchased, upon which Hydro Ottawa has constructed two regional campuses – namely, the Eastern Operations and Administrative Campus, and the Southern Operations & Warehouse.

Hydro Ottawa has described this program as a “once in a generation” modernization and operational efficiency initiative. Most of the capital additions for the FRP occur in 2019. This large investment worsens the total cost benchmarking scores throughout the entire Custom IR period.

2. **South Nepean Municipal Transformer Station** – This project consists of two key components: (1) a new municipal transformer station to be constructed by Hydro Ottawa; and (2) upgrades to existing transmission facilities, as well as construction of a segment of new transmission line, by Hydro One. These facilities are required to accommodate customer load growth and increase supply capacity in the South Nepean area of Ottawa, which has already reached the limits of local transformation capacity.

The capital additions for the South Nepean MTS project occur in 2021 and 2022. Therefore, this large investment will worsen the total cost benchmarking scores beginning in 2021 and then throughout the Custom IR period.

The following table displays the total cost benchmarking results with, 1) all of the Company’s capital additions, 2) the FRP capital additions excluded, and 3) the FRP and South Nepean MTS capital additions excluded. The two alternative results with the investments excluded are for information-purposes only. Clearspring Energy’s recommended stretch factor of 0.3% is based on the results that include all capital additions.

Table 12 Alternative Benchmarking Results Excluding Large Projects

Year	% Difference (All Capital Additions Included)	% Difference (FRP Excluded)	% Difference (FRP and South Nepean MTS Excluded)
2006	-24.1%	-24.1%	-24.1%
2007	-22.2%	-22.2%	-22.2%
2008	-18.7%	-18.7%	-18.7%
2009	-20.7%	-20.7%	-20.7%
2010	-20.2%	-20.2%	-20.2%
2011	-17.5%	-17.5%	-17.5%
2012	-18.5%	-18.5%	-18.5%
2013	-16.9%	-16.9%	-16.9%
2014	-12.5%	-12.5%	-12.5%
2015	-10.4%	-10.4%	-10.4%
2016	-9.3%	-9.3%	-9.3%
2017	-10.2%	-10.2%	-10.2%
2018	-7.6%	-7.6%	-7.6%
2016-2018 average score	-9.0%	-9.0%	-9.0%
2019	-4.5%	-7.9%	-7.9%
2020	-5.6%	-8.8%	-8.8%
2021	-5.6%	-8.7%	-10.7%
2022	-5.3%	-8.2%	-11.1%
2023	-7.1%	-9.8%	-12.6%
2024	-8.7%	-11.3%	-14.0%
2025	-8.9%	-11.4%	-13.9%
2021-2025 average score	-7.1%	-9.9%	-12.5%

As expected, the 2016 to 2018 average historical results are identical (to the tenth of a percent) with or without the forecasted investments. The 2021 to 2025 average forecasted results show that, if the FRP investment was excluded, the score becomes -9.9%. This is just above the threshold to move the stretch factor recommendation from 0.3% to 0.15%. If both the FRP and the South Nepean MTS investments are excluded, the total cost benchmarking score for 2021 to 2025 averages -12.5%. This would have pushed the stretch factor recommendation to 0.15%.

Appendix 2: Resume of Steve Fenrick



Clearspring Energy Advisors LLC

STEVEN A. FENRICK, Principal

Steve.fenrick@clearspringenergy.com (608.334.5994)

SUMMARY OF EXPERIENCE AND EXPERTISE

I have directed project teams and engaged in research in the fields of performance based regulation, performance benchmarking, DSM, load research and forecasting, and survey design and implementation

I have been a expert witness in a number of cases involving performance-based ratemaking and incentive regulation and peak time rebates.

PROFESSIONAL EXPERIENCE

Clearspring Energy Advisors, LLC– Madison, WI (2019 to Present)

Principal Consultant

Responsible for providing consulting services and expert witness testimony to utilities and regulators in the areas of reliability and cost benchmarking, productivity studies and other empirical aspects of performance-based ratemaking and incentive regulation. Manage activities in the areas of demand-side management programs, peak time rebate programs, load forecasting, and market research.

Power System Engineering, Inc.– Madison, WI (2009 to 2018)

Director of Economics

Responsible for providing consulting services to utilities and regulators in the areas of reliability and cost benchmarking, incentive regulation, value-based reliability planning, demand-side management including demand response and energy efficiency, ran peak time rebate programs, load research, load forecasting, end-use surveys, and market research.

Pacific Economics Group – Madison, WI (2001 - 2009)

Senior Economist

Co-authored research reports submitted as testimony in numerous proceedings in several states and in international jurisdictions. Research topics included statistical benchmarking, alternative regulation, and revenue decoupling. Managed and supervised PEG support staff in research and marketing efforts.

EDUCATION

University of Wisconsin - Madison, WI

Bachelor of Science, Economics (Mathematical Emphasis)

University of Wisconsin - Madison, WI

Master of Science, Agriculture and Applied Economics

PUBLICATIONS & PAPERS

“Peak-Time Rebate Programs: A Success Story”, *TechSurveillance*, July 2014 (with David Williams and Chris Ivanov).

“Demand Impact of a Critical Peak Pricing Program: Opt-In and Opt-Out Options, Green Attitudes and other Customer Characteristics”, *The Energy Journal*, January 2014. (With Lullit Getachew, Chris Ivanov, and Jeff Smith).

“Evaluating the Cost of Reliability Improvement Programs”, *The Electricity Journal*, November 2013. (With Lullit Getachew)

“Expected Useful Life of Energy Efficiency Improvements”, Cooperative Research Network, 2013 (with David Williams).

“Cost and Reliability Comparisons of Underground and Overhead Power Lines”, *Utilities Policy*, March 2012. (With Lullit Getachew).

“Formulating Appropriate Electric Reliability Targets and Performance Evaluations, *Electricity Journal*, March 2012. (With Lullit Getachew)

“Enabling Technologies and Energy Savings: The Case of EnergyWise Smart Meter Pilot of Connexus Energy”, *Utilities Policy*, November 2012. (With Chris Ivanov, Lullit Getachew, and Bethany Vittetoe)

“The Value of Improving Load Factors through Demand-Side Management Programs”, Cooperative Research Network, 2012 (with David Williams and Chris Ivanov).

“Estimation of the Effects of Price and Billing Frequency on Household Water Demand Using a Panel of Wisconsin Municipalities”, *Applied Economics Letters*, 2012, 19:14, 1373-1380.

“Altreg Rate Designs Address Declining Average Gas Use”, *Natural Gas & Electricity*. April 2008. (With Mark Lowry, Lullit Getachew, and David Hovde).

“Regulation of Gas Distributors with Declining Use per Customer”, *Dialogue*. August 2006. (With Mark Lowry and Lullit Getachew).

“Balancing Reliability with Investment Costs: Assessing the Costs and Benefits of Reliability-Driven Power Transmission Projects.” April 2011. *RE Magazine*.

“Ex-Post Cost, Productivity, and Reliability Performance Assessment Techniques for Power Distribution Utilities”. Master’s Thesis.

“Demand Response: How Much Value is Really There?” *PSE whitepaper*.

“How is My Utility Performing” *PSE whitepaper*.

“Improving the Performance of Power Distributors by Statistical Performance Benchmarking” *PSE whitepaper*.

“Peak Time Rebate Programs: Reducing Costs While Engaging Customers” *PSE whitepaper*.

“Performance Based Regulation for Electric and Gas Distributors” *PSE whitepaper*.

“Revenue Decoupling: Designing a Fair Revenue Adjustment Mechanism” *PSE whitepaper*.

EXPERT WITNESS EXPERIENCE

Docket EB-2019-0082, Hydro One Networks Transmission, TFP and Econometric Benchmarking research.

Docket EB-2018-0165, Toronto Hydro Electric System Limited, Econometric Benchmarking research.

Docket EB-2018-0218, Hydro One Transmission Sault St. Marie, TFP and Econometric Benchmarking research.

Docket EB-2017-0049, Hydro One Distribution, TFP and Benchmarking research.

Docket EB-2015-0004, Hydro Ottawa, Custom Incentive Regulation Application.

Docket 15-SPEE-357-TAR, Application for Southern Pioneer Electric Cooperative, Inc., Demand Response Peak Time Rebate Pilot Program.

Docket EB-2014-0116, Toronto Hydro, Custom Incentive Regulation Application.

Docket EB-2010-0379, The Coalition of Large Distributors in Ontario regarding “Defining & Measuring Performance”.

Docket No. 6690-CE-198, Wisconsin Public Service Corporation, “Application for Certificate of Authority for System Modernization and Reliability Project”.

Expert Witness presentation to Connecticut Governors “Two Storm Panel”, 2012.

Docket No. EB-2012-0064, Toronto Hydro’s Incremental Capital Module (ICM) request for added capital funding.

Docket No. 09-0306, Central Illinois Light rate case filing.

Docket No. 09-0307, Central Illinois Public Service Company rate case filing.

Docket No. 09-0308, Illinois Power rate case filing.

CONFERENCE PRESENTATIONS

Institute of Public Utilities Advanced Rate Conference at Michigan State University, "Performance Benchmarking". October 2018.

Panel Moderator at WPUI conference on cost allocation and innovative rate designs at Madison WI. June 2018.

Institute of Public Utilities Advanced Rate Conference at Michigan State University, "Performance Benchmarking". October 2017.

Wisconsin Manager's Meeting, "Reliability Target Setting Using Econometric Benchmarking". November 2016.

Institute of Public Utilities Advanced Rate Conference at Michigan State University, "Performance Benchmarking". October 2016.

Wisconsin Electric Cooperative Association (WECA) Conference, "An Introduction to Peak Time Rebates". September 2016.

Institute of Public Utilities Advanced Rate Conference at Michigan State University, "Performance Benchmarking". October 2015.

EUCI conference chair, 2015. "Evaluating the Performance of Gas and Electric Distribution Utilities."

Institute of Public Utilities Advanced Rate Conference at Michigan State University, "Performance Benchmarking". October 2014.

Cooperative Exchange Conference, Williamsburg VA. "Smart Thermostat versus AC Direct Load Control Impacts". August 2014.

EUCI conference chair in Chicago. "The Economics of Demand Response". February 2014.

Institute of Public Utilities Advanced Rate Conference at Michigan State University, "Performance Benchmarking". October 2013.

EUCI conference chair in Chicago. "Evaluating the Performance of Gas and Electric Distribution Utilities." August 2013.

Presentation to the Ontario Energy Board, "Research and Recommendations on 4th Generation Incentive Regulation".

Presentation to the Canadian Electricity Association's best practice working group. 2013

Conference chair for EUCI conference in March 2013 titled, "Performance Benchmarking for Electric and Gas Distribution Utilities."

Presentation to the board of directors of Great Lakes Energy on benchmarking results, December 2012.

Presentation on making optimal infrastructure investments and the impact on rates, Electricity Distribution Association, Toronto, Ontario. November 2012.

Conference chair for EUCI conference in August 2012 titled, "Performance Benchmarking for Electric and Gas Distribution Utilities."

2012 presentation in Springfield, IL to the Midwest Energy Association titled, "Reliability Target Setting and Performance Evaluation".

2012 presentation in Springfield, IL to the Midwest Energy Association titled, "Making the Business Case for Reliability-Driven Investments".

Conference chair for EUCI conference in 2012 titled, "Balancing, Measuring, and Improving the Cost and Reliability Performance of Electric Distribution Utilities". St. Louis.

Conference chair for EUCI conference in 2012 titled, "Demand Response: The Economic and Technology Considerations from Pilot to Deployment". St. Louis.

2012 Presentation in the Missouri PSC Smart Grid conference entitled, "Maximizing the Value of DSM Deployments". Jefferson City.

2011 conference chair on a nationwide benchmarking conference for rural electrical cooperatives. Madison.

2011 presentation on optimizing demand response program at the CRN Summit. Cleveland.

Conference chair for EUCI conference in 2011 titled, "Balancing, Measuring, and Improving the Cost and Reliability Performance of Electric Distribution Utilities". Denver.

2010 presentation on cost benchmarking techniques for REMC. Wisconsin Dells.

HYDRO OTTAWA UNIT COSTS BENCHMARKING STUDY

**FINAL REPORT
9 AUGUST 2019**

SECTION I – INTRODUCTION

Hydro Ottawa Limited (hereinafter referred to as “Hydro Ottawa” or “the Company”) engaged UMS Group to conduct a third party independent review of its methodology for deriving unit costs and perform benchmarking comparisons of a pre-selected set of asset categories and OM&A programs / practices; namely:

Asset Categories / Capital

- Wood Poles Replacement
- UG Cable (XLPE) Replacement
- OH Switches Replacement
- OH Transformer Replacement
- UG Transformer Replacement
- Station Breaker Replacement

OM&A Programs and Practices

- Vegetation Management
- Pole Test and Inspection
- Overhead Line Patrol
- Station Breaker and Relay Test and Inspection
- Billing-Paper
- Billing-Online
- Meter Maintenance

Establishing Context

In establishing context for the analyses and conclusions contained within this report, UMS Group:

- Reviewed relevant reports, procedures and system performance data provided by the Company, (**see Appendix A**);
- Was provided access to over 30 of the Company’s technical and management staff in the form of on-site workshops to address the following topics:
 - How Unit Costs are Calculated,
 - Capital Projects / Program Delivery,

- OM&A Projects / Program Delivery,
 - Metering,
 - Overview of the 2021-2025 Rate Application,
 - Line-of-Sight Performance Management,
 - Service Restoration and Vegetation Management,
 - Asset Management and Aging Infrastructure, and
 - Work Planning and Execution.
- Formed a Peer Group Panel, comprised of 15 electric utilities (based in Ontario, other parts of Canada, and the United States) with system and customer demographics like those of Hydro Ottawa, each dealing with the unique cost drivers that are prevalent in a mix of urban and rural settings (**see Appendix B**).

Comparative Analysis

The actual Peer Group comparisons of unit costs accounted for the fact that though there are similarities among the electric utilities selected, there are also differences to be reconciled, including:

- Regional costs,
- Practices in reporting costs,
- System demographics (e.g.; population density and underground utility congestion), and
- Other external factors (e.g.; mandates and constraints regarding performance of work, weather, and vegetation).

Thus, we developed normalization factors (**see Appendix C**), assuring the completeness and relevance of our benchmarks. In addition, with respect to our assessment of the Company's unit costing practices, we adopted an industry-wide perspective (*i.e.*; not constrained by those of the Peer Group Panel).

UMS Group Qualifications

Hydro Ottawa retained UMS Group, headquartered at 300 Interpace Parkway, Parsippany, NJ, 07054, as an independent expert. With over 30 years of experience conducting comparative performance assessments for the global utilities industry, UMS Group has supported multiple assessments and global benchmarking programs on six continents, working with state and province public utility commissions as well as more than 300 electric, gas and water utilities. UMS Group has augmented its analytical capabilities with a team of industry experts who are knowledgeable in practices related to (1) ascertaining an electric utility's efficiency and effectiveness in comparison to a qualified peer group, and (2) collaboratively developing aggressive, yet achievable performance improvement plans. Among other qualifications, UMS

Group leads several Global Learning and Benchmarking consortia, which together with its portfolio of ongoing client engagements facilitates maintenance of “real-time” proprietary cost and operational performance data, correlated to industry “best practices,” all supported by an analytical framework built on the premise that industry “best performers” are both efficient and effective. Appendix D provides additional details regarding UMS Group’s qualifications and those of the individuals assigned to this effort.

The UMS Group-assigned expert for this effort, Mr. Jeffrey W. Cummings, fully acknowledges his duties as an expert in accordance with Rule 13 and Form A of the Ontario Energy Board’s (“OEB” or “Board”) Rules of Practice and Procedure. In so doing, he acknowledges that it is his duty to provide evidence in relation to this report as follows:

- To provide opinion evidence that is fair, objective and non-partisan;
- To provide opinion evidence that is related only to matters that are within his area of expertise; and
- To provide such additional assistance that the Board may reasonably require, to determine a matter in issue.

He acknowledges that the duty referred to above prevails over any obligation that he may owe to Hydro Ottawa.

Structure of the Report

We have divided the ensuing discussion into three sections:

- Section II – Executive Summary: A summary of our conclusions on the Company’s methodology for deriving unit costs and the benchmarking comparisons with the Peer Group Panel,
- Section III – Project Approach: A description of and rationale for the approaches, methodologies, criteria and frameworks adopted to accomplish the Company’s stated objectives, and
- Section IV – Summary of Results: An expanded discussion of findings, conclusions and recommendations around the topic of unit costs.

We have also provided appendices to supplement the information provided in Sections II through IV in the form of comparative charts, graphs and tables, as well as more in-depth explanations of the bases for our evaluations and supporting analytics.

SECTION II – EXECUTIVE SUMMARY

Overview of Hydro Ottawa's Unit Cost Initiative

Hydro Ottawa retained UMS Group to conduct a review of its methodology for determining the unit costs underlying its distribution system capital and OM&A programs / practices and perform a utility benchmarking study to compare Hydro Ottawa's unit costs with those of a Peer Group Panel. In accomplishing these objectives, UMS Group:

- Conducted a series of workshops / interviews with several Hydro Ottawa stakeholder organizations (e.g., Distribution Engineering & Asset Management, Distribution Policies & Standards, Distribution Design, Maintenance & Reliability, Asset Planning, Program Management & Business Performance, Distribution Operations, Metering Services, Billing, Collection, Meter Data Services, Technology, Payroll & Analytics, Finance & Accounting, Regulatory, and Corporate Planning & Governance),
- Reviewed a myriad of requested reports, procedures and system performance data (see Appendix A),
- Established a Peer Group Panel of 15 electric utilities from across North America, largely based on demographics (number of customers, customer density, vegetation, and weather / climate), and factors that add complexity to field execution (e.g.; technical, legislative, regulatory and Bargaining Unit constraints / mandates),
- Designed and administered a survey, seeking unit cost comparators and key accounting and local factors to conduct full-scale normalization (i.e., accounting for elements beyond currency conversion rates and regional cost adjustments), and
- Analyzed the results of the survey, resulting in the benchmark of six asset categories and seven OM&A programs / practices and a comparison of Hydro Ottawa's unit cost methodology with that of representative sampling of industry peers.

The results of this effort are summarized below and expanded upon in Section IV, "Summary of Results," yielding insights from both industry and Hydro Ottawa-specific perspectives.

Industry Perspective Regarding Unit Cost Methodology

Unit costing is a simple concept to grasp. However, the reporting of unit costs for productivity measurement or benchmarking across electric utilities is complex:

- Asset Categories: Most utilities map burdened labor (i.e.; vacations, holidays and training less corporate Administrative & General), and material and equipment costs to asset classes based on some form of work order time sheets, and then allocate design, engineering, permitting, warehousing and AFUDC to arrive at a total cost. One can then infer a unit cost by dividing this "fully-loaded" cost by the number of units installed within the same year. Though seemingly straightforward, electric utilities need to account for the (1) carryover of costs from the previous fiscal year, (2) lagging costs applied to

uninstalled assets, and (3) different reporting regimens for work performed in-house versus by a third party.

- OM&A Programs / Practices: The industry as a whole is consistent in applying salary burdened by supervision, statutory costs and benefits to the costing of OM&A activities. However, there are inconsistencies regarding unitization of these activities. Some utilities manage them as “buckets” with budgets based on historical spending patterns. In these instances, there is little, if any opportunity to determine the number of units inspected, tested or maintained. Therefore, the fact that seven of the fifteen utilities responding to the survey could not provide unit costs for most of the OM&A programs / practices comes as no surprise.

Electric utilities typically use unit costs to provide order-of-magnitude estimates, define staffing levels, create resource-loaded schedules, and/or support financial reporting requirements. Therefore, the above-described methodology has proven adequate. However, as the focus shifts to measuring and comparing performance, inconsistencies in the burdening of capital labor costs, challenges in disaggregating the components of unit costs to arrive at a direct labor unit cost, and lack of transparency into the number of units installed will:

- Preclude effective Performance Management (e.g.; use of fully-loaded unit costs potentially masks productivity improvement or degradation, the inability to unitize OM&A programs / practices limits the monitoring of productivity to budget management, and inconsistencies in the burdening of capital labor costs results in the need for more rigorous “normalization” routines when comparing unit costs across electric utilities),
- Adversely affect management’s ability to assess the effectiveness of material procurement policies, and
- Limit insights regarding the trade-offs in using in-house vs. hiring outside contractor resources.

Hydro Ottawa–Specific Perspective Regarding Unit Cost Methodology

Hydro Ottawa recognizes the intent of the Ontario Energy Board (OEB) to evolve its performance benchmarking to allow for a more meaningful review of utility operations via its Activity and Program Based Benchmarking (APB) initiative.¹ In fact, the Company is already taking initial steps to align with the APB approach by selecting many of the Asset Categories and OM&A Programs / Practices identified in the preliminary list of candidates for benchmarking through this initiative.

With respect to the six asset categories selected for this study, Hydro Ottawa exhibits the rigor and transparency necessary to calculate and report unit costs, integrating cost information from its JD Edwards ERP system with the unitization process supported by its materials system. Further, the coordination and rapport that characterizes the interaction between Corporate Financial Planning & Analysis and the Subject Matter Experts within Operations is noteworthy.

¹ OEB File No. EB-2018-0278

Thus, we are confident that the unit costs presented in this study are both accurate and defensible:

- Wood Pole Replacement includes only wood poles. We excluded “fully dressed” components such as risers and UG cable.
- UG Cable (XLPE) excludes civil duct banks and associated secondary services.
- Overhead switches focused solely on the more complex / expensive items (3-phase, load break type switches).
- Overhead Transformers focused solely on pole-mounted transformers.
- Underground Transformers excludes the associated civil structures with the installation of pad-mounted transformers.
- Station Breaker Replacement addresses the replacement / installation of the outdoor reclosers and / or breakers, consistent with the Peer Group Panel.

Regarding the seven OM&A programs / practices, Hydro Ottawa conveys a thorough and consistent understanding of the scope of these activities, noting that the more significant programs from a budgetary perspective are performed by outside contractors (i.e.; tracked via contractor invoices).

Augmenting its Unit Cost initiative, Hydro Ottawa applies a best-in-class Performance Management framework to drive alignment between strategic objectives, performance goals, and individual contributions, and has structured this framework around four critical areas of performance:

- Financial Strength,
- Organizational Effectiveness,
- Customer Value, and
- Corporate Citizenship.

In summary, Hydro Ottawa effectively integrates the sources, systems and calculus to report unit costs, and is able to support, if not play a key role in, the implementation of the OEB’s APB initiative.

Unit Cost Benchmarks

Relative to a Peer Group Panel of 15 electric utilities spanning the North American continent (see Section III and Appendix B), fully “normalized” comparisons place Hydro Ottawa in the top two quartiles in all but three O&M Program / Practice areas:

- Fourth quartile for Pole Test and Inspection, and
- Hydro Ottawa matches the industry median (straddles between second and third quartiles) in Billing-Online and Meter Maintenance unit costs.

Table II-1: Fully Normalized Benchmark Comparisons

		Quartile			
Category / Program	Hydro Ottawa Unit Cost 3-YR Weighted Average	Top	2 nd	3 rd	Bottom
Asset Category (Capital)					
Wood Pole Replacement	\$8,524				
UG Cable (XLPE) Replacement	\$80				
OH Switches Replacement	\$21,871				
OH Transformer Replacement	\$7,595				
UG Transformer Replacement	\$12,470				
Station Breaker Replacement	\$106,386				
OM&A Program / Practice					
Vegetation Management	\$3,075				
Pole Test and Inspection ¹	\$43				
Overhead Line Patrol	\$31				
Station Breaker and Relay Test and Inspection	\$2,920				
Billing-Paper	\$1.20				
Billing-Online	\$0.25				
Meter Maintenance	\$173				

NOTE:

1. During Hydro Ottawa’s internal review of the draft UMS Group report, they noted that there is an extenuating explanation for the unit costs of the Pole Test and Inspection program. In 2018, Hydro Ottawa started to use more junior employees to complete the work, whose hourly rates are lower (i.e.; future unit cost analyses of this program will likely yield lower results).

In confirming the relevance of this study as a proxy for Hydro Ottawa's performance, UMS Group notes that:

- The six asset categories represent almost 72 percent of the system renewal capital budget over the 2016 through 2018 period, and
- Hydro Ottawa spends approximately 48 percent of all preventative and predictive maintenance costs on the OM&A programs / practices that comprise this study, with the exception of meter maintenance, which is a reactive program.

Summary

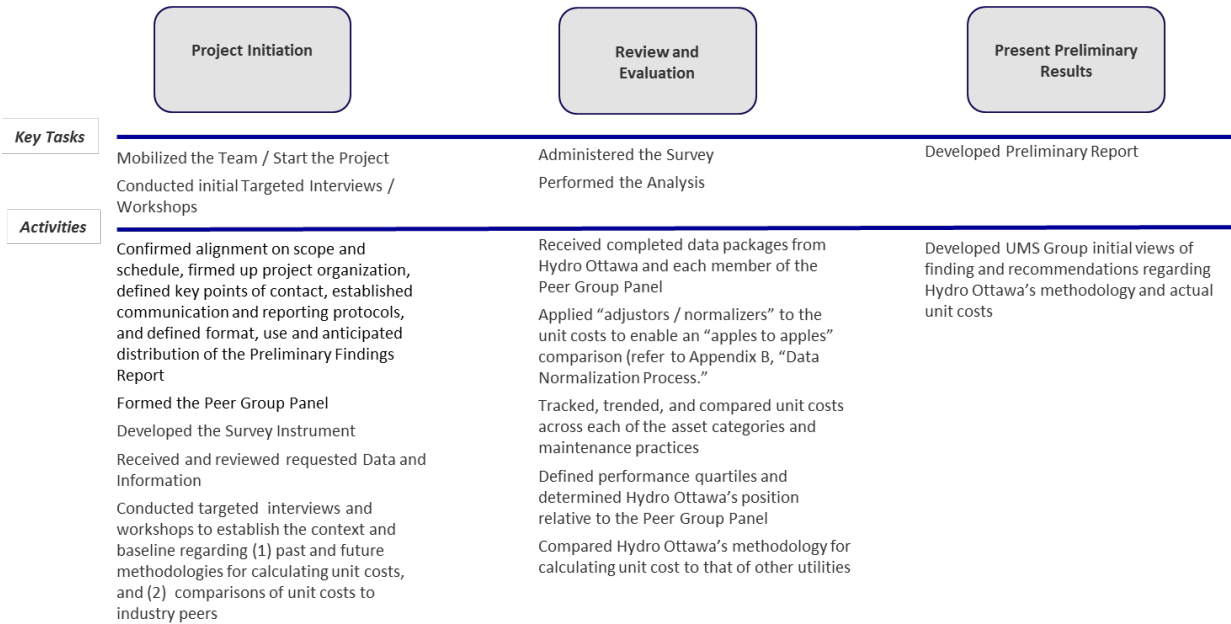
Hydro Ottawa compares favorably to the Peer Group Panel:

- Fully normalized benchmark comparisons reveal that:
 - Within the six Asset Categories, three are in the top quartile and three are in the second quartile, and
 - Across the seven OM&A Programs / Practices areas, only one (Pole Test and Inspection), with an explanatory note, places worse than the Peer Group Median. Two programs (Billing-Online and Meter Maintenance) match the Peer Group Median (i.e.; straddle second and third quartiles).
- The combination of an effective Performance Management Framework espousing line-of-sight between corporate strategy and individual performers, and strong competence in working with the current financial management tools, provides a strong platform for continuous improvement.

SECTION III – PROJECT APPROACH

In order to assess the Company’s methodology for deriving unit costs and perform benchmarking comparisons of a pre-selected set of asset categories and OM&A programs / practices, UMS Group developed and executed the following work plan:

Figure III-1: Unit Cost Performance Assessment Overview



From Project Initiation to the Presentation of Results, UMS Group applied several elements of its proprietary and time-tested benchmarking and practices assessment methodology to assess Hydro Ottawa’s approach in deriving unit costs, and to benchmark the fully loaded unit costs of a representative cross-section of asset categories and maintenance programs. The following discussion will expound on those aspects of our approach that contributed to our achieving the level of objectivity and relevance committed to in our original proposal.

Peer Group Panel

The Peer Group Panel used for this study consisted of 15 electric utilities; namely:

- AES-Indianapolis Power and Light (Indianapolis, IN)
- AES-Dayton Power and Light (Dayton, OH)
- Alectra Utilities (Mississauga, ON)
- Duquesne Light Company (Pittsburgh, PA)
- ENMAX (Calgary, AB)
- EPCOR (Edmonton, AB)
- FirstEnergy Cleveland Electric Illuminating (Cleveland, OH)

- FirstEnergy Toledo Edison (Toledo, OH)
- Lansing Board of Water and Light (Lansing, MI)
- Puget Sound Energy (Bellevue, WA)
- Portland General Electric (Portland, OR)
- Sacramento Municipal Utility District (Sacramento, CA)
- Seattle City Light (Seattle, WA)
- Toronto Hydro (Toronto, ON)
- Tucson Electric (Tucson, AZ)

In selecting the utilities that comprise this panel, our goal was to provide comparisons that would be relevant to an electric utility of Hydro Ottawa's size and complexity (and where there were inconsistencies, apply industry-accepted normalization processes). Table III-1 illustrates Hydro Ottawa's relative position across the myriad of factors considered in conducting like-for-like unit cost comparisons. Though no two electric distribution systems / organizations are identical, Hydro Ottawa is among the highest percentages within this Peer Group Panel in five areas that can influence comparisons of fully loaded unit costs.

Table III-1: Distribution of Peer Group Panel across Difficulty Factors (including Hydro Ottawa)

Vegetation		
Low	Medium	High
6	9	1
UG Utility Congestion		
Low	Medium	High
1	5	10
Population Density (Customers per Square KM)		
Low (<25)	Medium (25-100)	High (>100)
0	5	11
External Factors		
Low	Medium	High
1	5	10
Weather / Climate		
Mild	Moderate	Harsh
2	12	2

NOTE: To aid in interpreting this Table, the numbers represent the distribution of utilities in the Peer Group (including Hydro Ottawa) across each of the quantitative groupings (e.g.; Low, Medium and High) for each of the Difficulty Factors (i.e.; Vegetation, UG Utility Congestion, Population Density, External Factors and Weather / Climate). The red shading depicts Hydro Ottawa's position, supporting the claim that it is among the highest percentages within this Peer Group Panel in the five areas that can influence comparisons of fully loaded unit costs.

See Appendix B for more detail regarding the categorization of utilities in Table III-1.

Asset Categories and Maintenance Programs

As stated in Section I – “Introduction,” the study addressed unit costs for replacing six categories of assets (Capital Replacement) and conducting seven OM&A programs / practices, based initially on a list prepared by Hydro Ottawa, and then modified based on the availability of relevant unit cost information from the Peer Group Panel:

Capital Replacement

- Wood Pole Replacement
- UG Cable (XLPE) Replacement
- OH Switches Replacement
- OH Transformer Replacement
- UG Transformer Replacement
- Station Breaker Replacement

OM&A Programs / Practices

- Vegetation Management
- Pole Test and Inspection
- Overhead Line Patrol
- Station Breaker and Relay Test and Inspection
- Billing (Paper)
- Billing (Online)
- Meter Maintenance

In assessing the viability of these asset categories and OM&A programs / practices to serve as a proxy for Hydro Ottawa’s effectiveness and efficiency in performing work, UMS Group considered two perspectives:

- Contribution to Capital Expenditures and Maintenance Spending: The six asset categories represent almost 72 percent of Hydro Ottawa’s System Renewal Capital Budget over the 2016 through 2018 period. In addition, Hydro Ottawa spent approximately 48 percent of all preventative and predictive maintenance costs in each year on the OM&A programs / practices that comprise this study (exclusive of meter maintenance, which is a reactive program).
- Impact on Reliability: UMS Group has conducted several reliability-related assessments over the past 10 years (ranging from reviewing system performance to adjudging response during major storm events, see Appendix E). In conducting these assessments, the primary areas of concern revolve around vegetation management, equipment failures, underground facilities, and the overall conduct of inspection, test and maintenance programs, all of which are represented by the asset categories and OM&A programs / practices that define this study.

It is therefore our view that any conclusions around performance resulting from benchmarking or trending the unit costs of these six asset categories and seven OM&A programs / practices are valid indicators of operating performance.

Survey Instrument

UMS Group identified 23 electric utilities for inclusion in the Peer Group Panel, requiring 12 to assure a valid sample size on which to make meaningful comparisons.

- AES-Indianapolis Power and Light
- AES-Dayton Power and Light
- Alectra Utilities
- Austin Energy
- Duquesne Light Company
- ENMAX
- EPCOR
- FirstEnergy-Cleveland Electric Illuminating Company
- FirstEnergy-Toledo Edison
- Fortis BC
- Lansing Board of Water and Light
- Louisville Gas & Electric-Kentucky Utilities
- London Hydro
- New Brunswick Power
- Northern Indiana Public Service Company
- Nova Scotia Power
- Portland General Electric
- Puget Sound Energy
- Rochester Gas and Electric
- Sacramento Municipal Utility District
- Seattle City Light
- Toronto Hydro
- Tucson Electric

We were successful in soliciting the participation of 15 (highlighted in green font). The Survey Instrument itself (**see Appendix F**) consisted of three tabs:

- **Unit Costs** for the most current three-year period available, requesting the fully loaded installation, test, and inspection costs and number of assets installed / tests and inspections conducted for each asset category and OM&A program / practice. We averaged the responses across the three-year period (weighted by number of replacements, inspections and / or tests each year) to “smooth out” the year-to-year fluctuations that are likely to occur in the course of executing an annual capital investment and the maintenance-spending portfolio.
- **Accounting**, requesting (1) brief descriptions of each electric utility’s method for determining unit costs, (2) listings of costs (in addition to direct labor and material) that were included in the reporting of costs (in-house work), (3) listings of costs included for contracted work, and (4) the bases for the accounting of these costs (i.e.; GAAP or IFRS). This information was then used to inform the normalization process (i.e.; account

for the different methods used to apply indirect and overhead costs to capital projects), briefly described below and further expanded upon in **Appendix C**.

- **Local Factors**, providing a listing of any technical, legislative, regulatory and bargaining unit constraints / mandates (referred to as “external factors”) that dictate specific practices to be employed in performing work that could have cost ramifications. This information also informed the normalization process briefly described below and further expanded upon in **Appendix C**.

Hydro Ottawa reviewed the survey instrument, after which UMS Group issued it to each of the electric utilities that agreed to participate in this study. As the completed surveys were returned, UMS Group reviewed the responses and reached out to the respondents as necessary to resolve any apparent outliers and/or address areas where there appeared to be confusion.

Practices Assessment

UMS Group met with several divisions / groups within Hydro Ottawa to gain insights and perspective regarding its practices (past, current and future state) to derive unit costs. We used a variety of sources to compare this input with practices in use across the industry (summarized in Section IV-Summary of Results); namely:

- Insights gleaned from the Peer Group responses in the Accounting Tab of the Survey Instrument, augmented by follow up conversations to clarify / lend context to expressed points-of-view,
- Feedback from electric utilities that are part of our Global Learning Consortia (the focus of which includes benchmarking and the sharing of practices to improve performance and reduce costs), most notably the International Distribution Asset Management Study (IDAMS), International Transmission Operations and Maintenance Study (ITOMS), and International Distribution Benchmark Consortium (IDBC), and
- UMS Group knowledge gleaned from routinely working with over 40 to 50 electric utility organizations on an annual basis.

Benchmarking

UMS Group applied its methodology and a tailored work plan to meet Hydro Ottawa’s specific objective to benchmark unit costs across six asset categories and seven OM&A programs / practices. Data provided by the previously described Peer Group Panel (**see Appendix B**) established Hydro Ottawa’s position with respect to efficiency (cost). We likewise conducted practices interviews to lend context to these comparisons. In so doing, we were able to ascertain Hydro Ottawa’s position relative to the Peer Group Panel, and further inform our views regarding Hydro Ottawa’s methodology to calculate unit costs.

The benchmarking process itself consisted of three steps:

- Data Collection and Analysis: As each electric utility indicated its willingness to participate in the Peer Group Panel for this effort, UMS Group transmitted the survey instrument, configured to ensure consistent responses (i.e.; the questions were tightly structured) and support the “normalization” process (allowing for valid comparison of fully-loaded unit costs). In concert with sending the survey instrument, UMS Group provided “real time” instruction, and over time, conducted follow-up sessions to track progress, provide clarification and address any questions that might arise. Hydro Ottawa was the initial recipient of the Survey Tool, enabling the identification and remediation of any unanticipated areas of confusion / ambiguity / difficulty in completing the data package, and thus, increasing the likelihood of a valid comparison with the Peer Group Panel. As the surveys were completed, UMS Group performed a validation check for data quality, thus increasing the overall credence of the results. As UMS Group detected instances of potential misinformation, omissions, or anomalies, it contacted the respondent and resolved any underlying issues.
- Assure an “Apples-to-Apples” Comparison: The initial formation of a Peer Group Panel represented the first step in assuring valid unit cost comparisons. Table III-1 provides a view of this group relative to five areas that can affect performance (i.e.; Vegetation, UG Utility Congestion, Population Density, External Factors and Weather / Climate). There was not a perfect fit for the 15 electric utilities across all five areas, though each member of the peer group panel was “compatible” with Hydro Ottawa in several of these areas. UMS Group developed data normalization routines to account for any remaining gaps, allowing for valid comparisons of fully loaded unit costs (acknowledging that directional accuracy rather than precision is the acceptable standard in conducting such comparisons). Appendix C provides transparency to the specific methodologies deployed in accounting for the wide range of factors that can affect these comparisons.
- Present the Results: UMS Group presented Hydro Ottawa’s position relative to the Peer Group Panel median. Recognizing that some might prefer more delineation in the ranking, we also provided a more expansive presentation of Hydro Ottawa’s position relative to each member of the Peer Group Panel for the fully normalized scenario in Appendix G.

SECTION IV – SUMMARY OF RESULTS

The following discussion summarizes the results of an approach that

- Utilized UMS Group's proprietary and time-tested benchmarking and practices assessment methodology,
- Drew upon our extensive cost and service level database and best practices library,
- Analyzed input from a survey instrument administered to the Peer Group Panel, and
- Captured insights and perspectives from key management staff within the Hydro Ottawa organization.

Assessment of Hydro Ottawa's Unit Cost Methodology

As a precursor to assessing Hydro Ottawa's Unit Cost Methodology it is important to reemphasize that though a simple concept to grasp, there is enough evidence to suggest that the reporting of unit costs for benchmarking across electric utilities is complex:

- Across the industry, past applications of unit costs have not necessarily been part of a performance management / improvement process. Rather, they have been used to provide order-of-magnitude estimates (with no feedback loop to actual execution), and/or support some form of financial reporting (not necessarily linked to managing worker productivity or project / program execution). Further, current data collection processes for cost are heavily biased towards supporting basic finance and accounting functions and are generally not conducive to providing the necessary granularity (from an operations perspective) to manage costs at the project or program level.
- However, pertaining to Hydro Ottawa, we were impressed with the level of rigor and traceability offered by its Corporate Financial Planning and Analysis Group, and do not envision Hydro Ottawa will experience significant challenges in incorporating Unit Costing into its performance measurement framework. Our favorable view is reinforced by the existence of well-documented querying rules that outlined the work breakdown structure (Inventory Class, Inventory Sub Class, Parent Program and Components for each of the Asset Categories; and similarly the Parent Program and Components / Notes for the OM&A Programs / Practices) used to collect costs and report quantities.
- Practices regarding the burdening of capital labor costs are inconsistent across the industry (e.g.; the industry treats training, meetings, conferences, and Administrative and General, and AFUDC / CWIP costs differently), rendering use of publicly available raw information to conduct such comparisons only marginally useful.
- Maintenance program costs are not always unitized or traceable back to actual installations. Rather, electric utilities often manage them as programs with budgets based on historical spending patterns with little, if any, visibility on units inspected, tested or maintained. As the vast majority of Hydro Ottawa's maintenance programs / practices

are either contracted or related to number of customers (e.g.; billing), Hydro Ottawa is able to provide the unitization necessary to compute a unit cost.

Therefore, any industry comparisons of unit costs across electric utilities will require some degree of normalization. However, internal trending through application of a consistent methodology can be an integral part of any electric utility's internal performance management program by tracking changes in performance related to project / program execution. Hydro Ottawa already has an excellent approach to "line-of-sight" performance management, starting with four critical areas of performance:

- Financial Strength,
- Customer Value,
- Organizational Effectiveness, and
- Corporate Citizenship,

These performance areas drive the Company's 5-Year Strategic Objectives and Outcomes / Annual Performance Goals, and translate these specific targets into individual performance goals. Independent of any industry comparisons, Hydro Ottawa has the framework in place to drive productivity improvements through unit cost performance management.

Benchmarking of Hydro Ottawa's Unit Costs

In accordance with the approach outlined in the previous section, UMS Group benchmarked Hydro Ottawa's Unit Costs, summarized in Table IV-1. The Company compares favorably (better than the median) across 10 of the 13 asset classes and OM&A program / practice categories. Regarding the three categories with less than favorable results:

- There is an extenuating explanation regarding the Pole Test and Inspection unit costs, currently residing in the fourth quartile. In 2018, Hydro Ottawa started to use more junior employees to complete the work, whose hourly rates are lower, and
- Billing-Online and Meter Maintenance match the Peer Group Median (i.e.; straddle second and third quartiles).

Table IV-1: Hydro Ottawa and Peer Group Panel Comparisons

Category and Program / Practice	Units	Hydro Ottawa Unit Cost	Peer Group Unit Cost Median
Asset Categories (Capital)			
Wood Poles Replacement	Each	\$8,524	\$8,766
UG Cable (XLPE) Replacement	Meter	\$80	\$97
OH Switches Replacement	Each	\$21,871	\$25,395
OH Transformers Replacement	Each	\$7,595	\$9,995
UG Transformer Replacement	Each	\$12,470	\$21,122
Station Breakers Replacement	Each	\$106,386	\$106,580
OM&A Programs and Practices			
Vegetation Management	Line KM	\$3,075	\$3,451
Pole Test and Inspection	Each	\$43	\$25
Overhead Line Patrol	Line KM	\$31	\$43
Station Breaker and Relay Test and Inspection	Each	\$2,920	\$3,196
Billing-Paper	Each	\$1.20	\$1.42
Billing- Online	Each	\$0.25	\$0.25
Meter Maintenance	Each	\$173	\$173

NOTE: Red shading identifies the OM&A program and practice that resides in the fourth quartile. Yellow shading identifies the two OM&A programs and practices that match the Peer Group median.

We provide a more detailed presentation of these results in **Appendix G**.

Implications of the Study

In reviewing our assessment of the Company's Unit Cost methodology, the subsequent benchmarking across six asset categories and seven OM&A programs / practices, and taking stock of industry practices, the following assertions apply:

- The asset categories and OM&A programs / practices selected by the Company represent a valid proxy for trending its performance.
- Within these asset categories and OM&A programs / practices, continued refinement is called for in the reporting, collecting and synthesizing of cost and installation data, particularly as the industry drives to adopt unit costing as a means for trending and comparing performance.
- The industry (particularly in North America and certainly in the U.S.) has not matured to the point where (1) common methodologies exist in deriving unit rates, or (2) management of unit rates is a conscious part of any performance improvement programs.
- Benchmarking is directionally accurate in identifying opportunities for improvement and/or validating current cost and service levels. In applying this methodology to unit costs, absent detailed specifications regarding their calculation (which were developed for this study but not practical when conducting less rigorous comparisons of publicly

available data), there are a wide array of variables to consider, rendering such an effort difficult.

Appendix A – Supporting Material

UMS Group used the following information and data provided by Hydro Ottawa to support the study:

- Unit Cost Survey – Hydro Ottawa
- Hydro Ottawa Quick Facts and Stats-2018 End of Year
- Customer Count and Service Territory Size
- 3-YR System Renewal Capital Budget and Total Capital Budget Profiles
- 3-YR Preventative and Predictive Maintenance Budget and Total Maintenance Budget Profiles
- For the Asset Categories (Capital), the annual investment levels over the past three years
- For the Maintenance Programs (OM&A), the annual spending levels over the past three years
- 2015-2017 SAIDI and SAIFI contributions from Cause Code 5 - Defective Equipment
- 2015-2017 SAIDI and SAIFI contributions from Cause Code 3 - Tree Contact
- 2015-2017 SAIDI and SAIFI
- Hydro Ottawa 2016-2020 Distribution System Plan
- Hydro Ottawa 2017 Annual Report
- Hydro Ottawa-Asset Management Plan – Distribution Underground Transformer
- Hydro Ottawa 2016-2020 Strategic Direction
- Balanced Scorecard / Performance Tracking Reports (Corporate and Departmental Level)
- Hydro Ottawa List of Asset Components
- Hydro Ottawa Corporate Policy on Capitalization
- Hydro Ottawa Scorecard for 2016 and 2017 (as filed with the OEB)

Appendix B – Peer Group

The Peer Group Panel used for this study consisted of 15 electric utilities; namely:

- AES-Indianapolis Power and Light (Indianapolis, IN)
- AES-Dayton Power and Light (Dayton, OH)
- Alectra Utilities (Mississauga, ON)
- Duquesne Light Company (Pittsburgh, PA)
- ENMAX (Calgary, AB)
- EPCOR (Edmonton, AB)
- FirstEnergy-Cleveland Electric Illuminating (Cleveland, OH)
- FirstEnergy-Toledo Edison (Toledo, OH)
- Lansing Board of Water and Light (Lansing, MI)
- Puget Sound Energy (Bellevue, WA)
- Portland General Electric (Portland, OR)
- Sacramento Municipal Utility District (Sacramento, CA)
- Seattle City Light (Seattle, WA)
- Toronto Hydro (Toronto, ON)
- Tucson Electric (Tucson, AZ)

In selecting the utilities that comprise this group, we strove to provide results based on comparisons that would be relevant to an electric utility of Hydro Ottawa's size and complexity (and where there are inconsistencies, apply industry-accepted normalization processes – **see Appendix C**). Table B-1 illustrates Hydro Ottawa's relative position across the myriad factors that require consideration in conducting like-for-like unit cost comparisons of Electric Distribution Companies. Though no two Electric Distribution Systems / Organizations are identical, Hydro Ottawa is among the highest percentages within this peer group for all five factors that can influence comparisons to unit costs.

Table B-1: Distribution of Peer Group Panel across Difficulty Factors (including Hydro Ottawa)

Vegetation		
Low	Medium	High
6	9	1
UG Utility Congestion		
Low	Medium	High
1	5	10
Population Density (Customers per Square KM)		
Low (<25)	Medium (25-100)	High (>100)
0	5	11
External Factors		
Low	Medium	High
1	5	10
Weather / Climate		
Mild	Moderate	Harsh
2	12	2

NOTE: To aid in interpreting this Table, the numbers represent the distribution of utilities in the Peer Group (including Hydro Ottawa) across each of the quantitative groupings (e.g.; Low, Medium and High) for each of the Difficulty Factors (i.e.; Vegetation, UG Utility Congestion, Population Density, External Factors and Weather / Climate). The red shading depicts Hydro Ottawa's position, supporting the claim that it is among the highest percentages within this Peer Group Panel in the five areas that can influence comparisons of fully loaded unit costs.

We used the following extracts to categorize the Peer Group utilities in terms of **Vegetation**:

Figure B-1: US Vegetation Density

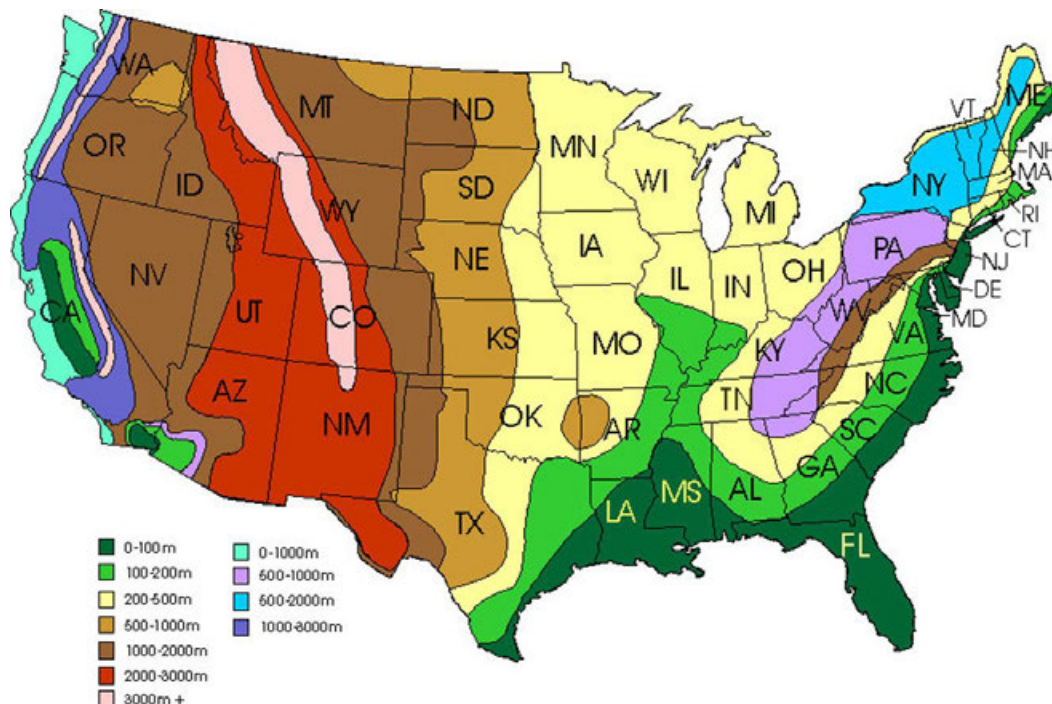
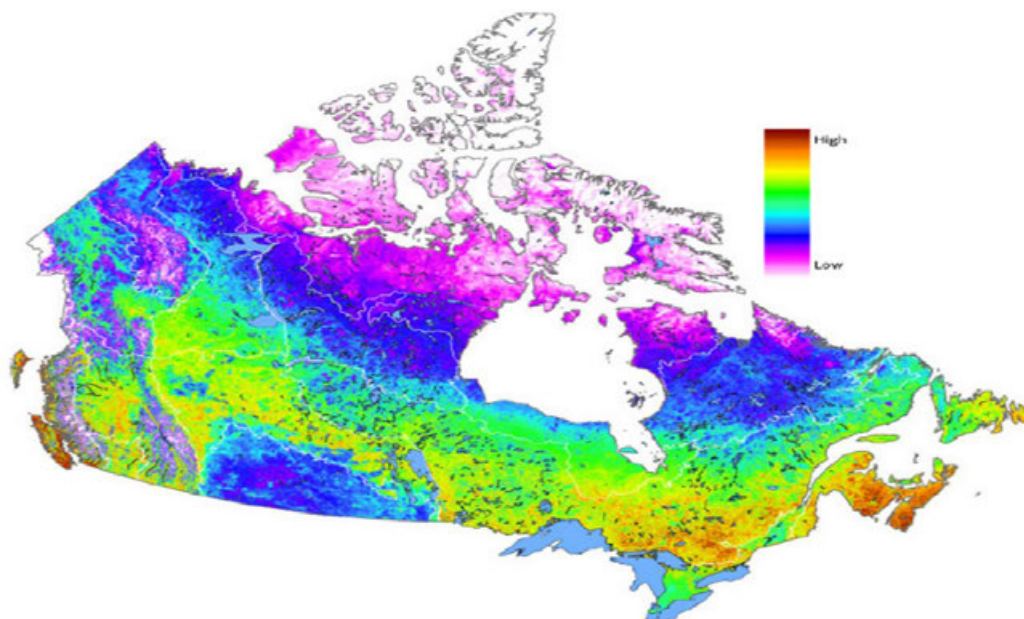
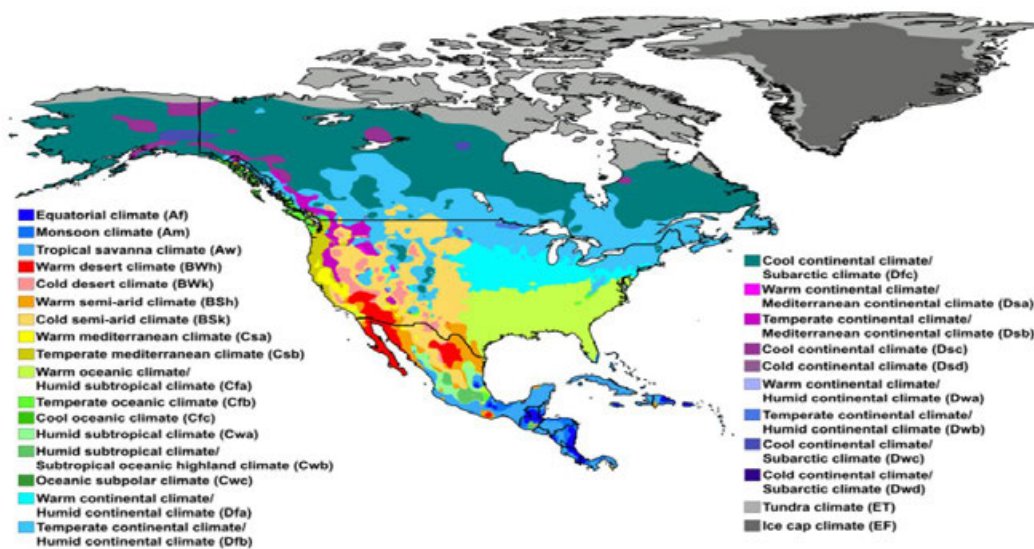


Figure B-2: Canadian Vegetation Density



In addition, with respect to **Weather / Climate**:

Figure B-3: North American Climate Map



The **External Factors** rating reflected responses to our queries regarding applicability of an array of factors that have an adverse effect on field productivity. Based on the responses, we assessed the level of difficulty confronting each utility (high, medium or low).

Table B-2: Summary of External Factors Ratings

External Factors	HO	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Excessive travel time (over 30 mins.)	X		X	X	X	X		X	X		X	X	X	X	X	X
Road restrictions which limit working hours	X	X	X	X	X			X	X	X	X	X	X	X	X	
High water table		X						X		X	X	X	X	X		X
Working next to energized lines (requiring dedicated observer, gloves, etc.)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Requirements to perform work off hours (i.e., night/weekend)	X			X	X	X		X	X	X	X	X	X	X	X	X
Changed standards requiring rebuilds rather than like-for-like (i.e., clearances)	X	X		X	X		X	X	X		X	X	X	X		X
Excessive switching requirements (i.e., to isolate on dual radial construction)	X	X		X	X	X	X	X	X	X	X	X			X	
Shoring requirements for UG work	X								X		X	X	X	X	X	
Limitations on tree trimming (e.g.; unusually tight clearances)	X	X				X				X	X	X	X	X		
Prior use of lead cables	X	X	X			X	X		X			X			X	
High fault currents (impacting equipment sourcing)	X	X	X			X			X	X		X	X	X	X	
Paid duty for police presence on public roads	X	X	X	X	X	X				X	X	X	X	X	X	X
Extensive use of submersible transformers		X						X	X		X	X				
Environmental regulations	X	X	X			X		X	X	X	X	X	X	X		X
Insufficient IT Enablement							X				X					
Union Work Rules	X		X			X			X	X	X		X	X	X	X
City consent requirements (i.e., customer notification, restoration, progressive clean-up, etc.)	X	X		X	X	X	X		X	X	X	X	X	X	X	X
Level of Difficulty	High	High	Medium	Medium	Medium	High	Low	Medium	High	High	High	High	High	High	High	Medium

NOTE: We applied “alpha” designations to mask the identity of any specific utility in the Peer Group Panel (a commitment that we must adhere to throughout the process, as guarantees of confidentiality were required to garner their participation in the study).

In addition, the following table substantiates the groupings (High, Medium and Low) of the Peer Group Panel based on **Population Density**.

Table B-3: Peer Group Panel Population Density

Peer Group Panel	Number of Customers	Service Territory (Sq. KM)	Population Density
AES-IPL	480,000	1,368	351.0
AES-DPL	520,000	6,000	86.7
Alectra	1,000,000	1,800	555.6
Duquesne Light Company	586,000	2,116	276.9
ENMAX	850,000	1,087	782.0
EPCOR	397,000	9,500	41.8
FirstEnergy CEI	700,000	4,403	159.0
FirstEnergy Toledo Edison	309,000	10,057	30.7
Lansing Board of Water and Light	100,000	130	769.2
Puget Sound Energy	1,000,000	15,540	64.4
Portland General Electric	862,000	10,360	83.2
SMUD	625,000	1,431	436.8
Seattle City Light	425,000	342	1,243.1
Toronto Hydro	761,000	630	1,207.9
Tucson Electric	424,000	2,991	141.8
Hydro Ottawa	331,777	1,116	297.3

We based the categorization of **UG Utility Congestion** (High, Medium and Low) on each utility's response to a direct inquiry from UMS Group.

Appendix C – Unit Cost Benchmarking (Normalization)

Prior to conducting comparative analyses with the Panel Group Panel (see Appendix B), it was necessary to “normalize” the unit cost performance across all participating electric utilities. The selection of the panel accounted for key criteria to facilitate proper comparisons (e.g.; mix of urban and rural centers, cross-section of public and investor-owned utilities, climate and number of customers served, existence of an underground network, and externally imposed mandates / constraints that affect productivity). Yet, no two electric utilities or the specific factors that affect their costs are ever identical - thus, the need to “normalize.”

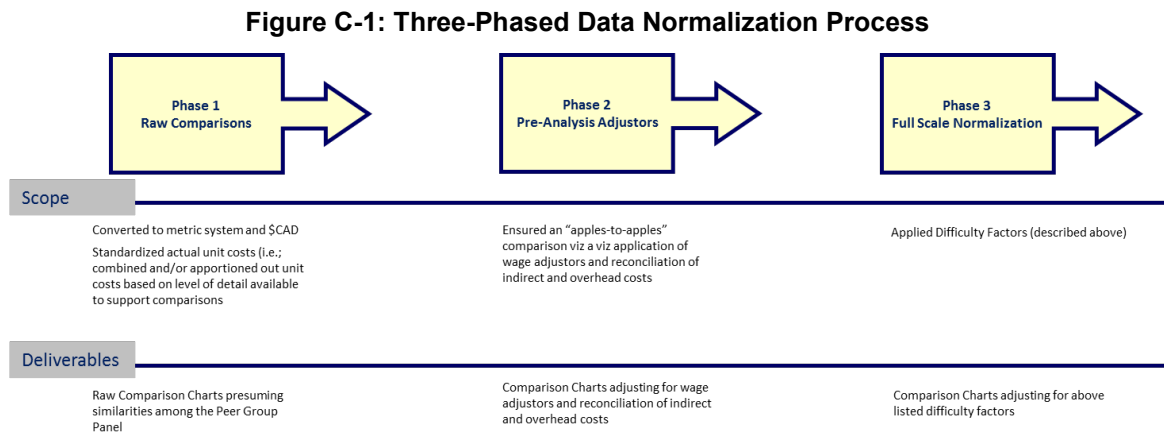
Defining the “Normalizing” Variables

For this study, we established two categories of variables:

- Cost-Related Variables:
 - *Regional Cost Differences* (applying regional cost adjustors based on average wages in each of the major cities that comprise the Peer Group Panel).
 - *Accounting Practices* (relating to the handling of indirect costs and overhead allocations vis-a-vis unit costs for asset replacements and / or the conduct of OM&A programs / practices).
- Difficulty Factors, acknowledging that system and city-specific demographics play a role in worker productivity:
 - *Population Density* (potentially impacts accessibility, increases awareness of public safety, and creates added distractions during the performance of work),
 - *Underground Utility Congestion* (increases the propensity for third-party damage and accounts for the impact of tight spaces, both factors that can contribute to the slowdown of work),
 - *External Factors* (accounts for varying degrees of technical, legislative, regulatory and bargaining unit constraints / mandates that dictate the specific practices to be employed in performing work, many of which inhibit the flow of work),
 - *Weather* (accounts for the differences between harsh and temperate climates and their impact on productivity), and
 - *Vegetation* (besides the direct correlation to one of the OM&A programs / practices being benchmarked, accounts for the challenges that increased vegetation might pose in gaining access to critical assets).

Applying the “Normalizing” Variables

In applying these variables, we instituted a three-phased approach:



Raw Comparisons (Phase 1) involved, where appropriate, the conversion from imperial to metric units and US to Canadian dollars. As we opted to adopt a three-year average, the conversion rate of \$US to \$CDN at the end of each year was applied (accounting for the ever-changing conversion rate over the three-year period). For purposes of this study, we used a \$0.76 USD to \$1.00 CAD conversion rate.

Pre-Analysis Adjustors (Phase 2) involved the application of regional cost adjustors and accounting for the different methods used by electric utilities to apply indirect and overhead costs to unit costs. Our sources included the Board of US Labor Statistics and, for Canada, www.payscale.com. Using the “average wage” of the major city served by each utility as a proxy, we decreased the unit costs at electric utilities higher than the City of Ottawa and increased all others. These changes were all proportionate to their variance from the average wage for the City of Ottawa, applied to the labor component of the unit cost (Table C-1).

Table C-1: Labor and Non-Labor Cost Split

Asset Category / O&M Program / Practice	Labor Costs	Non-Labor Costs
Asset Categories (Capital)		
Wood Poles Replacement	60%	40%
UG Cable (XLPE) Replacement	50%	50%
OH Switches Replacement	40%	60%
OH Transformer Replacement	50%	50%
UG Transformer Replacement	50%	50%
Station Breaker Replacement	40%	60%
OM&A Programs / Practices		
Vegetation Management	70%	30%
Pole Test and Inspection	70%	30%
Overhead Line Patrol	70%	30%
Station Breaker and Relay Test and Inspection	60%	40%
Billing-Paper	35%	65%
Billing-Online	100%	0%
Meter Maintenance	90%	10%

In further adjusting for the differences in Accounting Practices, we queried each of the utilities as to what non-direct labor and material were and were not included in the unit costs, distinguishing between utility and outside contractor-performed work. Table C-2 illustrates the differences across the Peer Group Panel.

Table C-2: Composition of Unit Costs
(In addition to Direct Labor and Material)

Cost Components	HO	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Design and Permitting costs																
Project Management and Supervisory costs																
Other project-related costs (e.g.; Fleet and Warehouse)																
Other labor-related costs (e.g.; training, conferences, and meetings)																
Employee-related costs (e.g.; vacation, sick time, insurances and pension)																
Administrative and General costs																
AFUDC / CWIP																
Adjustment Factor	1.00	1.02	1.02	0.95	0.95	1.02	0.95	0.95	0.98	0.95	0.95	1.00	1.00	1.00	0.95	0.98

The adjustment factors, ranging between 0.95 and 1.02, reflect comparisons with Hydro Ottawa. For those utilities with more categories in their Unit Costs calculation than Hydro Ottawa, we reduced the unit costs by up to five percent. We increased those with fewer categories in their Unit Costs calculation than Hydro Ottawa by up to two percent. There was no noted difference in applying loaders to work performed by outside contractors.

Full-Scale Normalization (Phase 3) applied the previously described difficulty factors in further normalizing unit costs across all 15 participating electric utilities. Table C-3 provides the basis for these adjustments.

Table C-3: Full Scale Normalization

Utility	Population Density	UG Utility Congestion	External Factors	Weather / Climate	Vegetation
Impact	High/Medium/Low	High/Moderate/Low	High/Medium/Low	High/Moderate/Low	High/Medium/Low
Source of Impact Assessment	Table B-3	Peer Group Survey	Table B-2	Table B-3	Figures B-1 and B-2
AES-IPL	High	High	Medium	Moderate	Low
AES-DPL	Medium	Moderate	Medium	Moderate	Low
Alectra	High	Moderate	High	Moderate	Medium
Duquesne Light Company	High	High	High	Moderate	High
ENMAX	High	Moderate	Medium	Harsh	Low
EPCOR	Medium	High	High	Harsh	Low
FirstEnergy CEI	High	High	High	Moderate	Medium
FirstEnergy Toledo Edison	Medium	Low	Medium	Moderate	Medium
Lansing Board of Water and Light	High	Moderate	Low	Moderate	Low
Puget Sound Energy	Medium	High	High	Moderate	Medium
Portland General Electric	Medium	High	High	Moderate	Medium
SMUD	High	High	High	Low	Medium
Seattle City Light	High	High	High	Moderate	Medium
Toronto Hydro	High	High	High	Moderate	Medium
Tucson Electric	High	Moderate	Medium	Low	Low
Hydro Ottawa	High	High	High	Moderate	Medium

In addition, Table C-4 outlines the framework used in applying these normalizing factors.

Table C-4: Difficulty Factor Scoring Criteria

Domain	Weighting	Metric	Source	Ordinal Ranking Assignment
Population Density	20%	Customers per KM ² translated to High / Medium Low	Table B-3	High: 6 Medium: 5 Low: 4
UG Utility Congestion	20%	High / Moderate / Low	Peer Group Survey	High: 6 Moderate: 5 Low: 4
External Factors	20%	High / Medium /Low	Table B-2	High: 6 Medium: 5 Low: 4
Weather / Climate	20%	Harsh / Moderate / Mild	Figure B-3	High: 6 Moderate: 5 Low: 4
Vegetation	20%	High / Medium / Low	Figures B-1 and B-2	High: 6 Medium: 5 Low: 4

In applying the domain rankings to specific Asset Categories and OM&A Programs / Practices, it is important to note that depending on the operating environment for each category / program, not all the domains in Table C-4 applied. Tables C-5 and C-6 account for this further refinement to the normalization process.

Table C-5: Domain Applicability Matrix by Asset Category / Maintenance Program

Operating Environment	Asset Category / OM&A Program / Practice	Domain				
		Population Density	UG Utility Congestion	External Factors	Weather / Climate	Vegetation
Overhead (OH)	<ul style="list-style-type: none"> Wood Pole OH Switches OH Transformer Station Breaker Pole Test and Inspection OH Line Patrol Station Breaker and Relay Test and Inspection Meter Maintenance 	X		X	X	X
Underground (UG)	<ul style="list-style-type: none"> UG Cable (XLPE) UG Transformer 	X	X	X	X	
Vegetation Management	<ul style="list-style-type: none"> Vegetation Management 			X	X	X
General	<ul style="list-style-type: none"> Billing-Paper Billing-Online 					

Table C-6: Full-Scale Normalization Factors (by Domain and Operating Environment)

Peer Group Panel	Population Density	UG Utility Congestion	External Factors	Weather / Climate	Vegetation	OH Adjustment		UG Adjustment		VM Adjustment	
						Score	Factor	Score	Factor	Score	Factor
AES-IPL	6	6	5	5	4	20	1.09	22	1.04	14	1.13
AES-DPL	5	5	5	5	4	19	1.14	20	1.13	14	1.13
Alectra	6	5	6	5	5	22	1.00	22	1.04	16	1.00
Duquesne Light Company	6	6	6	5	6	23	0.95	23	1.00	17	0.94
ENMAX	6	5	5	6	4	21	1.05	22	1.04	15	1.06
EPCOR	5	6	6	6	4	21	1.05	23	1.00	16	1.00
FirstEnergy CEI	6	6	6	5	5	22	1.00	23	1.00	16	1.00
FirstEnergy Toledo Edison	5	4	5	5	5	20	1.09	19	1.17	15	1.06
Lansing Board of Water and Light	6	5	4	5	4	19	1.14	20	1.13	13	1.19
Puget Sound Energy	5	6	6	5	5	21	1.05	22	1.04	16	1.00
Portland General Electric	5	6	6	5	5	21	1.05	22	1.04	16	1.00
SMUD	6	6	6	4	5	21	1.05	22	1.04	15	1.06
Seattle City Light	6	6	6	5	5	22	1.00	23	1.00	16	1.00
Toronto Hydro	6	6	6	5	5	22	1.00	23	1.00	16	1.00
Tucson Electric	6	5	5	4	4	19	1.14	20	1.13	13	1.19
Hydro Ottawa	6	6	6	5	5	22	1.00	23	1.00	16	1.00
Average Adjustment							0.99		0.99		0.98

Table C-7 presents the outputs of full normalization (all three phases) across the six asset categories and seven OM&A programs / practices, noting that we have intentionally masked the Peer Group Panel to comply with our commitment regarding the confidential handling of this information.

Table C-7: Full Scale Normalization

Asset Category / Capital	Unit of Measure	Labor Factor	HO	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Wood Poles Replacement	Each	0.6	\$ 8,524	\$ 8,920	\$ 11,935	\$ 9,238	\$ 9,915	\$ 10,429	\$ 7,968	\$ 6,931	\$ 8,896	\$ 7,921	\$ 10,689	\$ 7,025	\$ 8,210	\$ 8,635	\$ 9,132	\$ 8,253
UG Cable (KLPE) Replacement	Meter	0.5	\$ 80	\$ 87	\$ 97	\$ 92	\$ 80	\$ 126	\$ 119	\$ 95	\$ 106	\$ 116	\$ 111	\$ 92	\$ 86	\$ 105	\$ 115	
OH Switches (Manual and Remote / Motor Operated)	Each	0.4	\$ 21,871	\$ 28,280	\$ 36,211	\$ 25,848	\$ 24,050	\$ 27,626	\$ 31,432	\$ 21,756		\$ 20,446		\$ 20,290	\$ 25,395	\$ 28,524	\$ 25,170	
OH Transformer Replacement	Each	0.5	\$ 7,595	\$ 8,659	\$ 10,825	\$ 9,065	\$ 9,283	\$ 12,242	\$ 10,734	\$ 10,179		\$ 10,786		\$ 11,222	\$ 9,250	\$ 12,445	\$ 9,483	\$ 9,810
UG Transformer Replacement	Each	0.5	\$ 12,470	\$ 20,278	\$ 27,942	\$ 17,151	\$ 22,930		\$ 24,098	\$ 20,322	\$ 25,825	\$ 20,930		\$ 20,471	\$ 26,004	\$ 25,616	\$ 17,909	\$ 21,314
Station Breaker Replacement (SF6, Oil and Vacuum)	Each	0.4	\$ 106,386	\$ 114,587	\$ 116,277	\$ 111,204	\$ 112,807		\$ 108,022	\$ 84,243		\$ 106,774		\$ 82,118	\$ 105,908	\$ 102,472	\$ 93,793	
OM&A Program / Practice																		
Vegetation Management	Kilometer	0.7	\$ 3,075	\$ 4,529	\$ 4,229	\$ 3,211	\$ 3,451		\$ 5,027	\$ 3,356		\$ 3,160	\$ 3,877	\$ 1,976	\$ 4,464	\$ 3,200	\$ 4,283	
Pole Test and Inspection	Each	0.7	\$ 43	\$ 22	\$ 43	\$ 25	\$ 25	\$ 14	\$ 47	\$ 18		\$ 41		\$ 17			\$ 38	
Overhead Line Patrol	Kilometer	0.7	\$ 31	\$ 47	\$ 45	\$ 58	\$ 57		\$ 33	\$ 44		\$ 32		\$ 41			\$ 41	
Station Breaker and Relay	Each	0.6	\$ 2,920	\$ 3,459	\$ 3,504	\$ 2,936	\$ 2,882		\$ 3,616	\$ 3,431		\$ 3,311	\$ 2,831				\$ 3,082	
Billing - paper	Bills	0.6	\$ 1.20	\$ 1.66	\$ 1.62	\$ 1.42	\$ 1.66		\$ 1.41	\$ 1.10		\$ 1.69	\$ 1.38				\$ 1.34	
Billing - online	Bills	0.6	\$ 0.25	\$ 0.23	\$ 0.34	\$ 0.35	\$ 0.38		\$ 0.22	\$ 0.16		\$ 0.31					\$ 0.25	
Meter Maintenance	Each	0.6	\$ 173	\$ 173	\$ 185	\$ 152	\$ 147		\$ 171		\$ 181				\$ 130		\$ 184	

Appendix D – UMS Group and Project Team Qualifications

UMS Group is an International Utility Management Consulting firm founded in 1989 to serve the global utility industry. We specialize in enterprise-level value creation, performance management solutions, and utility asset management. We are a private employee-owned company incorporated in New Jersey with headquarters in Parsippany, New Jersey, and major branch offices in Australia, The Netherlands, and The Philippines. We managed this project out of UMS Group's Headquarters Office, located at Morris Corporate Center 1, 300 Interpace Parkway, Suite C380, Parsippany, NJ 07054.

We bring to our clients a unique knowledge of global industry best practices, an advanced library of diagnostic methodologies and performance benchmarking data, and a strong base of utility strategic and operational expertise. We combine experienced utility consultants and seasoned industry professionals with world class tools and intellectual capital to assist our clients in diagnosing problems, designing solutions, and implementing change.

We offer:

- A team of senior consultants who have “been there and done that” in implementing change in difficult cultural, political, and labor environments.
- Strong insights into key trends and directions across the global utility industry and comprehensive understanding of the underlying drivers and emerging technology and strategies for creating competitive advantage.
- Time-tested and accepted methodologies for conducting current state assessments in four core areas which we believe are the key to achieving best practices or best-in-class performance: Operating (and Accountability) Model, Business Processes and Practices, Competencies, and Technology, Data and Information Management.
- A comprehensive set of tools and approaches that quickly and effectively build on performance insights gained from assessments, to create actionable improvement strategies and plans.
- Experience in the successful development and implementation management of projects and initiatives that drive improvements in the performance of operations, business and financial, customer service, and asset management.

Our specific product and service offerings fall under the categories of **Performance and Asset Management**.

Performance Management

- Performance diagnostics (i.e. comparative analyses) to identify areas in which to improve operational efficiencies (cost level) while increasing operational effectiveness (service level).

- Enterprise-wide and function-specific benchmarking to substantiate rate case filings, identify reliability improvement initiatives including service interruption mitigation and restoration, and support Capital and O&M budget submittals to external stakeholders.
- Development of operational dashboards to provide line-of-sight performance tracking between corporate strategy and specific investment and spending programs.

Asset Management

- Asset Management Business Architecture, Strategy and Planning: Major *Strategic Asset Management Transformations* facilitated by UMS Group, have achieved significant cost reductions/productivity improvements, process efficiency and effectiveness improvements, system reliability and customer satisfaction improvements and OPEX and CAPEX optimization. This practice competency has given rise to many decision support tools and a corporate performance dashboard design and implementation practice.
- Life-Cycle Investment Decision-Making and Optimization: Services range from improving practices and methodologies related to *aging infrastructure* to refining existing tools / installing new tools to aid in *Capital Investment and O&M Program Portfolio Optimization* supporting the notion of maximizing value enterprise-wide (comprehensive accounting of benefits aligned to corporate strategy) while operating within a pre-established budget and risk profile.
- Assess Management Program Assessments: As an endorsed Assessor and Trainer by the Institute of Asset Management, UMS Group has conducted a significant number of PAS 55 / ISO55000 assessments, comparing utilities' compliance with basic asset management policies and practices. We view this standard as a lens in ensuring all asset management activities within a utility support the achievement of its business plan, at optimal cost and on a sustainable basis.

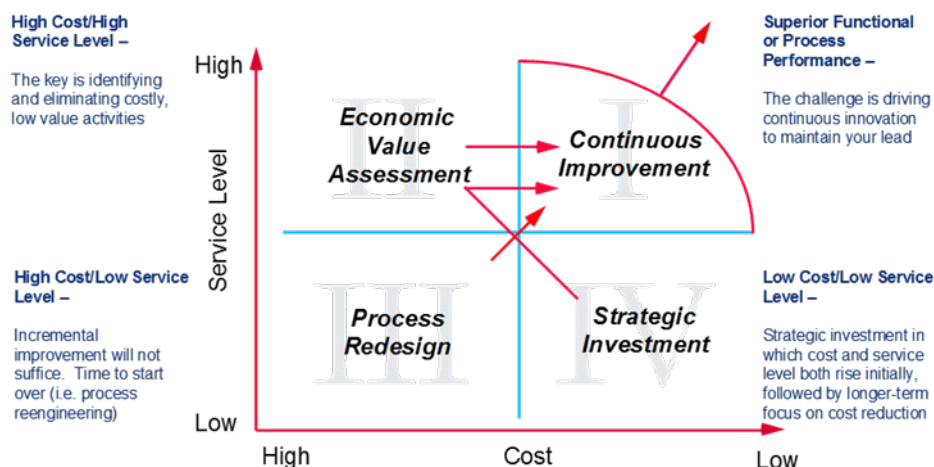
UMS Group Competencies and Skills

UMS Group has consistently demonstrated the following key competencies and skills required to complete a unit cost measurement and benchmarking effort in the utility industry:

- *Operational Knowledge of the Industry*: The ability to effectively converse with the utility Subject Matter Experts (critical to discovering the information under the numbers) requires a certain level of conversance with the factors that drive unit costs. The core team of four consultants that contributed to this effort combine for over 130 years of experience, three of whom have worked (either as full-time staff or in a consulting capacity) within utility organizations.
- *Development of a Performance Management Framework*: UMS Group has perfected the use of a 2-dimensional view of performance, calling for the simultaneous measurement

of cost and service level in conducting performance diagnostic and comparative analyses. Though this effort was largely cost-oriented, one still had to factor for the reality that maintaining an acceptable level of service (e.g.; reliability, power quality and customer service) is vital; and therefore, any comparisons to a Peer Group Panel had to factor for varying levels of customer expectations.

Figure D-1: UMS Group Performance Management Framework



- **Data Normalization:** Comparative Analysis (i.e.; Benchmarking), performed correctly, is directionally accurate in that it points towards areas where well-targeted intervention can result in improved performance (in this case reduced unit costs), and provides a point for real-time performance comparisons. However, one needs to account for normalizing for factors such as customer density, amount and accessibility of vegetation, and weather in presenting any comparisons (in the form of adjustments and / or mitigating statements). Specifically, regarding unit costs, there are issues to address with peer data in ensuring an “apples-to-apples” comparison including the use of burdened vs unburdened rates, inclusion of equipment costs, work performed energized or de-energized, comparability of work performed, etc. In forming the Peer Group Panel, we can reduce, but never eliminate these types of variances. Being able to assess the extent to which these factors negate exact comparisons and draw on years of benchmarking experience was critical to managing the presentation and interpretation of these results.

We have accomplished similar projects with clients in various markets around the world. The following table summarizes the successful completion of a cross section of relevant projects,

Table D-1: Recent UMS Group Comparative Analyses / Benchmarking Efforts

Client / Project	Relevant Analyses
Toronto Hydro Electric System Limited (THESL) Unit Cost Benchmarking	Asset Categories: <ul style="list-style-type: none"> • Wood Pole Replacement • UG Cable (XLPE) • OH Switches (Manual and Remote / Motor Operated) • Pole Top Transformer Replacement • Padmount / UG Transformer Replacement • Network Transformer / Protector Replacement • Breaker Replacement (SF6, Oil and Vacuum) OM&A Programs / Practices: <ul style="list-style-type: none"> • Vegetation Management • Pole Test and Treat • Overhead Line Patrol • Vault Inspection
ATCO Electric PBR Rate Filing Support	<ul style="list-style-type: none"> • Capital Additions • Investment levels for Asset Replacement/ End of Life, Clearance and Safety, and Reliability • System Performance Risk Mitigation • Transmission Construction Costs and Practices
ATCO Electric T&D Performance Diagnostics	<ul style="list-style-type: none"> • T&D Capital Maintenance Program Frequency • Distribution Projects Efficiency and Budget Adherence • Vegetation Management Spending Levels and Performance • O&M Productivity (internal comparison and external benchmarks)
Dayton Power and Light (AES) Generation and T&D Performance Diagnostics T&D System Refurbishment and Replacement Risk Assessment	<ul style="list-style-type: none"> • Capital Investment Levels • O&M Spending Levels • System Reliability Performance • Maintenance Performance • Workforce Productivity (Unit Costs) • Aging Infrastructure Trends and Comparisons • Reliability and Equipment Failure • Adequacy of Capital Investment and O&M Spending Levels
FirstEnergy (JCP&L) Investment, O&M Spending and Performance Comparison Study	<ul style="list-style-type: none"> • Capital Investment Levels • O&M Spending Levels • Reliability Performance • Aging Infrastructure Analysis
Indianapolis Power and Light Company (AES) Generation and T&D Benchmarking	<ul style="list-style-type: none"> • Generation Plant Performance Gap Assessment • Generation Asset Management Gap Analysis and Transformation Plan • T&D Asset Management Maturity • T&D Staffing Productivity (Unit Costs)
Lansing Board of Water and Light Power Production and Energy Delivery High Level Performance Diagnostic	<ul style="list-style-type: none"> • Cost and Service Level Comparison • Infrastructure Renewal Analysis • System Maintenance Performance • Aging Workforce Analysis • Worker Productivity (Unit Costs) • Organizational Effectiveness
Nova Scotia Power Enterprise-wide Performance Diagnostic	<ul style="list-style-type: none"> • O&M Spending Comparison • Capital Investment Levels Comparison • Investment Renewal Comparison • Asset Recovery Comparison • Reliability and Availability Comparison • Work Planning and Execution • Maintenance Program Effectiveness • Workforce Productivity (Unit Costs) • Aging Workforce Analysis
PSE&G-NJ and PSE&G-LI O&M Reduction Program Support Efficiency Improvement and Cost Reallocation Project	<ul style="list-style-type: none"> • O&M Spending Assessment • Workforce Management Assessment • Overtime Analysis / Comparisons • Organizational Effectiveness Review • Workforce Productivity (Unit Costs) • Aging Workforce Comparisons
PSE&G-LI Efficiency Improvement and Cost Reallocation Project	<ul style="list-style-type: none"> • Organization Redesign • Work Management • Asset Management • O&M Cost Reduction • Aging Workforce / Succession Planning
SaskPower Business Renewal Initiative: Capital Efficiency and O&M Spending Assessments (Generation, T&D and Customer Service)	<ul style="list-style-type: none"> • Capital Investment Levels • O&M Spending Levels • System Reliability Performance • Worker Productivity (Unit Costs) • Maintenance Performance • Aging Infrastructure Trends and Comparisons • Aging Workforce Comparisons

Experience Summaries of UMS Group Core Team

Representing over 130 years of electric utility experience, the individuals provided by UMS Group are knowledgeable in unit costing practices, and conversant with the analytics necessary to perform the comparative analyses required to support an objective, independent third-party assessment. The following table provides a high-level view of their qualifications.

Table D-2: UMS Group Core Team

Name	Project Role / Title	Years of Experience	Areas of Expertise
Jeff Cummings	Executive Sponsor and SME (Preparation and Presentation of Report)	39	<ul style="list-style-type: none"> • Regulatory Support • Comparative Analysis / Benchmarking • Strategic and Operational Planning • T&D Grid Resiliency and Revitalization • Electric Distribution Reliability • Capital Investment and O&M Program Planning and Prioritization • Asset Lifecycle Planning • Maintenance Program Optimization • Repair vs. Replacement Criteria • Labor Relations
Steven Morris	Project Manager and Subject Matter Expert	31	<ul style="list-style-type: none"> • Cost and Service Level Comparative Assessments • O&M Program Spending • Staffing Level Analyses and Benchmarking • Capitalization Practices related to Major Maintenance • Substation Maintenance and Construction • Distribution Construction Unit Cost Benchmarking • Economic Modeling for Asset Replacement and Maintenance Decision Support • Regulatory Support
Brett Shaw	Project Engineer	34	<ul style="list-style-type: none"> • Comparative Assessments (Benchmarking Diagnostics) • Energy Delivery • Industry Learning Consortia • Asset Management Transformations • Asset Risk and Performance Diagnostics • Work Planning and Execution • Work Productivity Assessments • Overtime Root Cause Analysis • Contract Administration
Thomas Myers	SME-Inspection, Test and Maintenance	34	<ul style="list-style-type: none"> • Technology Selection and Implementation • Enterprise Analytics • Asset Lifecycle Planning • Capital Investment and O&M Program Planning • Service Restoration • Inspection, Test and Maintenance Program Optimization • GIS Implementation and Operation • Work Planning and Execution

Appendix E – UMS Group Reliability Performance Assessments

UMS Group has established credentials in electric distribution reliability, as illustrated by the following engagements:

- *Pacific Gas and Electric*: UMS Group conducted a third-party expert review of Pacific Gas and Electric's distribution reliability to determine what had happened in the areas of *Equipment Failure* and *3rd Party Damage*, and what, if anything, could be done to help mitigate the reliability target shortfalls for the current year. Specifically, we reviewed restoration performance, weather effects, "Blue Sky" SAIFI trends, outage causes, equipment failure-caused outages, number of outages, customer interruptions, customer minutes, and worst performing circuits over a three-year time frame. Key findings and recommendations were presented in the areas of Equipment Failure (OH Conductor, Transformers and UG Cable), and Third Party Damage (Vehicles and Metallic Balloons).
- *Public Service Electric and Gas – Long Island*: PSE&G-LI retained UMS Group to review its reliability in the context of pre-established performance targets and changes during the year preceding the project. Specifically, they tasked UMS Group with determining the underlying cause of an apparent performance degradation over a three-year period, focused on those factors related to PSEG LI approaching (and in the case of SAIFI exceeding) the minimum performance level specified in its contract with LIPA. As part of this review, UMS Group recommended specific actions to reverse the trend and return to previous stronger levels of performance. These recommendations revolved around vegetation management (danger tree removal and use of herbicides), UG cable replacement, animal guarding, vehicle-caused outages, and creating a repository to store asset management information.
- *Israel Electric Company*: UMS Group provided an expert opinion regarding Israel Electric Company's (IEC's) restoration performance during a major storm event in October 2015. Filed with the Israeli courts, our opinion addressed IEC's comparable position in restoration time, restoration rate, immediate response, restoration practices deployed, and overall prudence of its decisions in the events leading up and during the storm. We not only provided incontrovertible proof of prudence, but also through comparisons with other major storm events in North America and Europe, presented a compelling argument that IEC excelled in its performance.
- *FirstEnergy Pennsylvania Operating Companies*: The FirstEnergy Pennsylvania Operating Companies engaged UMS Group to conduct an independent review and assessment of its internal and external mutual assistance activities, including a review of the mutual assistance provided to and received from other electric distribution companies (EDCs). An initial list of 26 outages covering 13 storm events was developed, based on number of customers impacted (minimum of 5 percent), with due regard to

including all four Operating Companies within Pennsylvania. We applied our standard multi-tiered diagnostic framework to:

- Compare the FE PA OPCOs practices relating to Mutual Assistance with those in use at comparable electric distribution organizations, and
- Assess execution of these practices, initially at a high level to address issues of equity in their application across the FE PA OPCOs' service territories and electric utility industry, and then on a storm-by-storm / outage-by-outage basis to identify specific opportunities for improvement, either programmatic or event driven.

UMS Group reviewed (1) FirstEnergy's most current E-Plan, (2) specific service restoration information for the 26 outages contained within FirstEnergy's Outage Management System (OMS), and (3) all previously filed Major Event Reports (MERs) for these specific outages / storm events, and was afforded complete access to the Company's technical and management staff. UMS Group concluded that notwithstanding a number of opportunities to fine-tune / improve its practices that at the highest level, the FE PA OPCOs' use of Mutual Assistance fell well within an industry-based range of reasonableness. Our review confirmed that plans were reasonably conceived, for the most part actions were properly executed (some exceptions were noted in the final report), and the results were generally appropriate (although with the benefit of hindsight, we did acknowledge that marginal improvement opportunities may have been possible). As with the above-mentioned Focused Reliability Audits, the respective Commission Staffs and FirstEnergy accepted all findings and recommendations as presented.

- *Jersey Central Power and Light*: In support of a recent Base Rate Case Filing, JCP&L hired UMS Group to provide an independent, third-party assessment of its investment and spending levels and reliability performance as compared against the other FirstEnergy electric utilities, other New Jersey electric utilities, and other peer group utilities. Our efforts objectively demonstrated that JCP&L's reported reliability had shown consistent improvement since 2004 and that its performance ranged between top quartile and median relative to two comparable peer groups. We were also successful in showing JCP&L's effectiveness in implementing asset management-related initiatives, and industry-leading service restoration processes; appropriately bridging the gap between reported reliability and the customer experience related to two extraordinary storm events in 2011 (Hurricane Irene and the October 31st Snow Storm). Further, his analyses illustrated that the capital investment and O&M spending levels were appropriate for the level of service required by the Regulator (BPU). In conjunction with filing written direct testimony, Mr. Cummings provided direct and rebuttal testimony at rate hearings conducted in October 2013 and supported JCP&L's outside counsel in the preparation of final briefs. Related to this effort, he prepared a written report adjudging the prudence of decisions made during the 2011 extraordinary storm events and Super Storm Sandy, from which the utility received a favorable outcome.

- *Met-Ed, Cleveland Electric Illuminating, and Penelec:* UMS Group has also performed several detailed reliability assessments for other FirstEnergy Operating Companies (Met-Ed, CEI and Penelec). We conducted this work for FirstEnergy with the approval / concurrence of respective State Regulators to address concerns around reliability and had extensive interaction with commission staffs. In each of these efforts, UMS Group assessed actual reliability performance, relevant OM&A practices, spending and investment levels, and overall approaches to Asset Management against industry “best practices.” Each utility and their respective Commission Staffs accepted our recommendations as presented in comprehensive reports and formal presentations to the PA and OH Commission Staffs.

Appendix F – Peer Group Panel Survey

Unit Costs Tab

For the most current three-year period for which you have data, please indicate the number of units and associated costs assigned to the designated categories and programs.

Asset Category / Capital	Unit of Measure	Year 1		Year 2		Year 3		Comments
		No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	
Wood Poles Replacement	Each							
UG Cable (XLPE) Replacement	Meter							
OH Switches Replacement	Each							
OH Transformer Replacement	Each							
UG Transformer Replacement	Each							
Station Breaker Replacement	Each							
Maintenance Programs / OM&A	Unit of Measure	Year 1		Year 2		Year 3		Comments
		No. of Units	Cost	No. of Units	Cost	No. of Units	Cost	
Vegetation Management	Kilometer							
Pole Test and Inspection	Each							
Overhead Line Patrol	Kilometer							
Station Breaker and Relay	Each							
Billing-Paper	Customer							
Billing-Online	Customer							
Meter Maintenance	Each							

Accounting Tab

	The following information will be used to apply adjustors based on how each utility calculates unit cost and the factors that comprise unit cost.		
	Calculation of Unit Costs	Response	Comments
1	Which of the following methods do you use to determine unit rates for your asset categories and / or maintenance programs?		
	Divide total spent by number of units		
	Average individual costs of separate work orders		
	Other (please describe)		
2	In addition to Direct Labor and Material, which of the following costs are included in your unit costs for In-House work ?	Response (Please indicate "y" or "N")	Comments
	Design and Permitting costs		
	Project Management and Supervisory costs		
	Other project-related costs (e.g., Fleet and Warehouse)		
	Other labor-related costs (e.g.; training, conferences and meetings)		
	Employee-related costs (e.g.; vacation, sick time, insurances and pension)		
	Administrative and General costs		
	AFUDC / CWIP		
	Other (please describe)		
3	In addition to Contractor's cost, which of the following costs are included in your unit costs for Contracted work ?	Response (Please indicate "y" or "N")	Comments
	Contractor Management/Supervision costs (please indicate in comments if these costs include overheads per question 2)		
	Permitting and Design Costs		
	Other (please describe)		
4	Do you "net out" customer contributions from your unit costs?		
5	Do you use GAAP or IFRS accounting? (please specify which in Comments)		

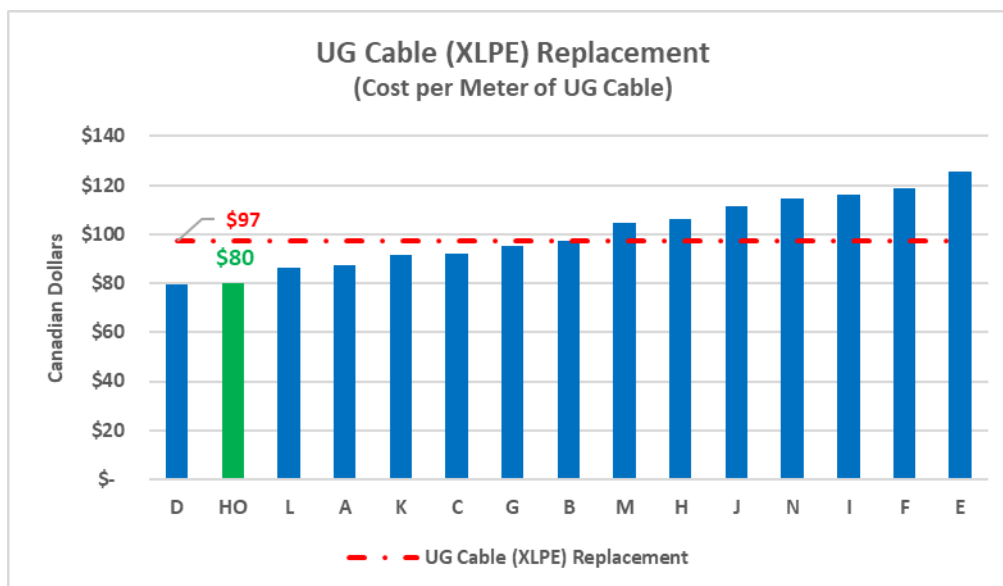
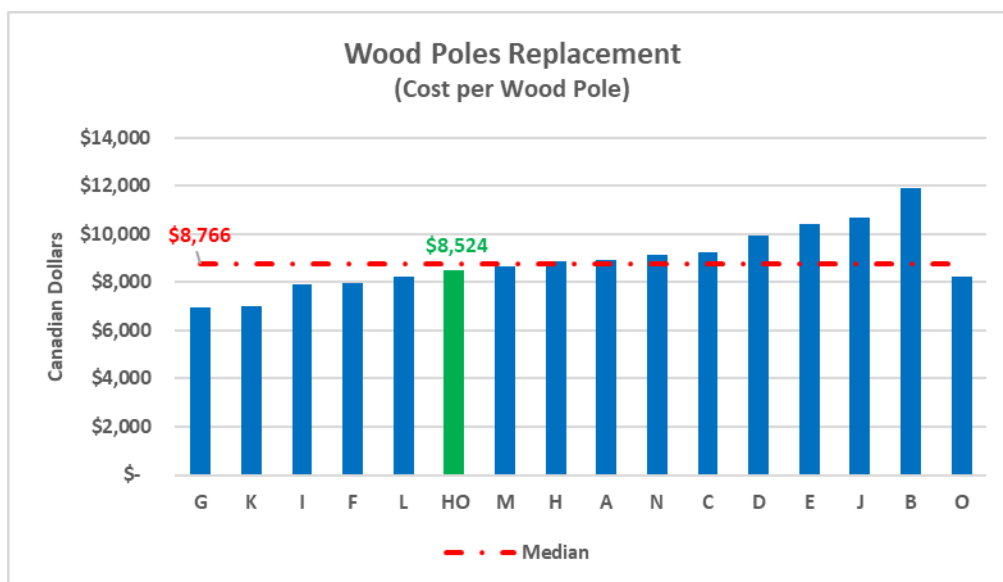
Local Factors Tab

The following table lists some of the more common factors that negatively impact worker productivity. Please indicate which ones apply to your operating and working environment and / or add others that are unique to your service territory.

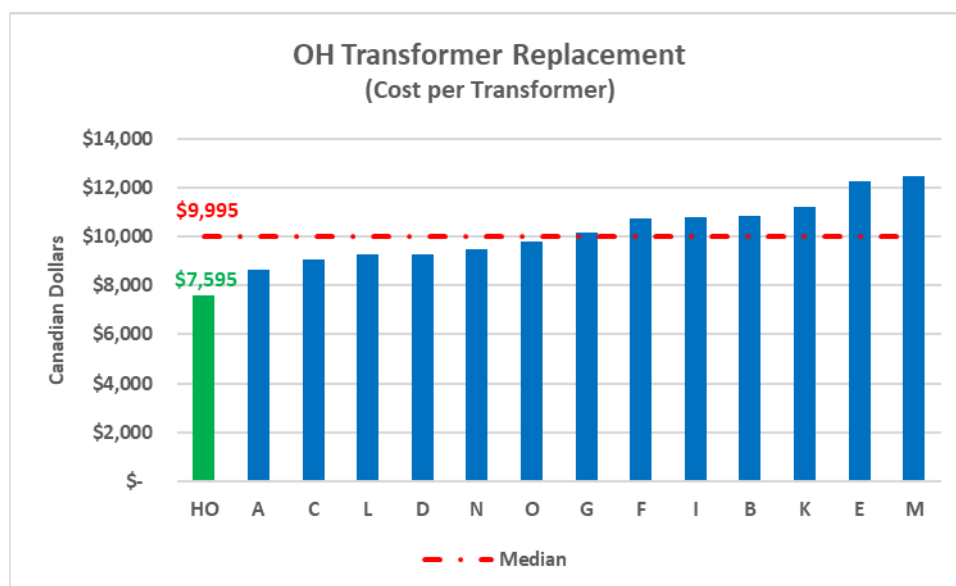
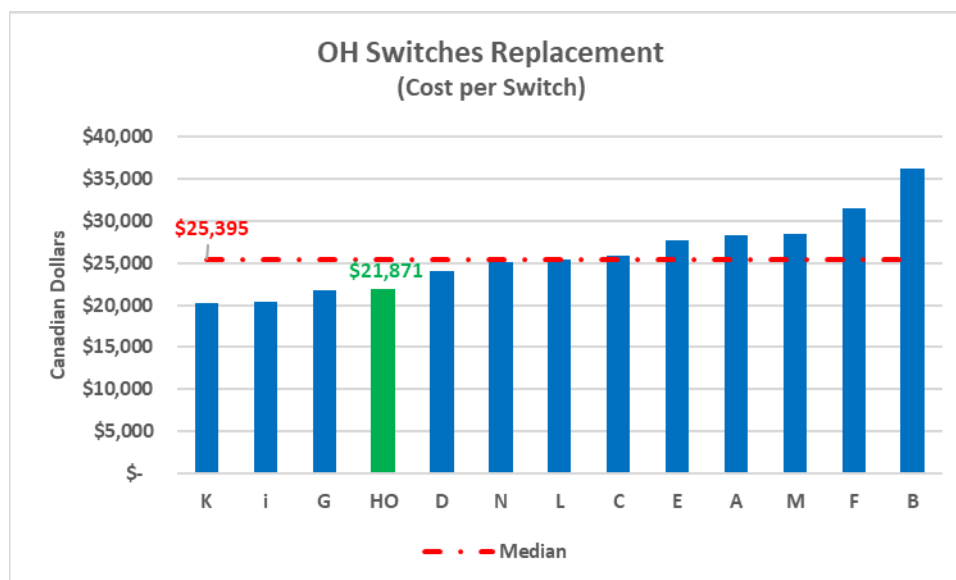
Local Factors	"X" to those that apply	Comments
Which of the following factors impact the cost of you performing inspections and replacement work?		
Excessive travel time (over 30 mins.)		
Road restrictions which limit working hours		
High water table		
Working next to energized lines (requiring dedicated observer, gloves, etc.)		
Requirements to perform work off hours (i.e., night/weekend)		
Changed standards requiring rebuilds rather than like-for-like (i.e., clearances)		
Excessive switching requirements (i.e., to isolate on dual radial construction)		
Shoring requirements for UG work		
Limitations on tree trimming (e.g.; unusually tight clearances)		
Prior use of lead cables		
High fault currents (impacting equipment sourcing)		
Paid duty for police presence on public roads		
Extensive use of submersible transformers		
Environmental regulations		
Insufficient IT Enablement		
Union Work Rules		
City consent requirements (i.e., customer notification, restoration, progressive clean-up, etc.)		
Other (please specify in Comments)		

Appendix G – Detailed Benchmarking Results

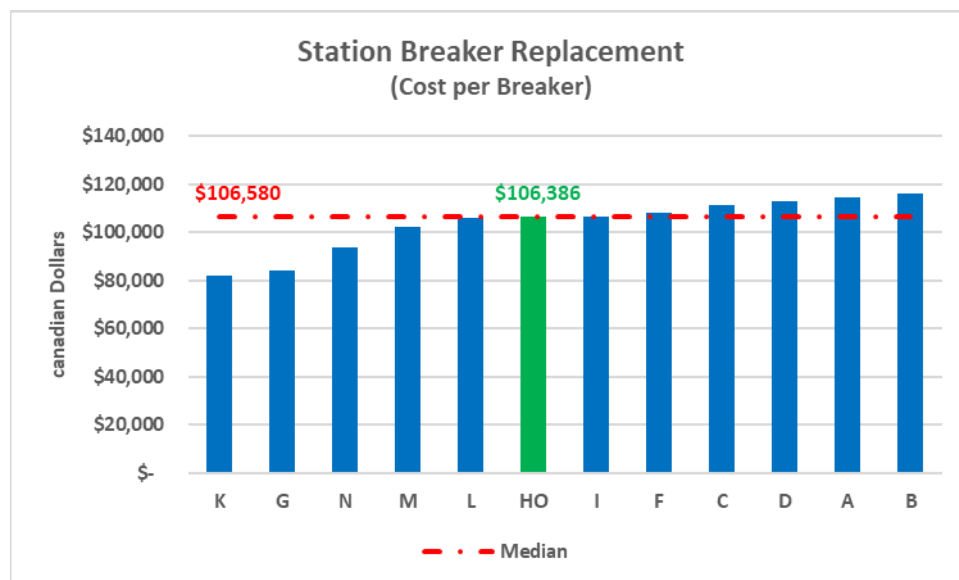
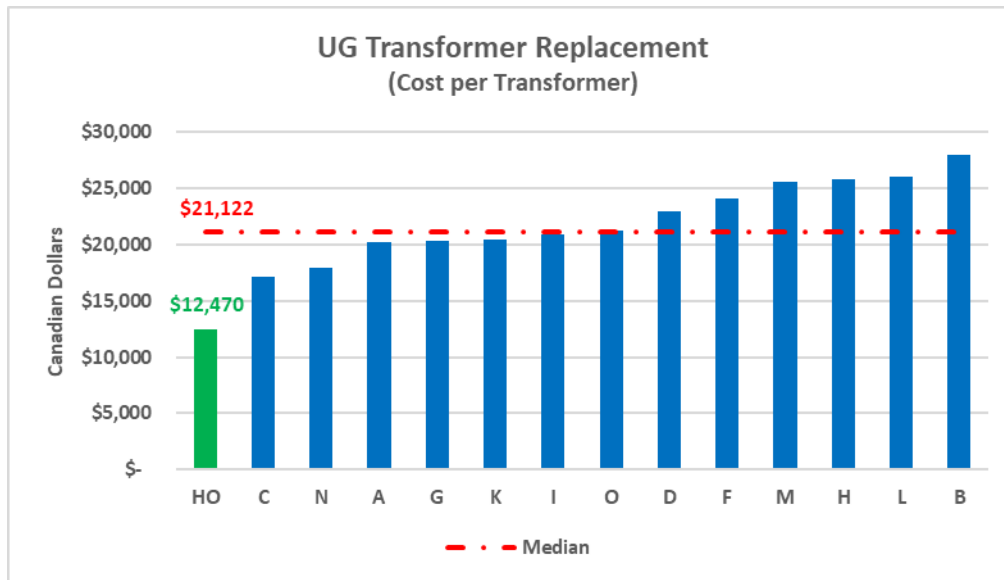
The following charts, presenting the unit costs for each of the utilities (in ascending order), show Hydro Ottawa's (Green) position relative to each of the electric utilities and the Peer Group Panel and full-scaled "normalized" median value (Red).



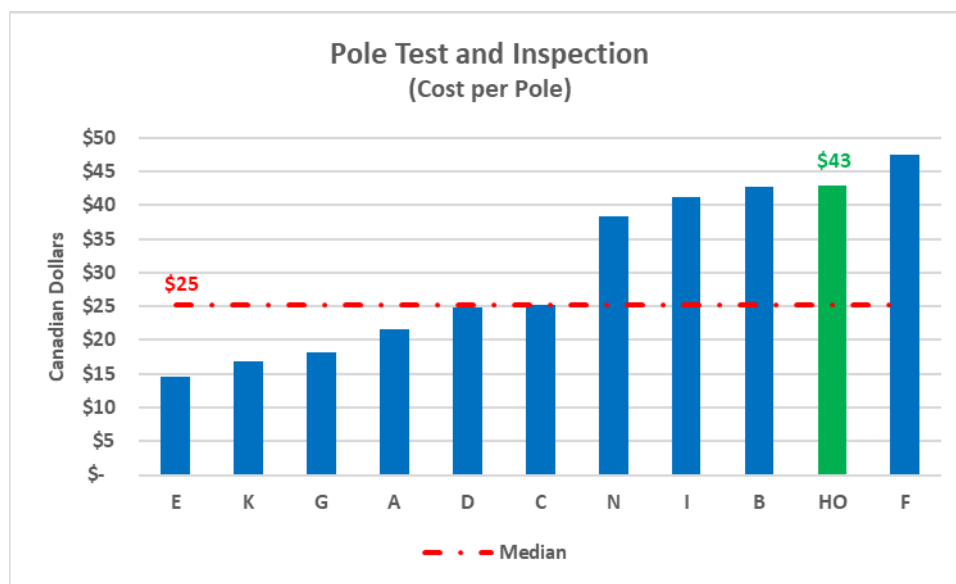
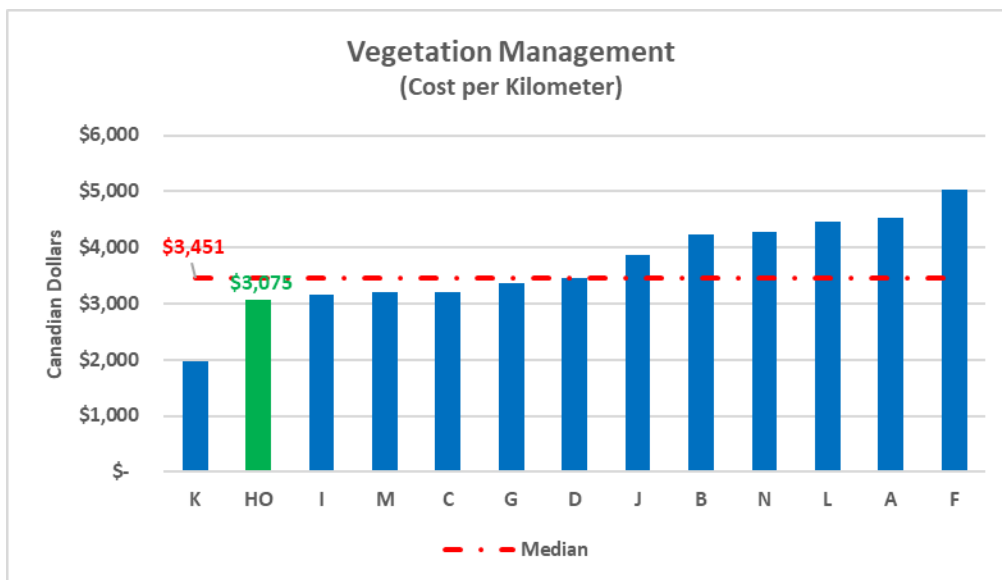
NOTE: The use of a letter designation for each member of the Peer Group Panel provides the confidentiality assured in soliciting participation for this study.



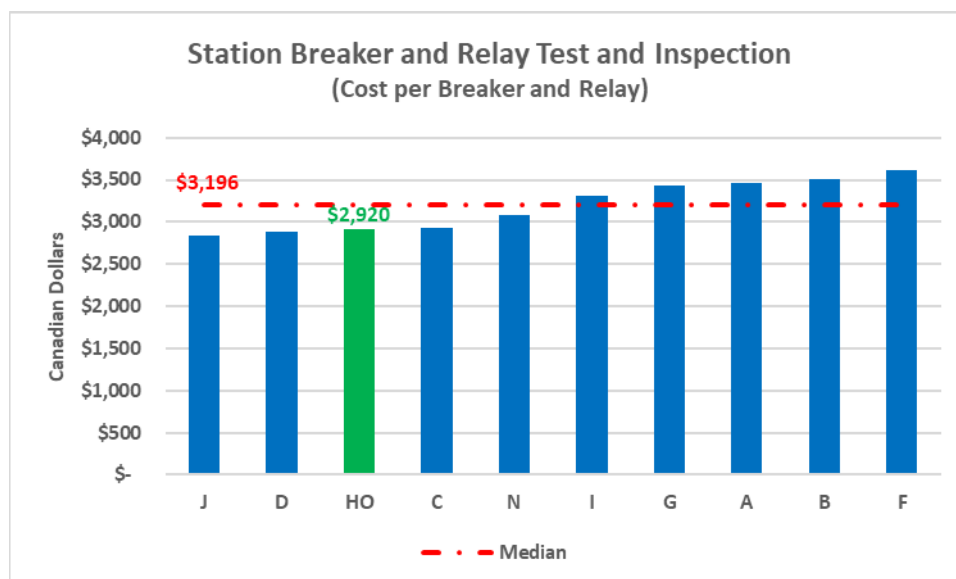
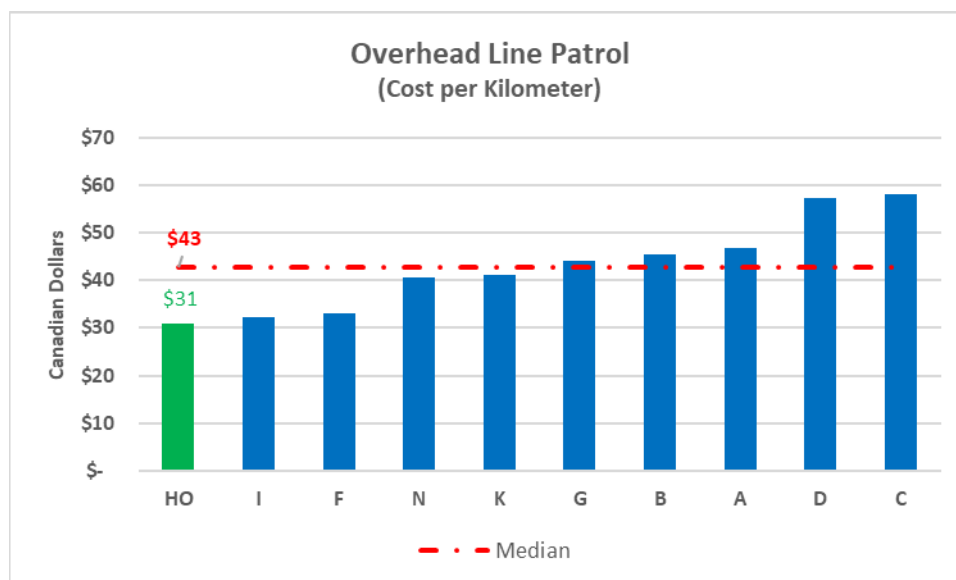
NOTE: The use of a letter designation for each member of the Peer Group Panel provides the confidentiality assured in soliciting participation for this study.



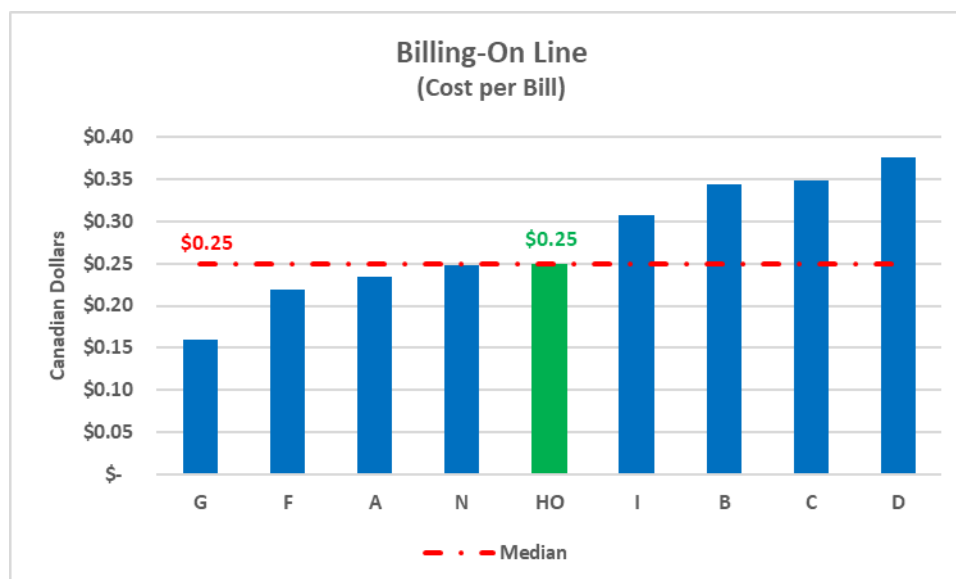
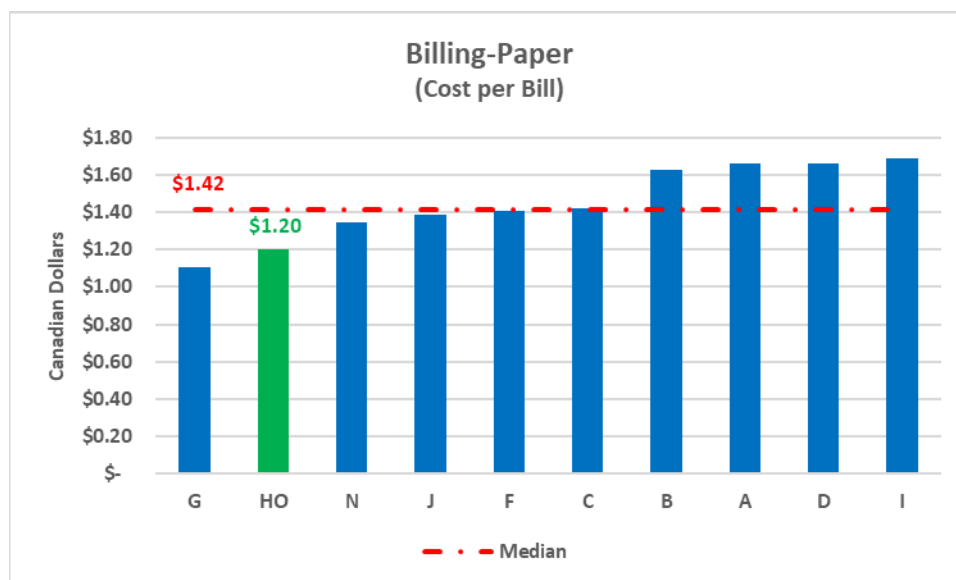
NOTE: The use of a letter designation for each member of the Peer Group Panel provides the confidentiality assured in soliciting participation for this study.



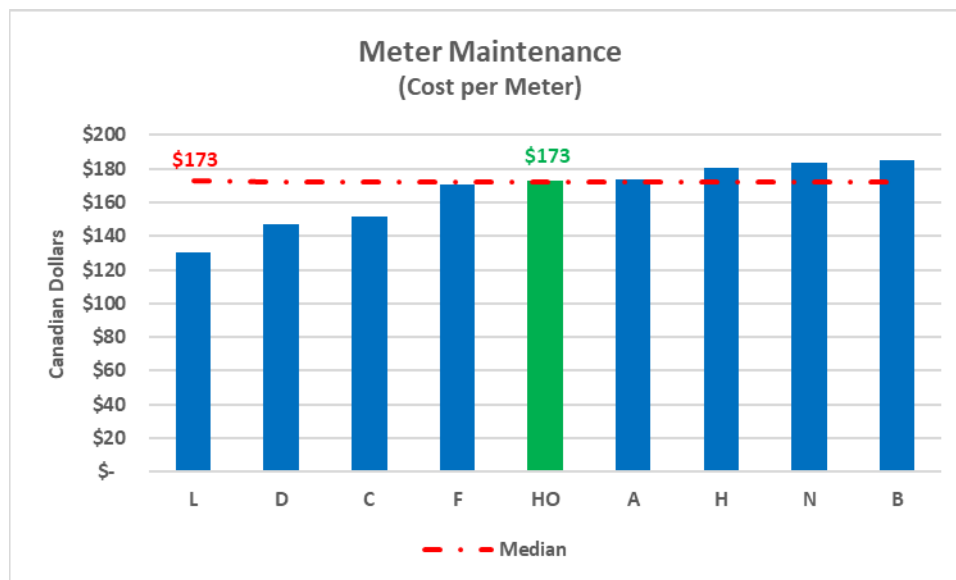
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ELECTRICITY UTILITY SCORECARD

1. INTRODUCTION

A key tool of the OEB's Renewed Regulatory Framework ("RRF") is the Electricity Utility Scorecard ("scorecard"). The scorecard is a mechanism which facilitates the OEB's performance monitoring and distributor benchmarking. The scorecard contains five years of data, and assesses a distributor's effectiveness and improvement in achieving the four performance outcomes of the RRF: Customer Focus, Operational Effectiveness, Public Policy Responsiveness, and Financial Performance. As a key part of the RRF, the scorecard enables the OEB to align the needs of a sustainable, financially viable electricity sector with the expectations of customers, who want reliable service at a reasonable price.

Since the inception of the scorecard in 2013, Hydro Ottawa's performance in the categories measured by the scorecard has been strong, with notable achievement in its reliability and customer focus measures. Over the last five years of scorecard performance, the utility has met 91% of those measures with defined targets, whether industry-wide or distributor-specific, and has made significant performance improvements in its scorecard measures. In 2014, 55.6% of those measures on the scorecard with trend indicators were showing that Hydro Ottawa's performance was either consistent or improving. In 2015, that percentage increased to 77.8%. From 2016-2018, Hydro Ottawa met or exceeded 100% of its scorecard measures that include targets, with 100% of those measures showing performance improvement or consistent trending. Those measures with consistent trending are those that cannot be improved upon (i.e. zero public safety incidents).

Table 1 below summarizes Hydro Ottawa's annual scorecard target results, indicating whether a target was met or not met, as well as the utility's five-year trend as published yearly by the OEB on the scorecard. Hydro Ottawa's performance improvement as expressed on the OEB's scorecard demonstrates the utility's commitment to continuous improvement and to providing value for its customers and shareholder.

Table 1 – Summary of Hydro Ottawa’s Scorecard Targets Met/Not Met (2014-2018)

Performance Categories	Measures	2014	2015	2016	2017	2018
Service Quality	New Residential/Small Business Services Connected on Time	➡	➡	➡	➡	➡
	Scheduled Appointments Met on Time	⬇	⬆	⬆	⬆	⬆
	Telephone Calls Answered on Time	⬇	⬇	⬆	⬆	⬆
Customer Satisfaction	Billing Accuracy	➡	⬆	⬆	⬆	⬆
Safety	Level of Compliance with O. Reg. 22/04	⬆	➡	➡	➡	➡
	Number of General Public Safety Incidents*	➡	➡	➡	➡	➡
	Rate per 1000 km of line*	➡	➡	➡	➡	➡
System Reliability	Average Number of Hours that Power to a Customer is Interrupted*	⬆	⬆	⬇	⬇	⬇
	Average Number of Times that Power to a Customer is Interrupted*	⬆	➡	⬇	⬇	⬇
Percentage of Flat/Improving Trends		55.6%	77.8%	100%	100%	100%

* Note that a downward trend indicates performance improvement for the following four measures: Number of General Public Safety Incidents, Rate per 1000 km of line, Average Number of Hours that Power to a Customer is Interrupted, and Average Number of Times that Power to a Customer is Interrupted.

This Attachment discusses Hydro Ottawa’s performance in each of the scorecard measures in detail. It furthermore analyzes the utility’s performance year-over-year, as well as compared to both a peer group of distributors in Ontario and all distributors in the province, where possible.

Unless otherwise noted, the analysis in this Attachment is focused on the period of 2014-2018.

2. PEER GROUP SELECTION

In determining an appropriate peer group of local distribution companies (“LDCs”) in Ontario, Hydro Ottawa reviewed its position relative to four main distributor characteristics: (1) total number of customers, as published in the OEB’s 2018 Electricity Distributor Yearbook (“yearbook”); (2) Gross Property, Plant and Equipment, as published in the OEB’s 2018 yearbook; (3) efficiency ranking, as presented in the Pacific Economics Group (“PEG”)

1 econometric benchmarking model,¹ and (4) membership in the Coalition of Large Distributors
2 ("CLD"). Distributor peers were chosen if they appeared in at least two of the four characteristic
3 groups and at least two distributors were chosen from each characteristic group. This peer
4 group helps to provide context and perspective relative to Hydro Ottawa's performance on the
5 scorecard.

6
7 Based on this selection process, as outlined in Table 2 below, Hydro Ottawa established a
8 comparative peer group that consists of the following Ontario distributors:

- 9
- 10 ● Alectra Utilities Corporation
 - 11 ● Burlington Hydro Inc.
 - 12 ● EnWin Utilities Ltd.
 - 13 ● Hydro One Networks Inc.
 - 14 ● Kitchener-Wilmot Hydro Inc.
 - 15 ● London Hydro Inc.
 - 16 ● Oakville Hydro Electricity Distribution Inc.
 - 17 ● Thunder Bay Hydro Electricity Distribution Inc.
 - 18 ● Toronto Hydro-Electric System Limited
 - 19 ● Veridian Connections
 - 20 ● Waterloo North Hydro Inc.

¹ Pacific Economics Group, *Empirical Research in Support of Incentive Rate-Setting: 2018 Benchmarking Update* (August 15, 2019).

1

Table 2 – Criteria for Peer Group Selection

Source	Criteria	Distributors	Value
2018 Yearbook	Total Customers (top 10)	Hydro One Networks Inc.	1,333,601
		Alectra Utilities Corporation	991,102
		Toronto Hydro-Electric System Limited	772,624
		Hydro Ottawa Limited	335,320
		London Hydro Inc.	159,039
		Veridian Connections	121,826
		Kitchener-Wilmot Hydro Inc.	96,827
		EnWin Utilities Ltd.	88,978
		Oakville Hydro Electricity Distribution Inc.	72,108
		Burlington Hydro Inc.	67,940
2018 Yearbook	Property Plant & Equipment (Gross) (top 10)	Hydro One Networks Inc.	\$12,489,379,660
		Toronto Hydro-Electric System Limited	\$5,333,499,789
		Alectra Utilities Corporation	\$4,241,982,950
		Hydro Ottawa Limited	\$1,244,860,354
		London Hydro Inc.	\$503,465,229
		Kitchener-Wilmot Hydro Inc.	\$387,749,042
		Waterloo North Hydro Inc.	\$383,813,462
		Veridian Connections Inc.	\$322,385,817
		EnWin Utilities Ltd.	\$312,252,487
		Burlington Hydro Inc.	\$281,800,009
PEG Report (August 2019 Update)	Stretch Factor Assignment by Group	Atikokan Hydro Inc	Stretch Factor = 0.45% Group IV
		Canadian Niagara Power Inc.	
		Chapleau Public Utilities Corporation	
		Festival Hydro Inc.	
		Hydro One Networks Inc.	
		Hydro Ottawa Limited	
		PUC Distribution Inc.	
		Thunder Bay Hydro Electricity Distribution Inc.	
		Wellington North Power Inc.	
CLD	CLD Members	Alectra Utilities Corporation	
		Hydro Ottawa Limited	
		Hydro One Networks Inc.	
		Toronto Hydro-Electric System Limited	
		Veridian Connections Inc.	

2

3. CUSTOMER FOCUS

3.1. SERVICE QUALITY

3.1.1. New Residential and Small Business Services Connected on Time

As per section 7.2 of the *Distribution System Code* (“DSC”), all new low voltage connections must be completed within five days of all service conditions being met, or at such later date as agreed to by the customer and distributor, at least 90% of the time. From 2014-2018, Hydro Ottawa connected an average of 4,414 low voltage customers per year, which were all completed within a five day timeframe or as scheduled with the customer. It is Hydro Ottawa’s process to always schedule a new low voltage connection within five days, or at a later date if requested by the customer. The utility’s consistent performance in this Service Quality Requirement (“SQR”) is above both the five-year peer group average of 97.6%, and the five-year industry average of 98.3%.

In light of the City of Ottawa’s continued year-over-year growth, Hydro Ottawa expects that requests for new connections will steadily increase over the 2021-2025 period. Hydro Ottawa aims to continue its strong performance in connecting new low voltage customers on time over the term of this Application.

**Table 3 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Percentage of New Residential and Small Business Connections Completed on Time
(Industry Average: 90%)**

	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	96.7%	97.6%	96.8%	98.6%	98.4%	97.6%
Provincial Average	98.0%	98.5%	98.3%	98.3%	98.3%	98.3%
Hydro Ottawa	100%	100%	100%	100%	100%	100%

1 **Figure 1 – Peer Group and Hydro Ottawa Results: Percentage of New Residential and**
 2 **Small Business Connections Completed on Time (*Industry Target: 90%*)**
 3

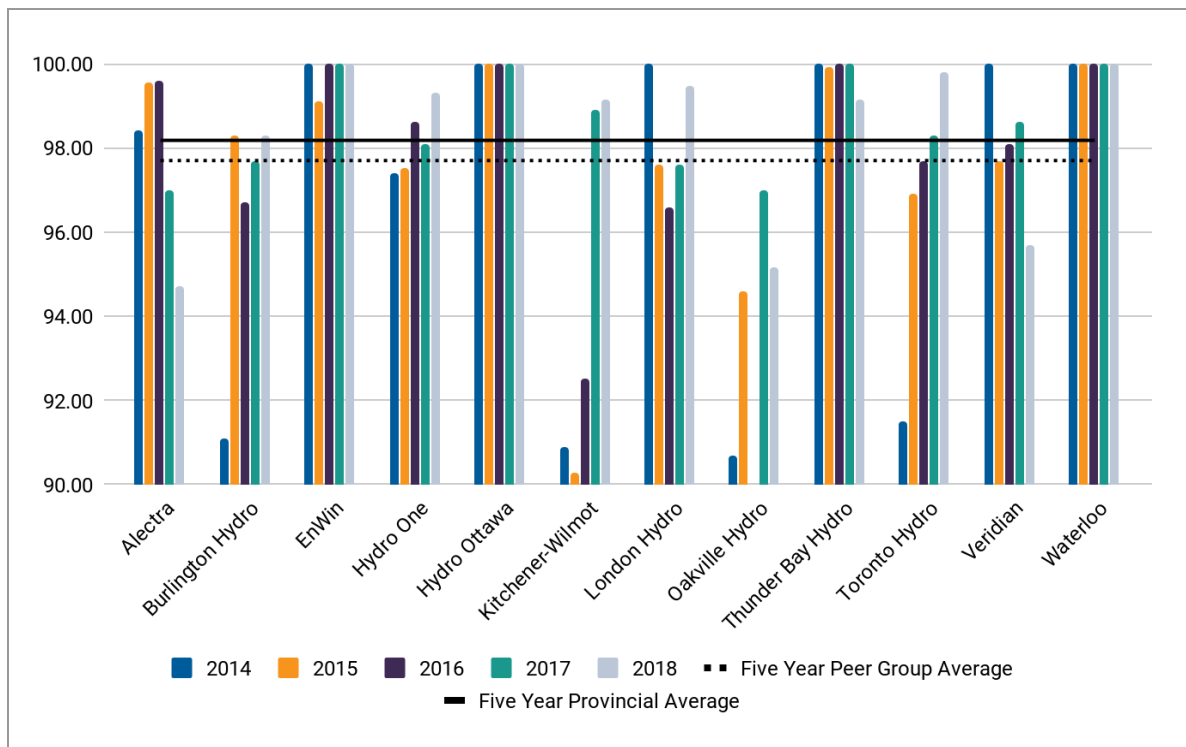
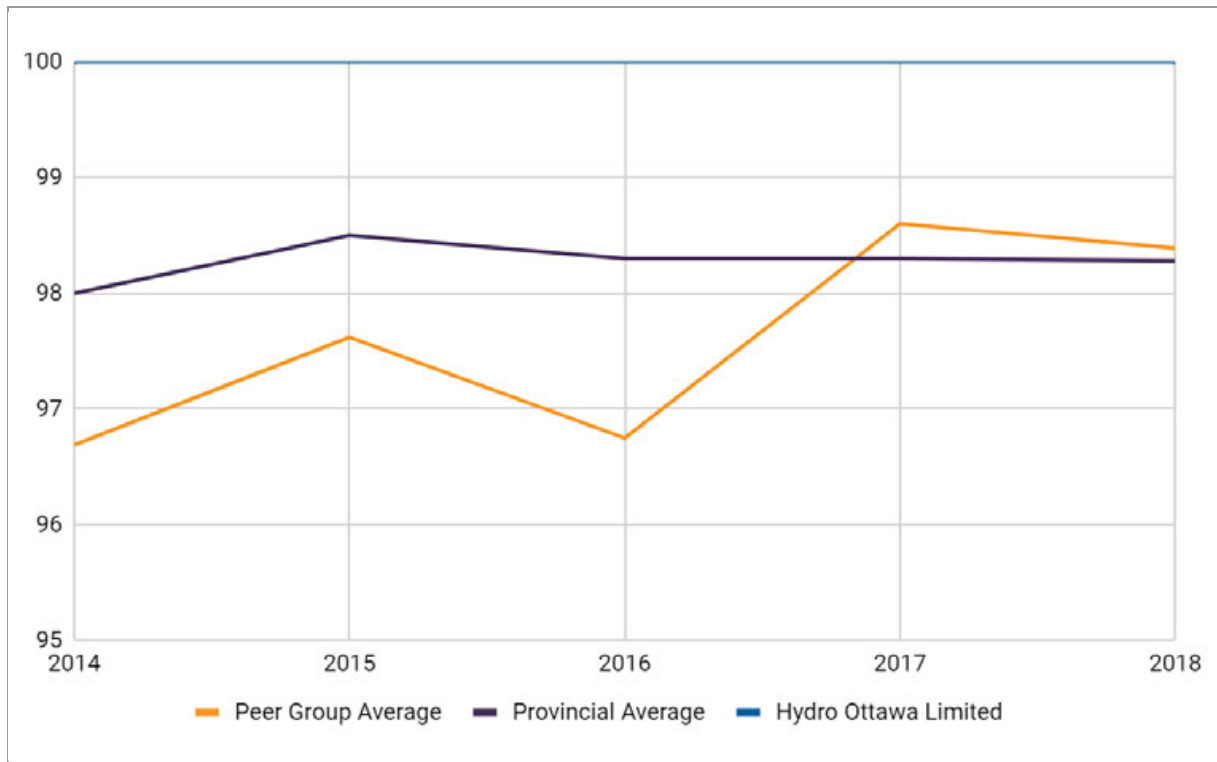


Figure 2 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Percentage of New Residential and Small Business Connections Completed on Time
(Industry Target: 90%)



3.1.2. Scheduled Appointments Met On Time

As required by section 7.4 of the DSC, Hydro Ottawa aims to schedule all appointments with customers – and meet those appointments – within a window of time that is no greater than four hours. On average, over the 2014-2018 period, the utility scheduled over 4,000 appointments per year. Recent years have witnessed an increase in appointments scheduled, with over 6,000 appointments scheduled in 2018 alone. On average, Hydro Ottawa has been able to meet 98.8% of scheduled appointments on time over the 2014-2018 period. Appointments that are missed are predominantly a result of significant emergencies or inclement weather events that redirect resources to power restoration efforts.

The five-year average for Hydro Ottawa's performance under this SQR was 0.5% below the peer group average and 0.2% below the provincial average. In the years 2016, 2017, and 2018, the utility was able to meet over 99% of its scheduled appointments, and was thus on par with, or exceeded, the peer group and provincial averages. Hydro Ottawa's performance in meeting appointments has shown an improvement since 2014 and 2015.

Table 4 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Percentage of Scheduled Appointments Met on Time (*Industry Target: 90%*)

	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	99.1%	98.9%	99.4%	99.2%	99.7%	99.3%
Provincial Average	99.0%	98.9%	99.0%	99.10%	99.15%	99.0%
Hydro Ottawa	98.3%	97.1%	99.6%	99.4%	99.7%	98.8%

Figure 3 – Peer Group and Hydro Ottawa Results: Percentage of Scheduled Appointments Met On Time (*Industry Target: 90%*)

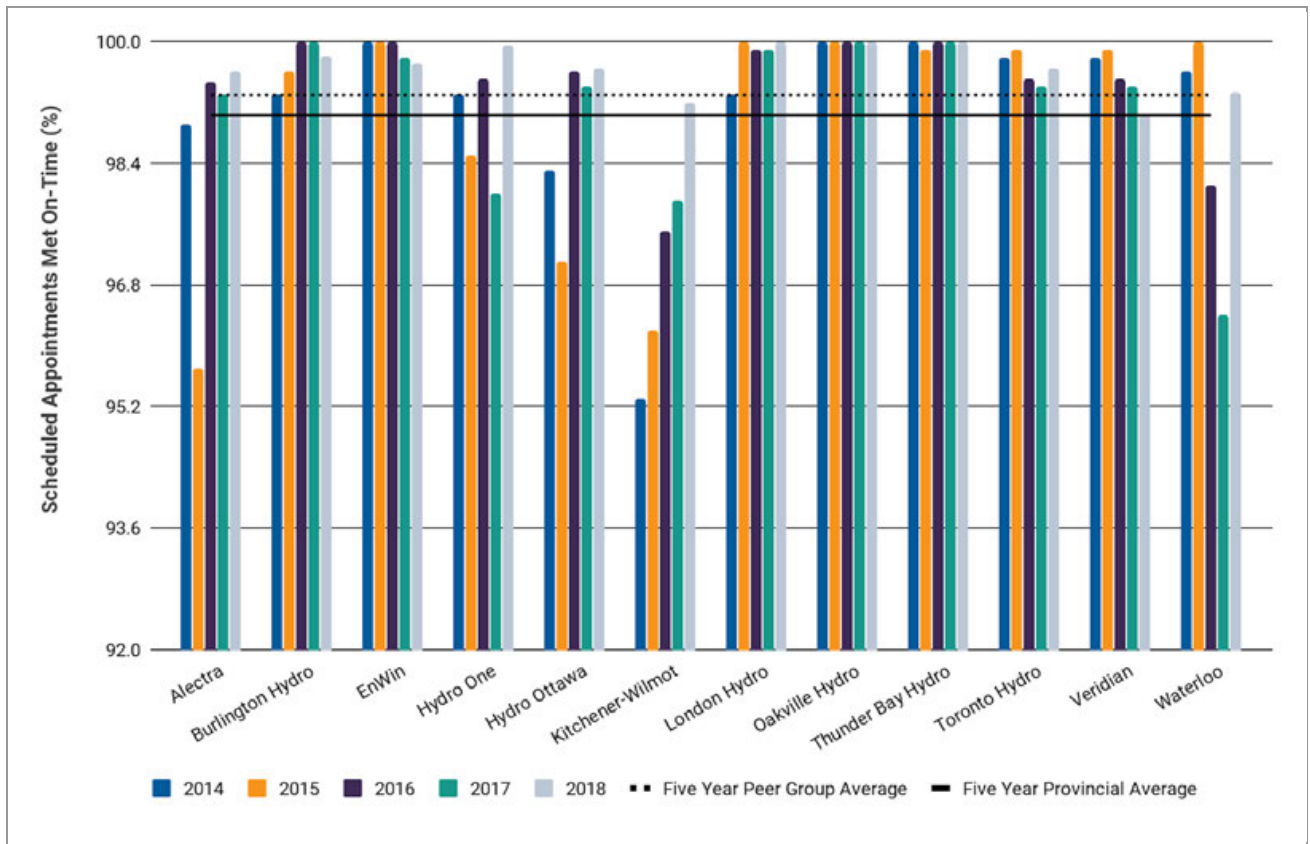
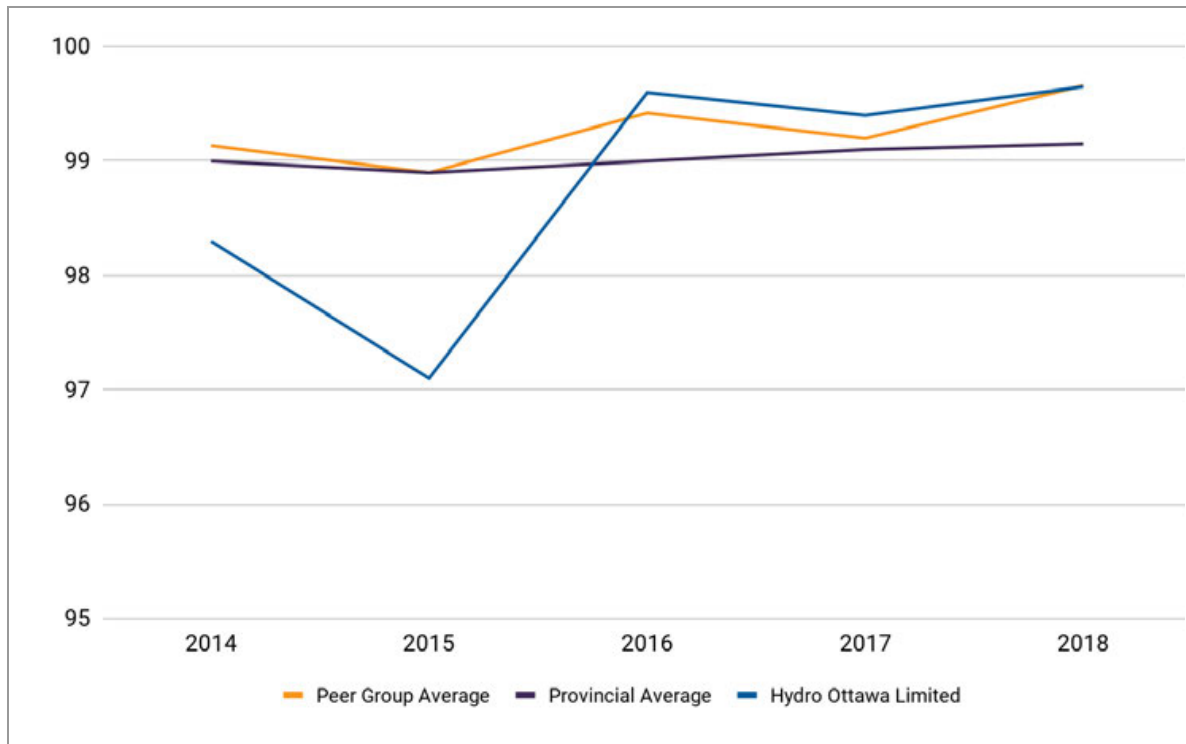


Figure 4 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Percentage of Appointments Met on Time (*Industry Target: 90%*)



3.1.3. Telephone Calls Answered On Time

Section 7.6.1 of the DSC requires that distributors answer all telephone calls within 30 seconds, 65% of the time. Between 2014 and 2018, Hydro Ottawa answered an average of more than 276,000 calls annually, and on average those calls were answered within 30 seconds 84.1% of the time. This exceeds the peer group average by 4%, is slightly below the provincial average, and significantly exceeds the industry target of 65%.

As can be seen in Figures 5 and 6, on a year-over-year basis, Hydro Ottawa's performance under this SQR has shown improvement from 2014-2018. In 2017, the utility engaged a new provider for its Customer Contact Centre, and also expanded its contact centre hours to include Saturdays. Since its transition to a new contact centre, Hydro Ottawa has seen an improvement in the number of calls answered within 30 seconds. Ultimately, the utility expects call volumes to

decline in the future, due to the implementation of improved self-service options, including web chat functionality, voice biometric technology, and its smart speaker skill, which are expected to enhance customer convenience.

Table 5 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Percentage of Telephone Calls Answered on Time (*Industry Target: 65%*)

	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	77.4%	79.4%	76.9%	81.1%	83.4%	80.1%
Provincial Average	84.7%	86.1%	84.9%	87.3%	88.15%	85.8%
Hydro Ottawa	80.3%	82.5%	83.8%	85.1%	88.7%	84.1%

Figure 5 – Peer Group and Hydro Ottawa Results: Percentage of Telephone Calls Answered on Time (*Industry Target: 65%*)

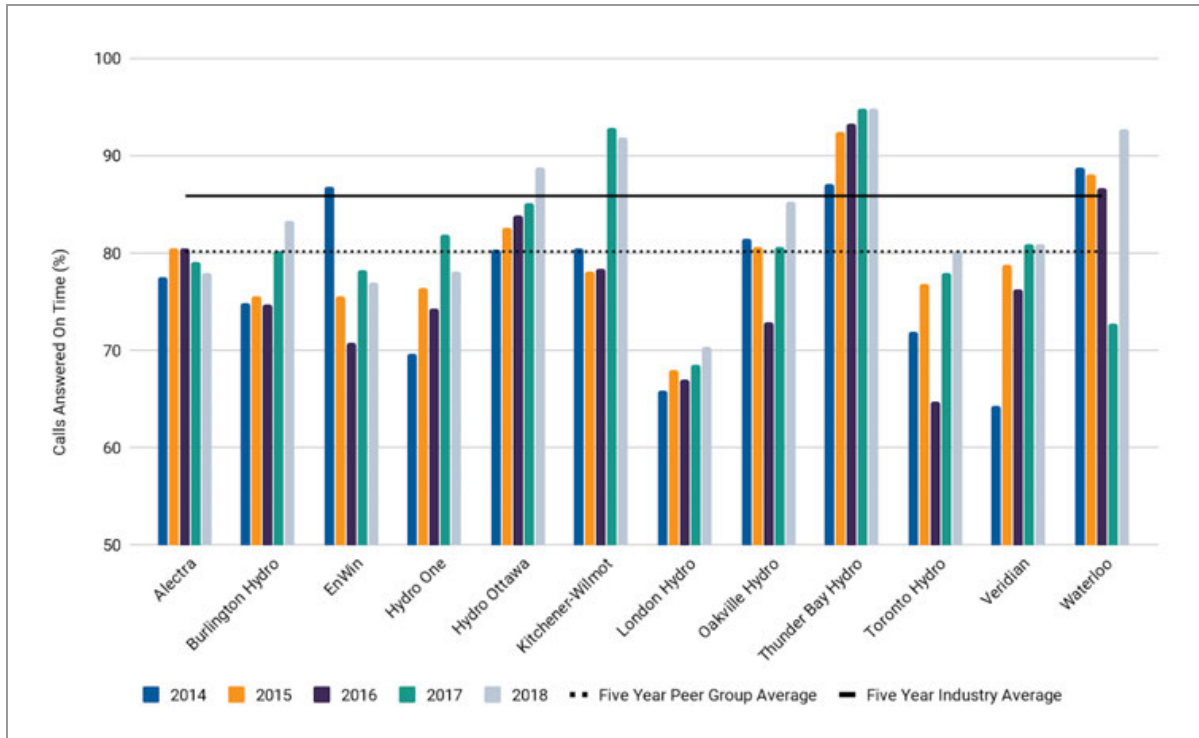
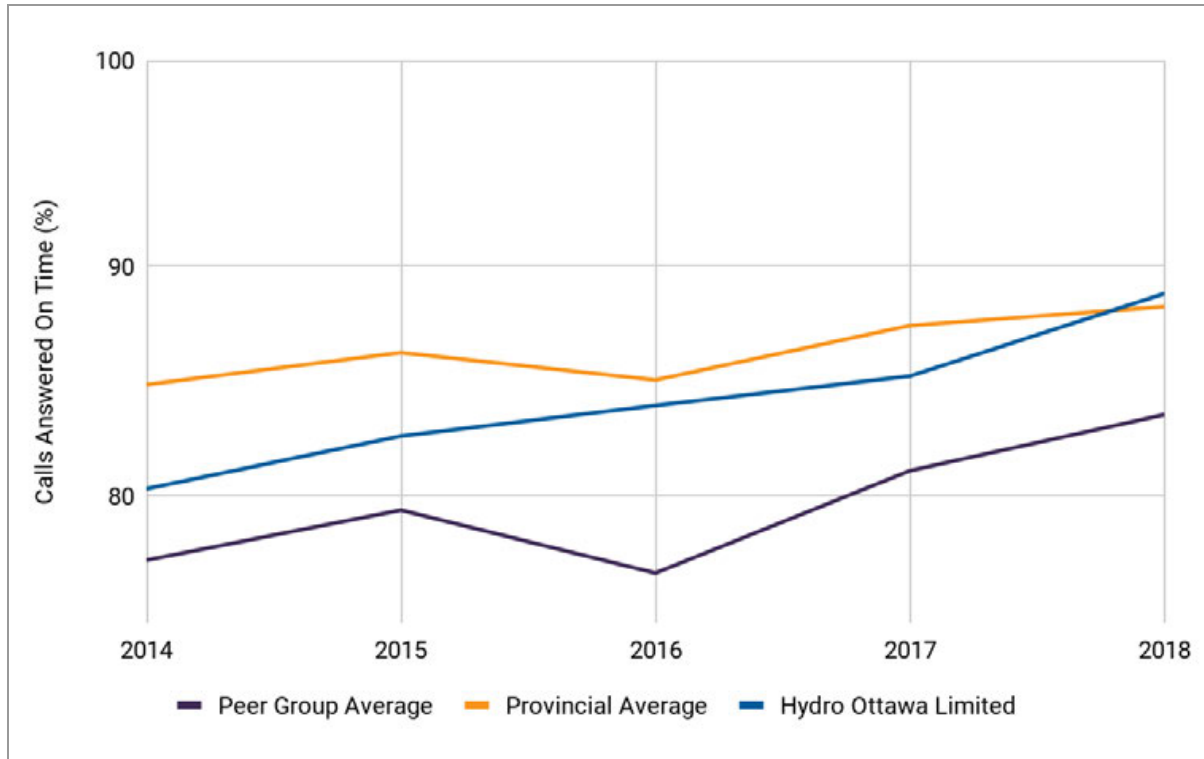


Figure 6 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Percentage of Telephone Calls Answered on Time (*Industry Target: 65%*)



3.2. CUSTOMER SATISFACTION

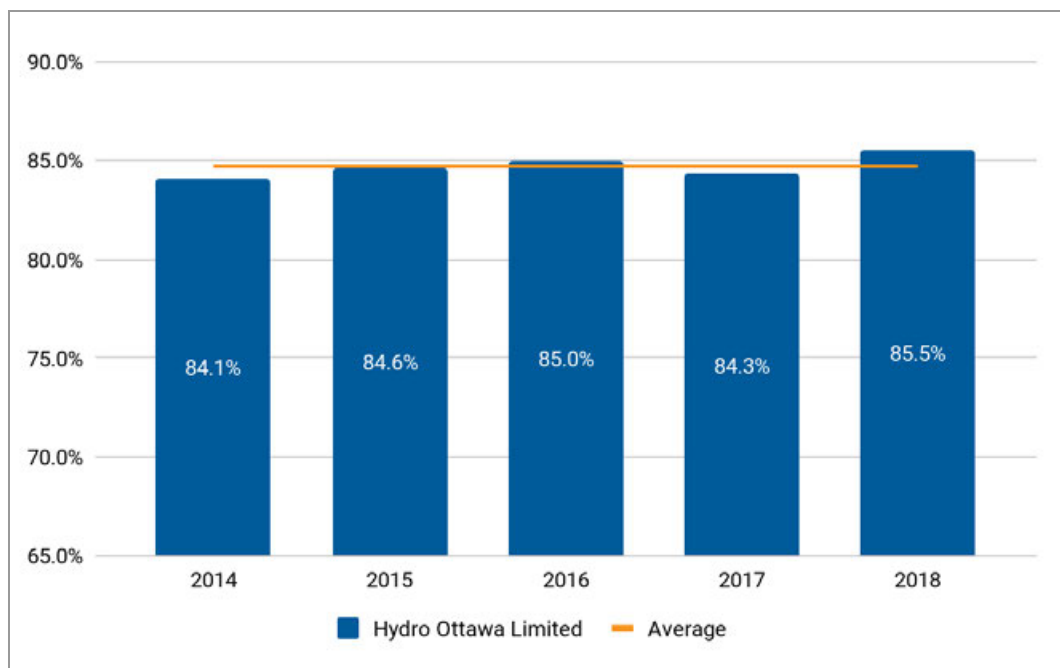
3.2.1. First Contact Resolution

First Contact Resolution is intended to be a measure of a distributor's effectiveness at satisfactorily addressing customers' complaints. Currently, the First Contact Resolution measure is undefined, and the OEB allows distributors discretion as to how this metric is reported. Hydro Ottawa derives its First Contact Resolution score from a monthly transactional survey. Customers who have recently contacted Hydro Ottawa by phone are chosen at random throughout the year to participate in a customer satisfaction survey. The customers who indicate that their issue was resolved on first contact are included under First Contact Resolution.

Given the varied methodologies for tracking and reporting First Contact Resolution, comparability among the peer group and provincial averages is moot. However, on average between 2014 and 2018, 84.7% of Hydro Ottawa customers contacted in the transactional survey indicated that their issue was resolved upon first contact. Hydro Ottawa showed continual improvement in this area throughout the 2014-2018 period, with a drop of less than 1% in 2017, which can be attributed to the transition to a new contact centre.

Hydro Ottawa's 2018 score for First Contact Resolution is the highest it has been over the last five years. Over the 2021-2025 period, the utility intends to improve its First Contact Resolution score, and to explore new methods of tracking First Contact Resolution via other communications platforms, such as web chat and social media.

Figure 7 – First Contact Resolution



3.2.2. Billing Accuracy

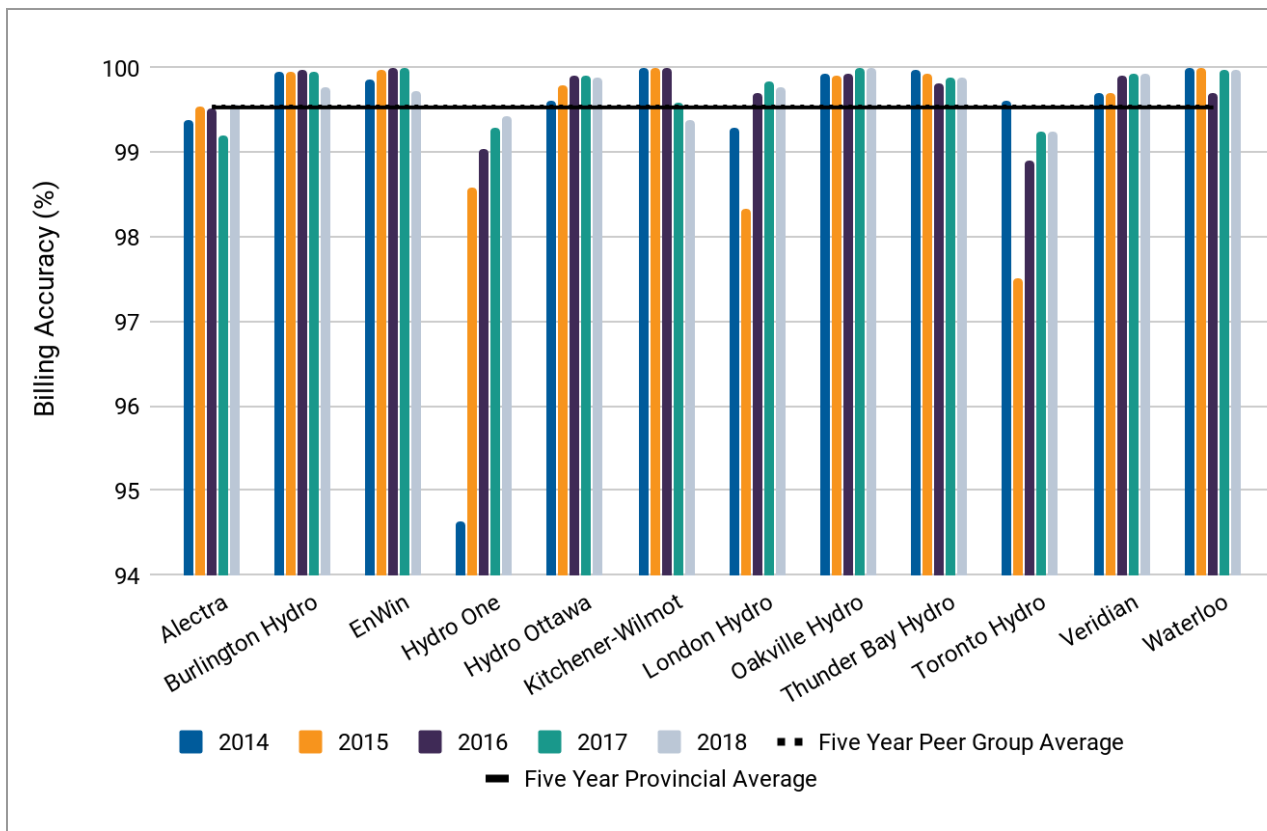
As defined in section 7.11 of the DSC, a bill is considered to be accurate if it contains correct customer information, meter readings, and rates information. Hydro Ottawa strives to always produce accurate bills for its customers, and consistently surpasses the industry Billing Accuracy target of 98%. There are a limited number of instances beyond Hydro Ottawa's control that occasionally require a customer to be rebilled, including meter communication issues and out-of-date customer information. Nevertheless, over the 2014-2018 period, Hydro Ottawa's Billing Accuracy score has consistently been above the industry target, peer group average, and provincial average (the only exception being 2014, where the utility's score was 99.6% and the provincial average was 99.7%).

Since its switch from bi-monthly to monthly billing in 2015, Hydro Ottawa has produced an average of nearly four million bills annually. Over the 2014-2018 period, an average of 99.8% of bills produced were accurate. Since 2014, Hydro Ottawa's billing accuracy score has increased by 0.3%.

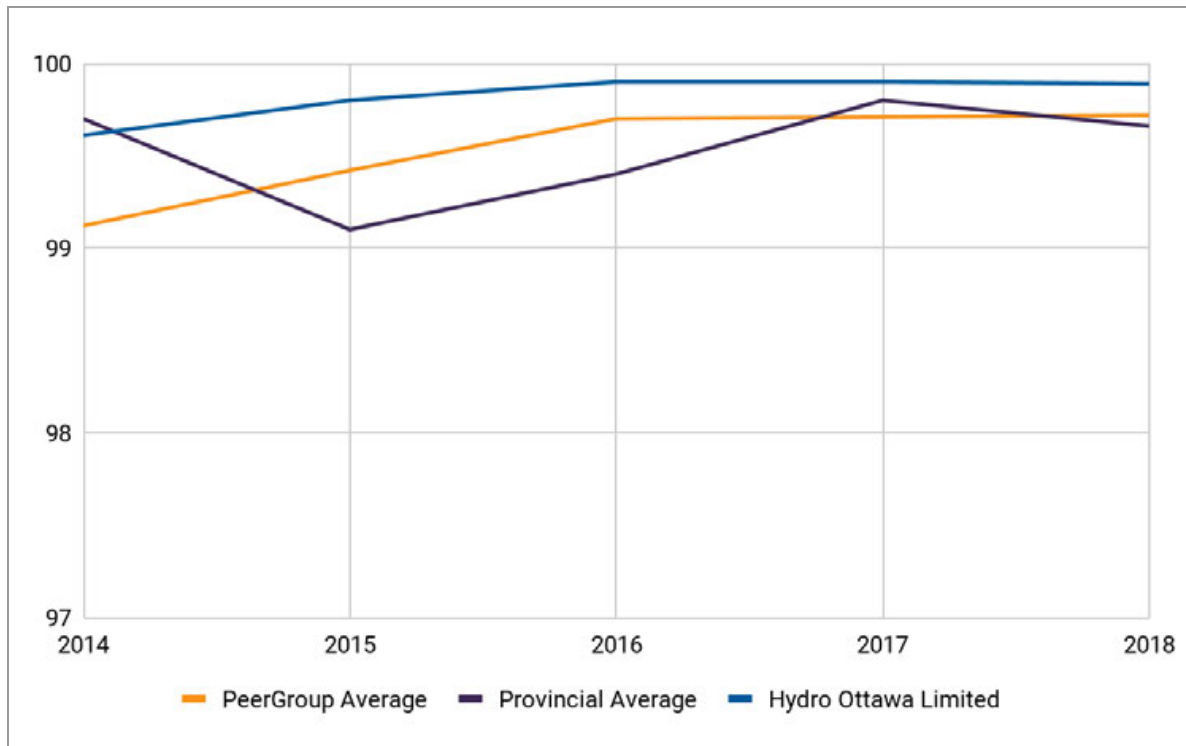
Table 6 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Billing Accuracy (Industry Target: 98%)

	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	99.1%	99.4%	99.7%	99.7%	99.7%	99.5%
Provincial Average	99.7%	99.1%	99.4%	99.8%	99.7%	99.5%
Hydro Ottawa	99.6%	99.8%	99.9%	99.9%	99.9%	99.8%

Figure 8 – Peer Group and Hydro Ottawa Results: Billing Accuracy (Industry Target: 98%)



**Figure 9 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Billing Accuracy (Industry Target: 98%)**



3.2.3. Customer Satisfaction Survey Results

The OEB requires distributors to survey customers as to their level of satisfaction and report the results to the OEB on a biennial basis at a minimum. While distributors currently have discretion to determine how to conduct their customer satisfaction surveys, the OEB expects distributors to adhere to the following principles:

- Surveys must, at a minimum, canvass customer satisfaction in the following key areas:
(a) power quality and reliability; (b) price; (c) billing and payment; (d) communications; and (e) the customer service experience.
- Distributors must follow good survey practices. Examples of such include the following:
(a) survey goals are clear and specific; (b) selected samples well represent the population to be studied; (c) care is taken in matching question wording to the concepts

1 being measured and the population studied; (d) appropriate statistical analytic and
2 reporting techniques are used; and (e) all methods of the survey are disclosed to allow
3 for evaluation and replication.

4
5 Given the varied methodologies of tracking and reporting Customer Satisfaction Survey results,
6 comparability among the peer group and provincial averages is moot.

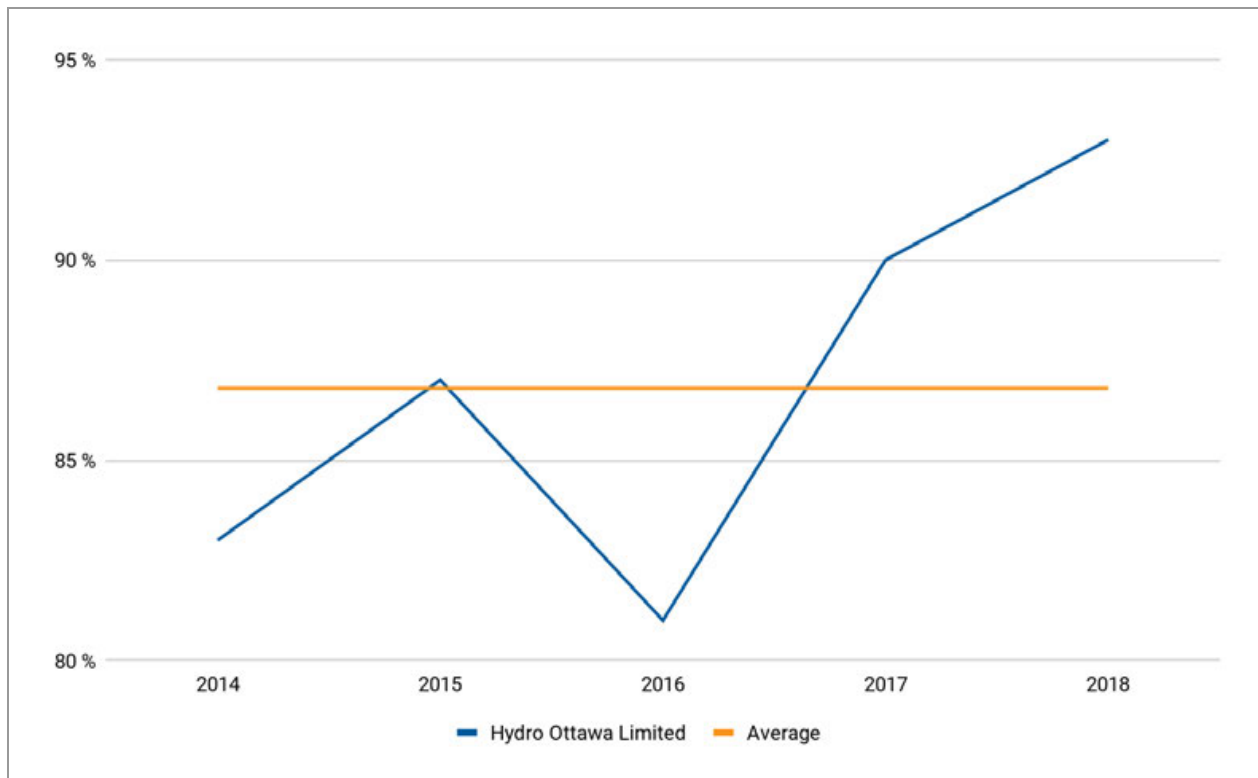
7
8 However, in terms of year-over-year analysis, for over a decade and a half Hydro Ottawa has
9 engaged a third party to conduct customer satisfaction surveys. These surveys provide valuable
10 insight into customer needs and preferences, and support the planning and improvement of
11 customer service offerings provided by the utility. The survey questions cover a wide variety of
12 relevant topics in line with the OEB's guiding principles, including reliability, power outages,
13 price, billing and payment, communications, customer service, and corporate image. Hydro
14 Ottawa makes use of this information to gain insight into customer expectations, to further
15 develop customer engagement activities, and to identify the most effective means of
16 communicating with customers. Feedback from these surveys is incorporated into Hydro
17 Ottawa's planning process and ultimately forms the basis of plans which address customer
18 needs and service offerings. A final report of survey outcomes confirms customer satisfaction
19 levels and identifies areas for improvement. While the requirement is to report on a biennial
20 basis to the OEB, Hydro Ottawa reports its Customer Satisfaction Survey results annually.

21
22 While Hydro Ottawa's Customer Satisfaction Survey results have shown some fluctuation over
23 the 2014-2018 period, the results indicate that customer satisfaction has risen steadily since
24 2014 and has improved overall by 10% since that time.

25
26 The significant decrease in customer satisfaction that was observed in 2016 merits explanation.
27 Consistent with historical findings, the final report provided to Hydro Ottawa in 2016 indicated
28 that a customer's ability to pay is directly correlated to overall satisfaction. Given the steady
29 increases in electricity costs (beyond distribution rates) that had been accumulating prior to

1 2016, customers expressed concern regarding their increasing bills, despite their efforts to
2 reduce consumption. In the face of province-wide public dissatisfaction with electricity costs,
3 Hydro Ottawa continued to improve its customers' experience through various initiatives, such
4 as the launch of a new smartphone app, expanded customer contact centre hours, and
5 enhanced web and social media communications. In addition, subsequent customer satisfaction
6 and public polling research found that the introduction of rate mitigation programs by the
7 provincial government in 2016 and 2017 had the effect of attenuating many of the concerns of
8 Ontario consumers with respect to electricity prices. In turn, Hydro Ottawa's Customer
9 Satisfaction Survey results increased significantly in 2017 and 2018.

Figure 10 – Customer Satisfaction Survey Results



4. OPERATIONAL EFFECTIVENESS

4.1. SAFETY

4.1.1. Level of Public Awareness

The Level of Public Safety Awareness measure was introduced to the Electricity Distributor Scorecard in 2015 and is based upon a standardized, public survey which must be conducted, at a minimum, biennially. The Electrical Safety Authority (“ESA”) and some electricity distributors assisted the OEB in creating the survey. Distributors are required to survey not only their own customers, but the general public within their service territory.

Helping customers understand the importance of staying safe and using electricity wisely is a priority for Hydro Ottawa. The utility works to continuously enhance public awareness of electrical safety through three primary vehicles: (a) its corporate website and social media

platforms; (b) a well-established student education program; and (c) active participation in hazard-specific education campaigns, such as the utility's annual promotion of the Ontario Regional Common Ground Alliance's ("ORCGA") Dig Safe Month, the ESA's Powerline Safety Month, Smart-as-a-Fox videos and the ESA's Holiday Safety Campaign.

To date, Hydro Ottawa has completed two Public Safety Awareness surveys. Both the 2016 and 2018 surveys resulted in a public safety awareness score of 70%. Hydro Ottawa acknowledges that this is one of the lower scores in the province, and is the lowest score among the established peer group, as depicted in Table 7.

**Table 7 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Public Safety Survey Results**

	2015	2016	2017	2018	4-Year Average
Peer Group Average	79.8%	79.8%	80.3%	80.3%	82.0%
Provincial Average	81.1%	81.1%	82.4%	82.3%	81.7%
Hydro Ottawa	70.0%	70.0%	70.0%	70.0%	70.0%

Hydro Ottawa will conduct a third survey in 2020 and plans to augment its public safety awareness efforts over the next two years by developing a communications strategy focused on increasing public awareness about electricity safety. Ultimately, Hydro Ottawa aims to continue to position the utility as a reliable and trusted source for safety information for Ottawa's residents, communities, and businesses, while ensuring a reliable supply of electricity throughout its service territory.

By leveraging channels such as community and industry events, social media, and both a mainstream and digital advertising campaign, Hydro Ottawa will focus on extending the utility's public safety efforts to the broader Ottawa community through a holistic and long-term strategy. Hydro Ottawa will also be developing additional messaging on emergency preparedness, covering topics such as floods, tornadoes, and winter storms, as they have become more frequent and severe over the past few years due to the effects of climate change. In addition,

Hydro Ottawa will continue with recently expanded activities related to the promotion of public safety awareness to children and youth through in-school presentations, online presence, and contests, similar to the ongoing and long-standing internal operational and employee safety approach. Finally, this strategy will continue to reiterate the top six safety messages measured by the OEB as part of the public safety awareness survey throughout Hydro Ottawa's service territory.

Hydro Ottawa's goal is to incrementally increase its public safety awareness score from 70% to 77% by 2022.

4.1.2. Level of Compliance with Ontario Regulation 22/04

The Compliance with Ontario Regulation 22/04 component of the public safety measure addresses the level of distributor compliance to *Electrical Distribution Safety, O. Reg. 22/04*. This includes Audit, Declaration of Compliance, Due Diligence Inspections, Public Safety Concerns, and Compliance Investigations. These five elements are evaluated by the ESA's Powerlines Department under different timeframes, and are not normalized based on the distributor's size. As a whole, these elements determine the compliance status that is reported by the ESA each year under this metric. The target for each distributor is to be deemed "Compliant" with O. Reg. 22/04.

Hydro Ottawa has been deemed Compliant with O. Reg. 22/04 each year over the 2014-2018 period. The 2018 ESA audit report of the utility's compliance with the regulation highlighted four items: (a) Hydro Ottawa was compliant in the five key compliance sections examined; (b) the utility had implemented the action plans developed for the recommendations cited in the 2017 audit; (c) equipment and plans or standard design drawings used in the construction of the utility's distribution system were approved, and (d) constructed plant was inspected and certified safe before being put into use. The audit confirmed that Hydro Ottawa has a genuine interest in improving health and safety, and that the utility continued to effectively implement its health, safety, and environment management system, and maintain certification to the Occupational Health and Safety Assessment Series 18001 standard. ESA's 2018 audit report also highlighted

that Hydro Ottawa continues to be active in the community promoting conservation and demand management, educating children and youth about electricity safety, helping to mitigate the impact of energy costs for those in need, and making other contributions to the quality of life in Ottawa.

Over the course of the 2021-2025 period, Hydro Ottawa intends to maintain and uphold its commitment to safety by maintaining Compliance under O. Reg. 22/04.

Table 8 – Hydro Ottawa Level of Compliance with O. Reg. 22/04²

	2015	2016	2017	2018	2018
Hydro Ottawa	C	C	C	C	C

4.1.3. Serious Electrical Incident Index

The Serious Electrical Incident Index component of the public safety measure is intended to address the resultant impact in improving public electrical safety on the distribution network over time. A “serious electrical incident” is defined by Section 12 of O. Reg. 22/04, and only equipment which is applicable to Section 12 is considered. A serious electrical incident will appear as part of this scorecard component if it was determined by the ESA that a member of the public was involved in the incident (i.e. caused a death or critical injury, or had the potential to cause death or critical injury). A serious electrical incident will not appear as part of this scorecard component if it was determined by the ESA that the incident was initiated by a non-distributor worker and there were no deaths or critical injuries involving a member of the public.

Both the actual number and normalized rate of serious electrical incidents occurring on a distributor’s network are shown on the scorecard. Performance targets for the serious electrical incident component of the scorecard is distributor-specific and is based on each distributor’s historical data and prior performance.

² The letter “C” in this table denotes “Compliant.”

Historically, the number of serious electrical incidents involving the general public in Hydro Ottawa's service territory has been very low, due in part to the utility's public education initiatives outlined above. For the last five years, Hydro Ottawa's serious electrical incident component has been consistently below both the provincial and peer group averages. Given the utility's historical performance in this area, its target is zero, and thus any incident deemed to be serious by the ESA within Hydro Ottawa's territory will render a result of the target not being met.

In 2014, one reported electrical incident was deemed to have the potential to be a serious electrical incident because it occurred in a public space. In 2015, one reported electrical incident was deemed to be serious on account of a member of the public requiring hospital treatment after coming into contact with an open wire secondary conductor while accessing the roof of a commercial business. From 2016 through 2018, no incidents have been deemed to be serious electrical incidents by the ESA. The number of incidents is expected to continue to remain low.

Table 9 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Number of Serious Electrical Incidents

	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	1.25	1.42	1.83	1.83	3.58	1.98
Provincial Average	0.31	0.31	0.34	0.39	0.78	0.43
Hydro Ottawa	1	1	0	0	0	0.40

Table 10 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Normalized Number of Serious Electrical Incidents (Incidents per 10, 100, or 1000 km of line)

	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	0.112	0.187	0.255	0.308	0.629	0.298
Provincial Average	0.046	0.054	0.051	0.061	0.175	0.077
Hydro Ottawa	0.182	0.182	0.000	0.000	0.000	0.073

Figure 11 – Peer Group and Hydro Ottawa Results: Normalized Number of Serious Electrical Incidents (*Incidents per 10, 100, or 1000 km of line*)

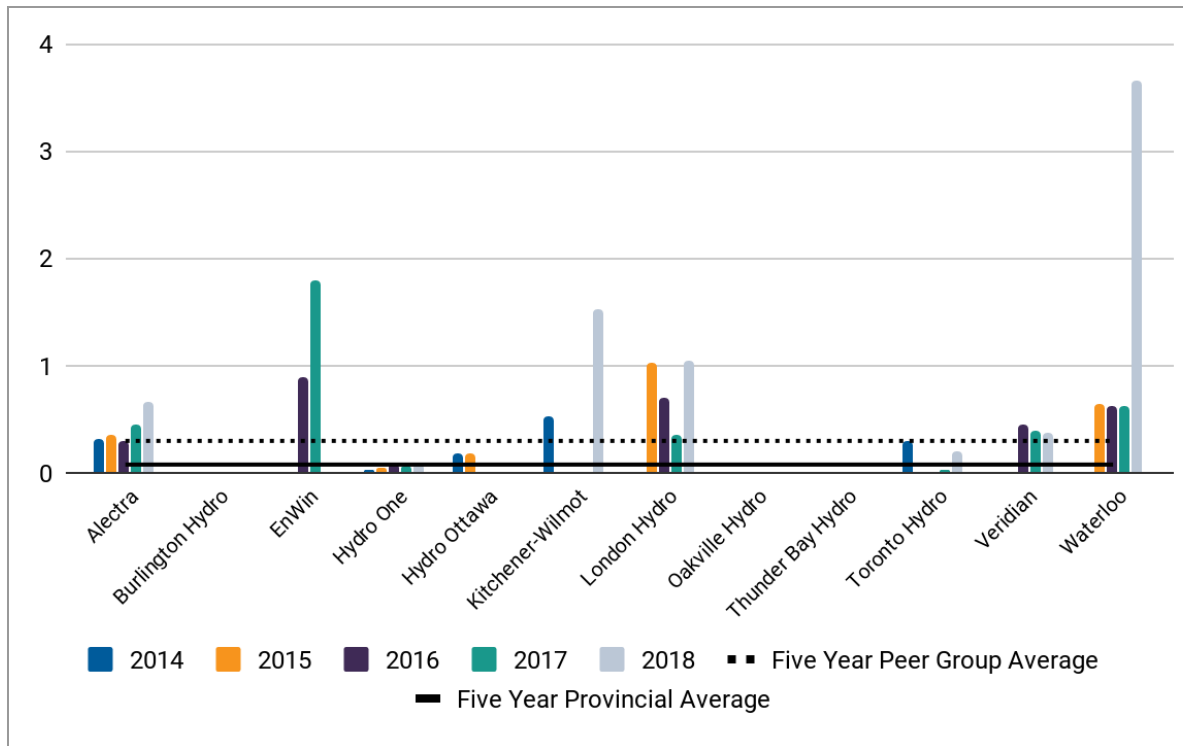
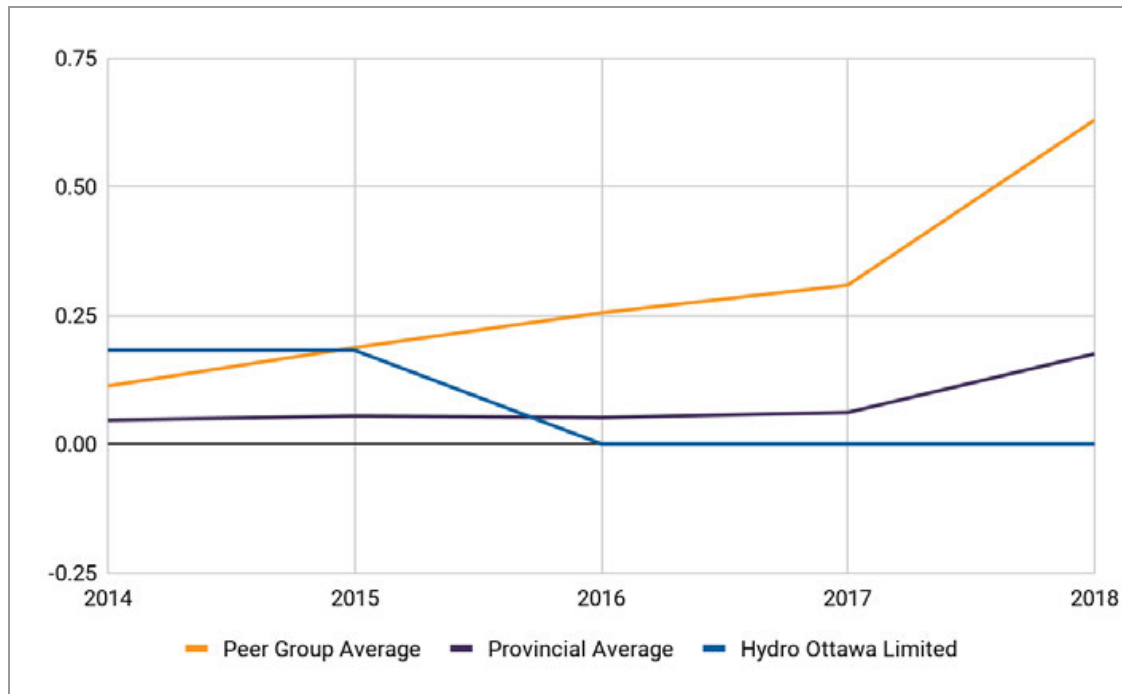


Figure 12 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Serious Electrical Incidents (Normalized for Incidents per 10, 100, or 1000 km of line)



4.2. SYSTEM RELIABILITY

4.2.1. Average Number of Hours that Power to a Customer is Interrupted

The scorecard includes a System Average Interruption Duration Index ("SAIDI"), which is an industry-wide standard that is used to measure the average number of hours that power to a customer is interrupted annually. In order to facilitate customer understanding and transparency, the OEB employs a plain language definition of SAIDI as the label for this scorecard metric, in lieu of the term itself. This component of the scorecard is adjusted for both Loss of Supply and Major Event Days.

Distributor-specific targets are included on the scorecard, which are based on each distributor's own historical performance. Over the 2014-2018 period, Hydro Ottawa consistently exceeded its distributor-specific target for SAIDI. Hydro Ottawa consistently exceeded both the provincial average and peer group average, and furthermore showed continual year-over-year

improvement.³ The average Hydro Ottawa customer experienced 1.02 outages per year, on average, during the 2014 to 2018 period. In 2017, the utility's SAIDI measure increased to 1.11, which can mainly be attributed to defective equipment.

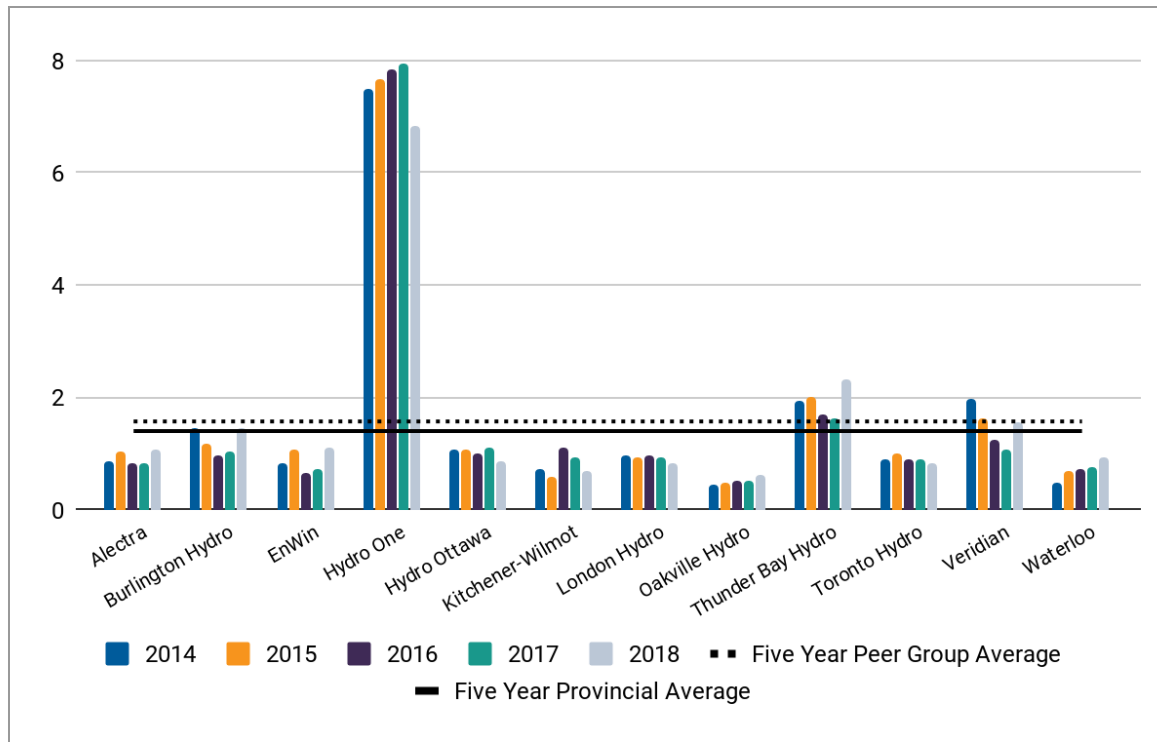
Hydro Ottawa strives to maintain or improve its system reliability performance indicators from year to year. Towards this goal, Hydro Ottawa's asset management practices are essential for managing the reliability impact of its assets by ensuring infrastructure renewal is keeping pace with need. Hydro Ottawa continues to seek improvements by assessing and implementing new methods of operation to increase system resilience and invest in grid technology to reduce restoration times when outages do occur. In 2018, Hydro Ottawa customers experienced less than one hour (0.85) of interruption on average.

Table 11 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Average Number of Hours that Power to a Customer is Interrupted

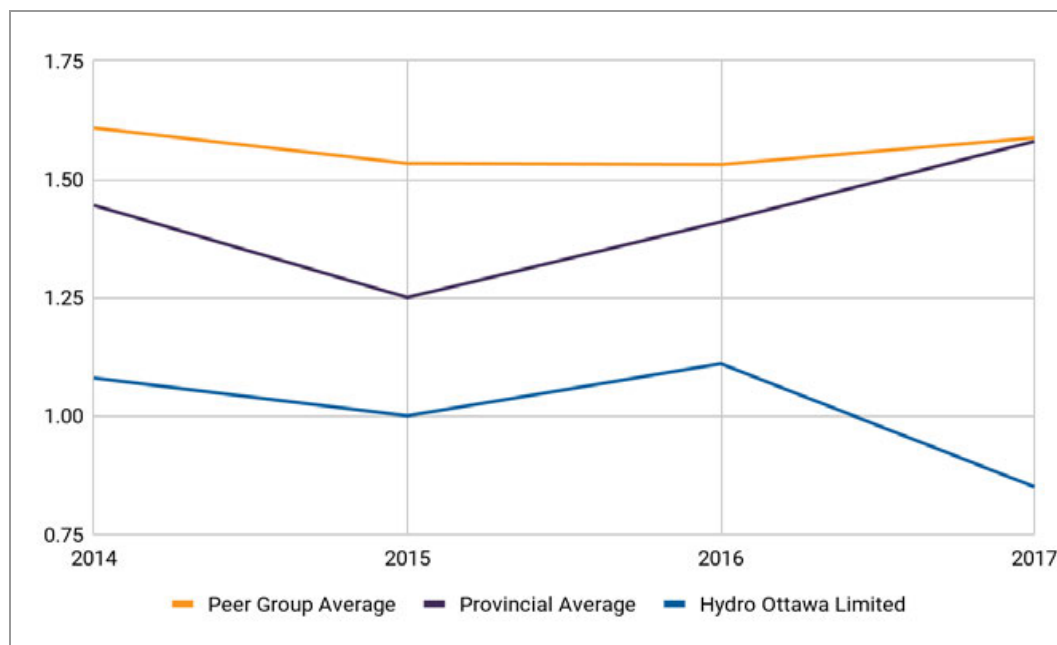
	2014	2015	2016	2017	2018	5-Year Average	Hydro Ottawa Target (2018)
Peer Group Average	1.59	1.61	1.53	1.53	1.59	1.57	
Provincial Average	1.35	1.49	1.41	1.53	1.63	1.48	
Hydro Ottawa	1.08	1.08	1.00	1.11	0.85	1.02	1.42

³ Note that for Average Number of Hours that Power to a Customer is Interrupted and Average Number of Times that Power to a Customer is Interrupted, a lower number indicates "better" reliability, while a higher number indicates "worse" reliability.

Figure 13 – Peer Group and Hydro Ottawa Results: Average Number of Hours that Power to a Customer is Interrupted



**Figure 14 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Average Number of Hours that Power to a Customer is Interrupted**



4.2.2. Average Number of Number of Times that Power to a Customer is Interrupted

The scorecard also includes a System Average Interruption Frequency Index (“SAIFI”), which is an industry-wide standard that is used to measure the average number of times that power to a customer is interrupted annually. In order to facilitate customer understanding and transparency, the OEB employs a plain language definition of SAIFI as the label for this scorecard metric, in lieu of the term itself. This component of the scorecard is adjusted for both Loss of Supply and Major Event Days.

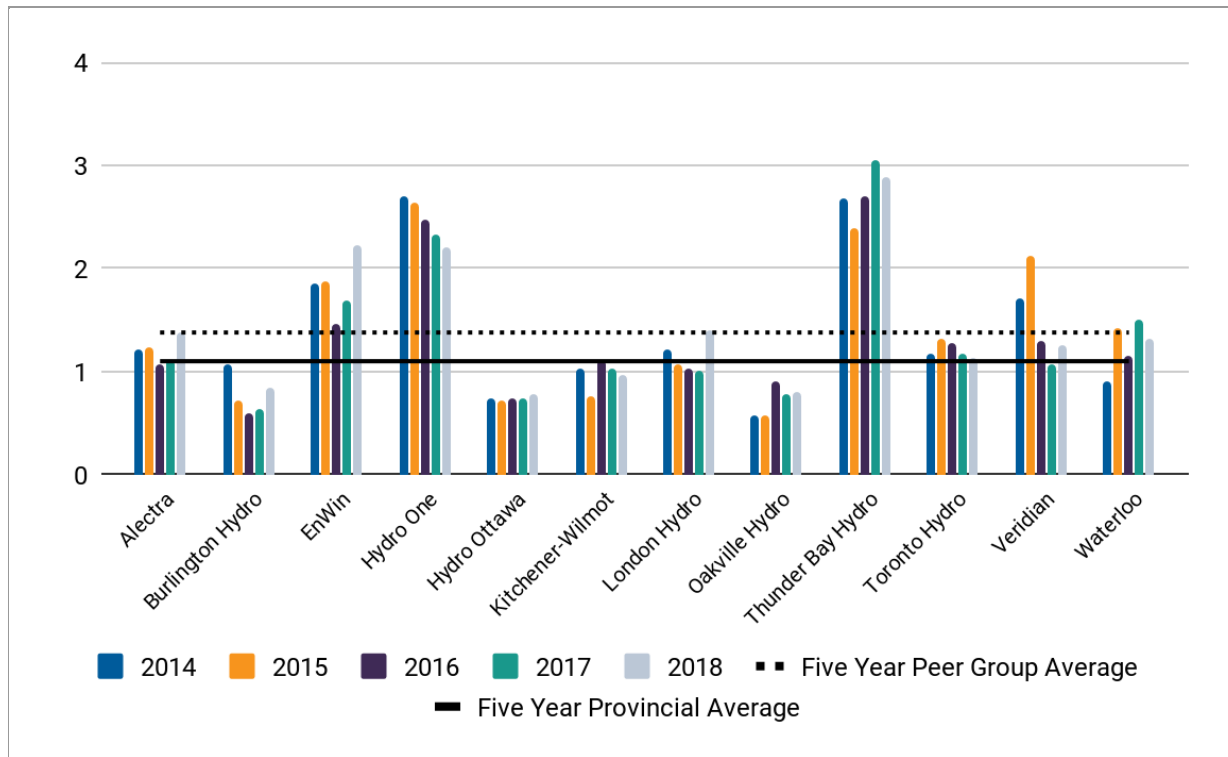
Distributor-specific targets are included on the scorecard, which are based on each distributor’s own historical performance. Over the 2014-2018 period, Hydro Ottawa consistently met and exceeded its distributor-specific target for SAIFI. In 2018, the frequency in which the utility’s customers experienced an outage increased slightly from 0.73 to 0.78 times per year, which can mainly be attributed to defective equipment. However, Hydro Ottawa’s SAIFI remains well below

its distributor-specific target, the provincial SAIFI average, and the peer group average. Hydro Ottawa continually assesses the distribution system's service reliability. Where issues are found, the appropriate analysis and action is undertaken to address weaknesses and improve performance. System reliability is integral to all work undertaken as part of system planning and asset management processes.

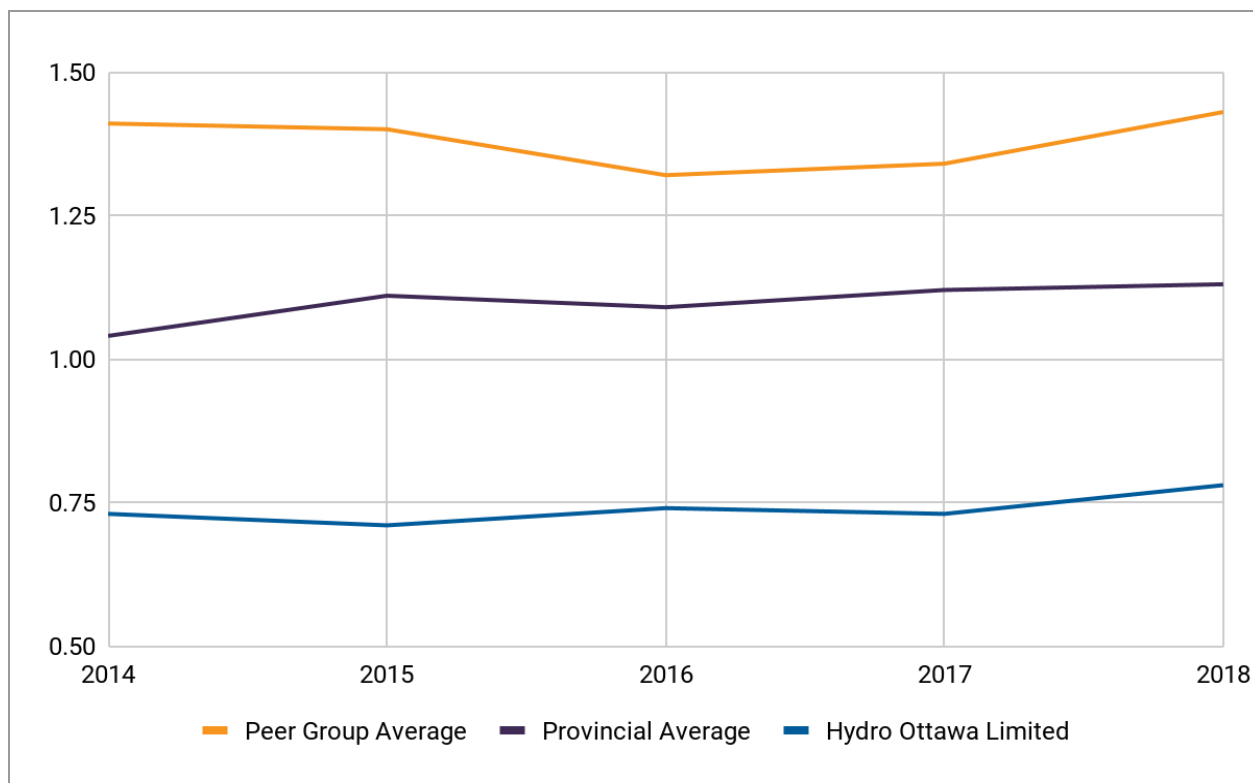
Table 12 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Average Number of Times that Power to a Customer is Interrupted

	2014	2015	2016	2017	2018	5-Year Average	Hydro Ottawa Target (2018)
Peer Group Average	1.41	1.40	1.32	1.34	1.43	1.38	
Provincial Average	1.04	1.11	1.09	1.12	1.13	1.10	
Hydro Ottawa	0.73	0.71	0.74	0.73	0.78	0.74	1.04

Figure 15 – Peer Group and Hydro Ottawa Results: Average Number of Times that Power to a Customer is Interrupted



**Figure 16 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Average Number of Times that Power to a Customer is Interrupted**



4.3. ASSET MANAGEMENT

4.3.1. Distribution System Plan Implementation Progress

The OEB includes an Asset Management measure on the scorecard. Distributors are required to measure Distribution System Plan Implementation Progress and report on such progress annually. Distributors are permitted discretion as to how this measure is implemented, and must describe their methodology annually in the scorecard's accompanying Management Discussion and Analysis. Targets have not been set for this measure.

Hydro Ottawa's Distribution System Plan ("DSP"), which can be found in Exhibit 2-4-3, forecasts capital expenditures that are required to maintain and expand its system to serve current and future customers over the 2021-2025 period. The DSP details Hydro Ottawa's prioritization

1 process, tools, and methods which ultimately direct the utility's capital expenditure planning
2 process.

3
4 For the 2014-2018 period, the Distribution System Plan Implementation Progress measure
5 assessed Hydro Ottawa's effectiveness at planning and implementing its previous DSPs. The
6 utility measures the progress of its DSP implementation as a ratio of actual total capital
7 expenditures made in a calendar year over the total amount of planned capital expenditures for
8 that calendar year in the System Renewal and System Service categories. The measure
9 excludes unplanned asset failures (plant failures), System Access, and General Plant
10 investments.

11
12 Hydro Ottawa strives for its Distribution System Plan Implementation Progress measure to be
13 as close to 100% as possible, which ultimately signals good planning and execution of its DSP.
14 For the 2014-2018 period, Hydro Ottawa achieved a 98% Distribution System Plan
15 Implementation Progress measure. From 2014 to 2017, Hydro Ottawa's actual versus planned
16 spending remained fairly constant at 94% or 95%. In 2018, Hydro Ottawa completed 113% of its
17 planned project spending. Increased expenditures in 2018 were driven by required scope
18 changes at two large station projects as well as required changes in the timing of expenditures.
19 The 2019 and 2020 plans have been adjusted accordingly to keep on track with the 2016-2020
20 DSP requirements.

21
22 Given the flexibility the OEB provides on the methodology of reporting Distribution System Plan
23 Implementation Progress, direct comparisons between distributors on this measure is not
24 always possible. Some distributors use a qualitative approach, such as "on track" or "in
25 progress", while others provide a quantitative result similar to Hydro Ottawa's approach.
26 Consequently, peer group and provincial averages, as shown in Table 13 and Figures 17 and 18

below, have been calculated to exclude all distributors which employ a qualitative measurement of this metric.⁴

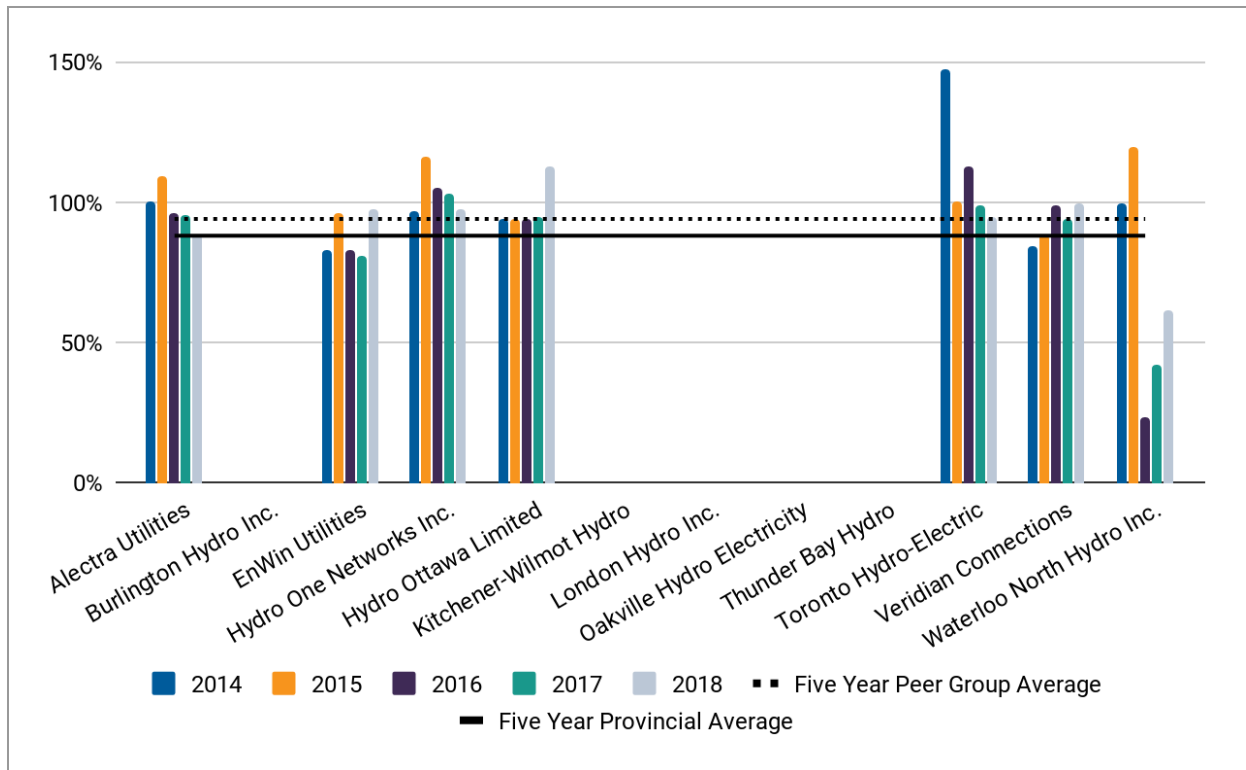
While imperfect, this method of comparison allows Hydro Ottawa to review its results relative to distributors which use a similar calculation methodology for this measure. Hydro Ottawa's results are comparable to both the peer group and provincial averages.

**Table 13 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Distribution System Plan Implementation Progress**

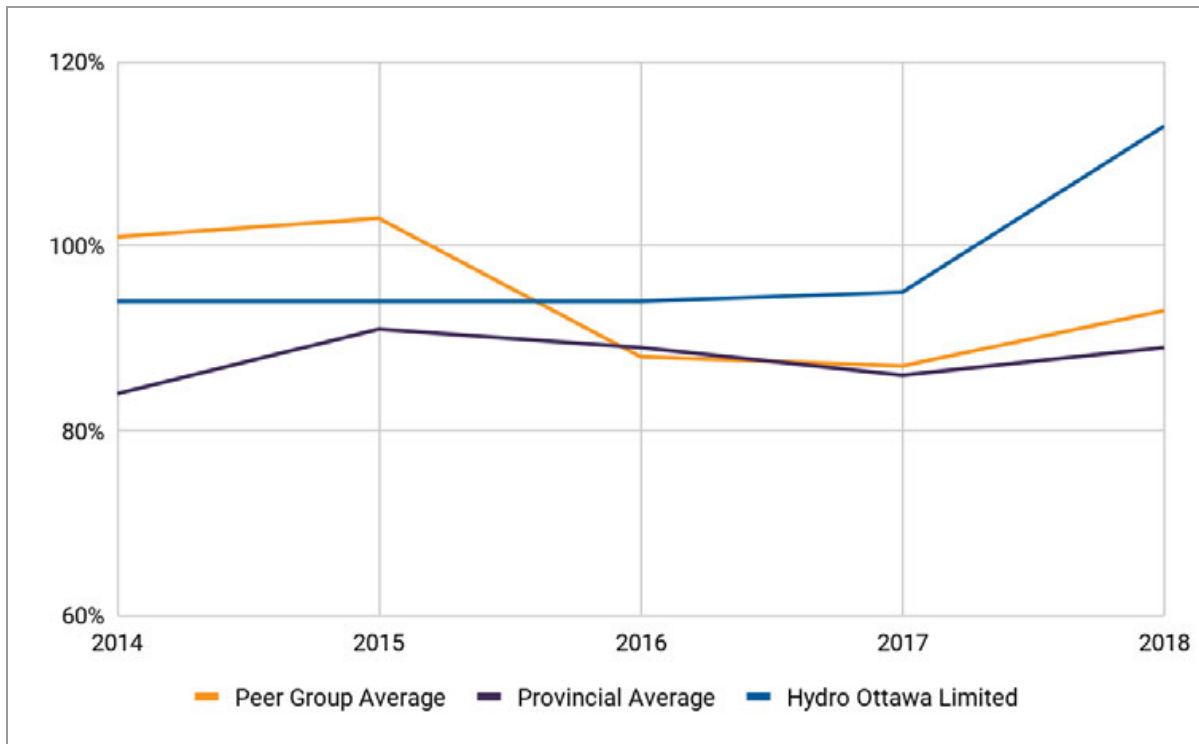
	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	101%	103%	88%	87%	93%	94%
Provincial Average	84%	91%	89%	86%	89%	88%
Hydro Ottawa	94%	94%	94%	95%	113%	98%

⁴ The number of distributors in Ontario that use a quantitative measure varies per year. The yearly provincial averages were calculated using the following number of distributors per year: 2014, 28; 2015, 31; 2016, 33; 2017, 34; and 2018, 37.

**Figure 17 – Peer Group and Hydro Ottawa Results: Distribution System Plan
 Implementation Progress**



**Figure 18 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Distribution System Plan Implementation Progress**



4.4. COST CONTROL

4.4.1. Efficiency Assessment

The total costs for Ontario distributors are evaluated by the Pacific Economics Group (“PEG”) on behalf of the OEB to produce a single efficiency ranking. Distributors are divided into five groups based on the magnitude of difference between their respective actual and predicted costs. In 2014, Hydro Ottawa’s results placed the utility in Cohort 3, which is considered “average efficiency” and is defined as having actual costs within +/- 10% of predicted costs. In 2014, Hydro Ottawa’s actual costs were evaluated by the PEG model to be 9.4% higher than predicted costs. The utility’s ranking was thus less than 1% away from the +/- 10% efficiency assessment threshold between Cohorts 3 and 4.

1 In 2015, PEG assessed Hydro Ottawa's actual costs to be 12.1% above predicted costs, which
2 consequently pushed the utility into Group 4. Under the PEG model, Group 4 is defined as
3 having actual costs between 10% and 25% above predicted costs. In the years 2016, 2017, and
4 2018, Hydro Ottawa remained in Group 4 with increasing differences between actual and
5 predicted costs of 14.5%, 15.8%, and 16.8%, respectively.

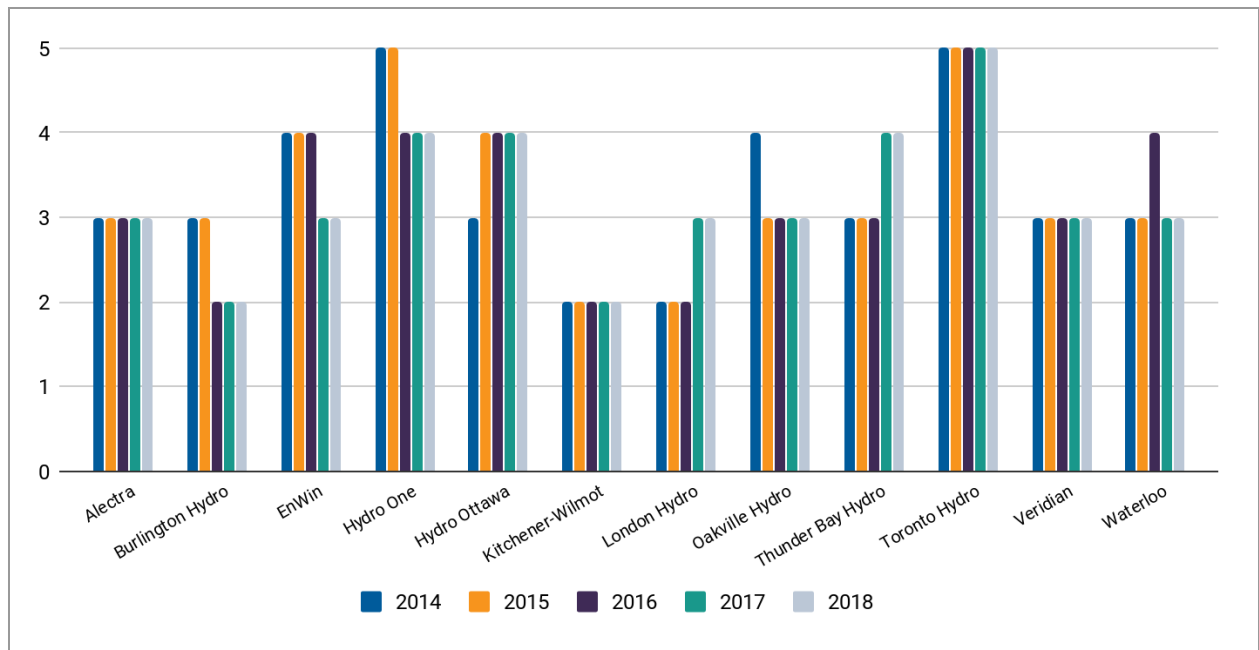
6
7 Hydro Ottawa is currently experiencing a sustained need for significant capital investments in its
8 distribution system, which negatively impacts its efficiency assessment. While all efforts are
9 made to keep operating costs under control and find productivity improvements where possible,
10 Hydro Ottawa's capital investment program is necessary to address its aging infrastructure and
11 expanding customer growth. As further explained in Attachment 1-1-12(E): PEG Benchmarking
12 Forecast, under the PEG model it is expected that Hydro Ottawa will remain in Cohort 4 for the
13 foreseeable future. While Hydro Ottawa does not dispute the value of total cost benchmarking
14 as a measure of productivity and efficiency, as part of this Application the utility is submitting an
15 alternative total cost benchmarking study. For additional information on the rationale for this
16 approach, and the results that were yielded under this separate analysis, please see
17 Attachment 1-1-12(E).

18
19 As of 2018, the number of Ontario distributors in each cohort is as follows:

- 20
21
- 22 ● Cohort 1 (Actual costs are more than 25% *below* predicted costs): 6 distributors
 - 23 ● Cohort 2 (Actual costs are between 10% and 25% *below* predicted costs): 19 distributors
 - 24 ● Cohort 3 (Actual costs are within 10% of predicted costs): 26 distributors
 - 25 ● Cohort 4 (Actual costs are between 10% and 25% *above* predicted costs): 9 distributors
 - 26 ● Cohort 5 (Actual costs are more than 25% *above* predicted costs): 3 distributors
- 27

Figure 19 presents the peer group's Efficiency Assessments over the 2014-2018 period.

Figure 19 – Efficiency Assessments (1 = Most Efficient, 5 = Least Efficient)



4.4.2. Total Cost per Customer

Total Cost per Customer is likewise evaluated by PEG on behalf of the OEB. This metric is calculated as the sum of a distributor's capital and operating costs according to the PEG model, and divided by the total number of customers that a distributor serves.

As of the end of 2018, Hydro Ottawa had slightly over 335,000 customers within its service territory. For the 2014-2017 period, Hydro Ottawa's Total Cost per Customer remained below both the peer group average and the provincial average.

In 2017, Hydro Ottawa's Total Cost per Customer decreased from its 2016 result by \$11 per customer. Hydro Ottawa's focus on productivity and cost reduction initiatives, along with the overall Strategic Direction to deliver reliable service while operating efficiently and effectively in order to keep rates competitive, contributed to the utility's decrease in total costs despite inflation and other cost increases.

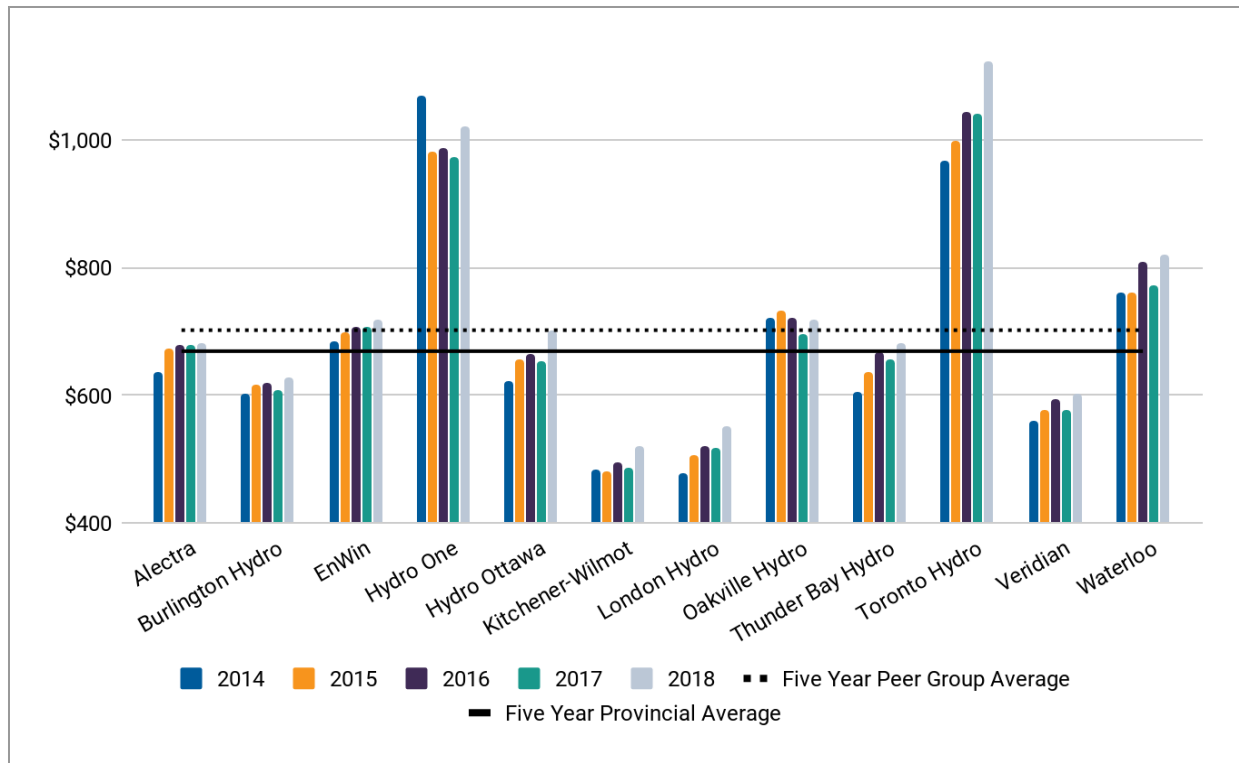
In 2018, the utility's metric score increased slightly above the provincial average, but remained below the peer group average. Hydro Ottawa's Total Cost per Customer for 2018 was the highest it has been over the 2014-2018 period. As discussed above, this result was anticipated due to the utility's capital investment program that has been addressing aging infrastructure and significant customer growth in the service territory.

Over the five-year period, Hydro Ottawa's average Total Cost per Customer, according to the PEG model, was \$659 per customer.

**Table 14 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Total Cost per Customer (As per the PEG Model)**

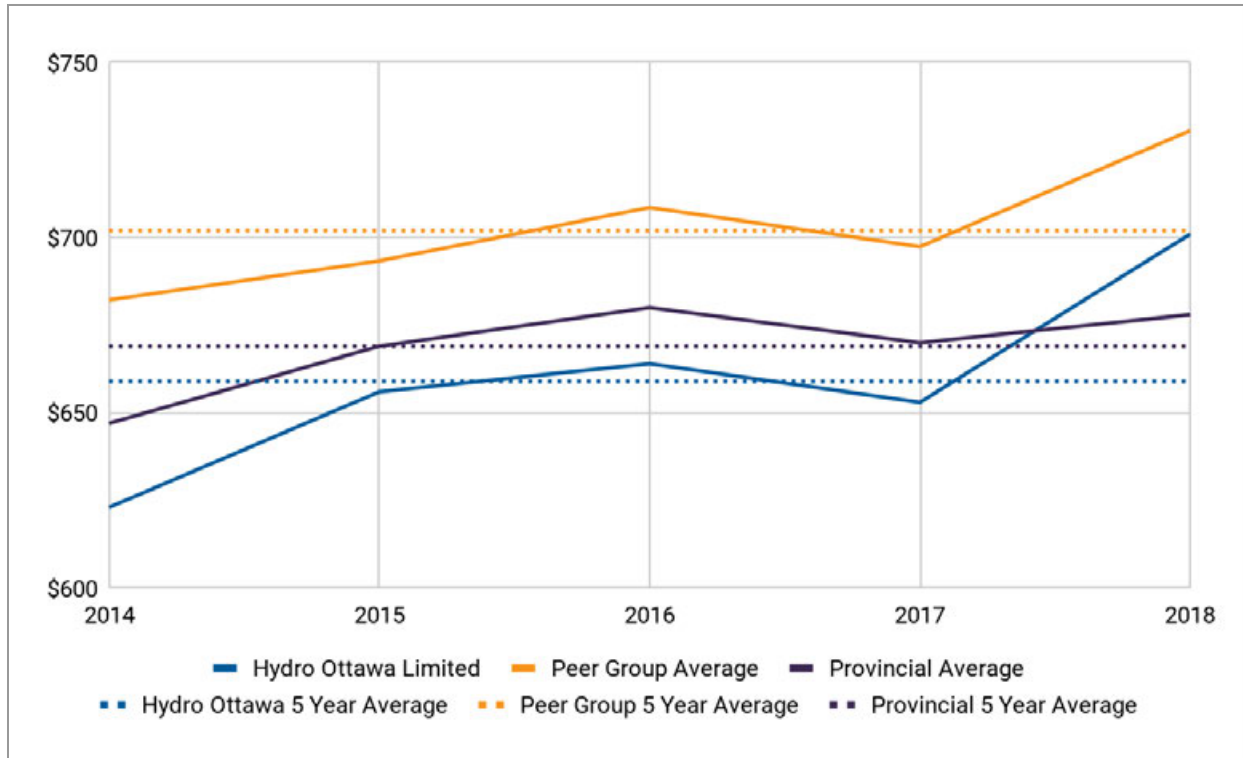
	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	\$682	\$693	\$709	\$697	\$731	\$702
Provincial Average	\$647	\$669	\$680	\$670	\$678	\$669
Hydro Ottawa	\$623	\$656	\$664	\$653	\$701	\$659

1 **Figure 20 – Peer Group and Hydro Ottawa Results: Total Cost per Customer**
 2 **(As per the PEG model)**
 3



4

**Figure 21 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Total Cost Per Customer (As per the PEG Model)**



4.4.3. Total Cost per km of Line

Total Cost per km of Line is also evaluated by PEG on behalf of the OEB. This metric is calculated as the sum of a distributor's capital and operating costs according to the PEG model, and divided by the total kilometres of distribution line within the distributor's service territory.

Over the 2014-2018 period, Hydro Ottawa's total cost per km of line was higher than the peer group average and provincial average. It should be noted, however, that this measure (as calculated by PEG) does not account for Hydro Ottawa's unique service territory size. Its physical territory is comprised of a geographically diverse area with significant population dispersion, and a unique mix of 40% urban core and 60% rural service areas.

What's more, Hydro Ottawa would also emphasize that it only reports primary lines to the OEB, and thus the PEG model excludes any secondary lines within Hydro Ottawa's service territory. Legacy information from the utility's predecessor utilities has presented limitations in reporting accurate secondary line information. For example, only certain portions of secondary lines in the downtown core are captured in Hydro Ottawa's Geographical Information System. Secondary lines are therefore not counted at all in Hydro Ottawa's circuit kilometres of line, as there would be a significant discrepancy between recorded secondary lengths and actual secondary lengths. If secondary service lines were to be included in PEG's calculations, it can reasonably be assumed that the utility's cost per km of line would be significantly lower.

Table 15 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Total Cost per km of Line (As per the PEG Model)

	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	\$31,594	\$33,061	\$29,678	\$25,759	\$27,105	\$29,440
Provincial Average	\$28,425	\$29,519	\$29,304	\$27,350	\$27,372	\$28,394
Hydro Ottawa	\$36,169	\$38,154	\$38,794	\$37,950	\$40,766	\$38,367

Figure 22 – Peer Group and Hydro Ottawa Results: Total Cost per km of Line (As per the PEG Model)

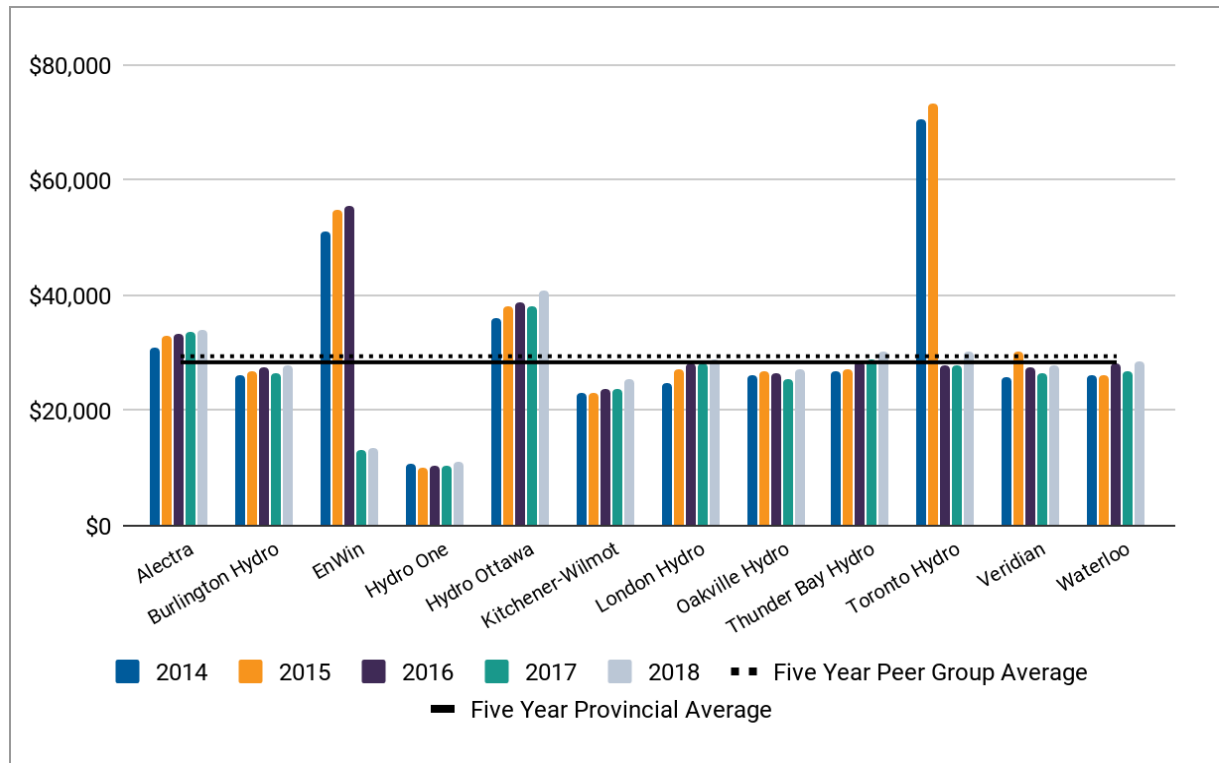
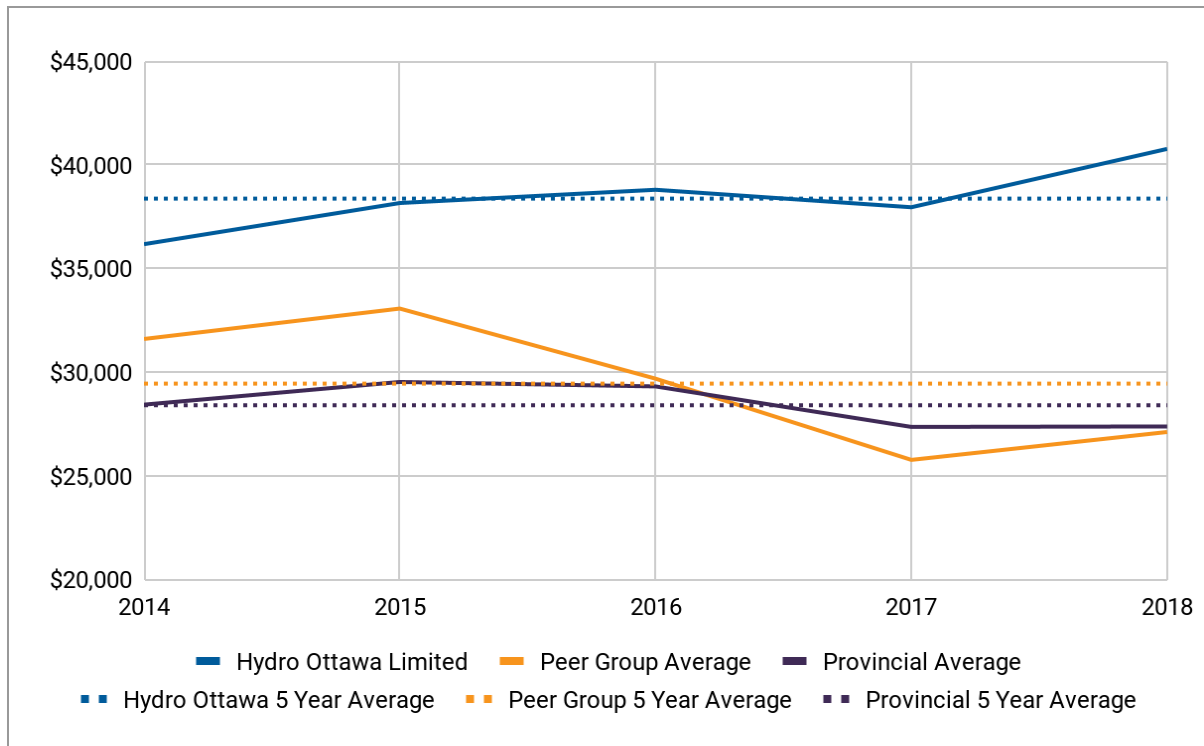


Figure 23 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Total Cost per km of Line (As per the PEG Model)



5. PUBLIC POLICY RESPONSIVENESS

5.1. CONSERVATION AND DEMAND MANAGEMENT

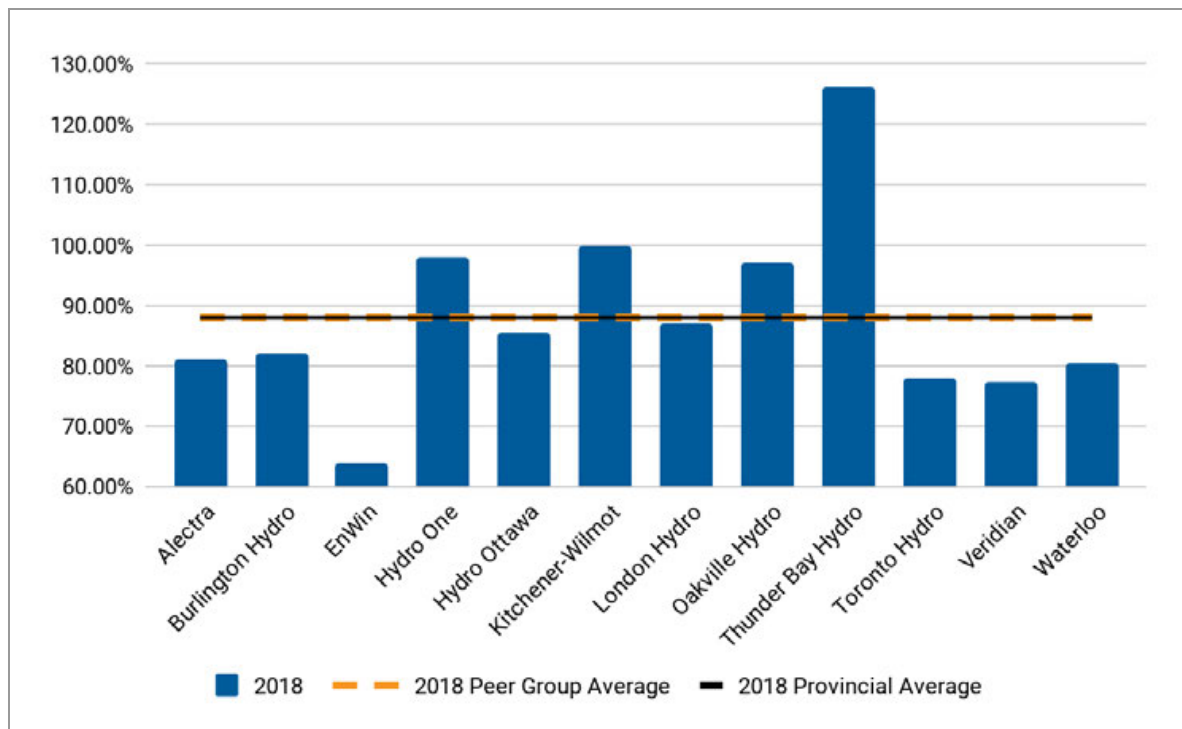
5.1.1. Net Cumulative Energy Savings

Under the Conservation First Framework (“CFF”), distributors in Ontario were each allocated Conservation and Demand Management (“CDM”) targets to achieve over the 2015-2020 period. Hydro Ottawa was allotted a CDM target of 395 GWh to be achieved by 2020. As of the end of 2018, Hydro Ottawa had achieved a cumulative total of 335 GWh of CDM savings, representing 85% of its target, with two years remaining under the CFF.

On average, both the peer group and distributors province-wide achieved 88% of their CDM targets by the end of 2018, as shown below in Figure 24. The CFF was discontinued effective March 21, 2019 by Ministerial directive, and a new framework for centralized delivery of energy

efficiency programs through the Independent Electricity System Operator (“IESO”) began on April 1, 2019.

Figure 24 – Percentage of Overall CFF Target Achieved (2018)



5.2. CONNECTION OF RENEWABLE GENERATION

5.2.1. Renewable Generation Connection Impact Assessments Completed On Time

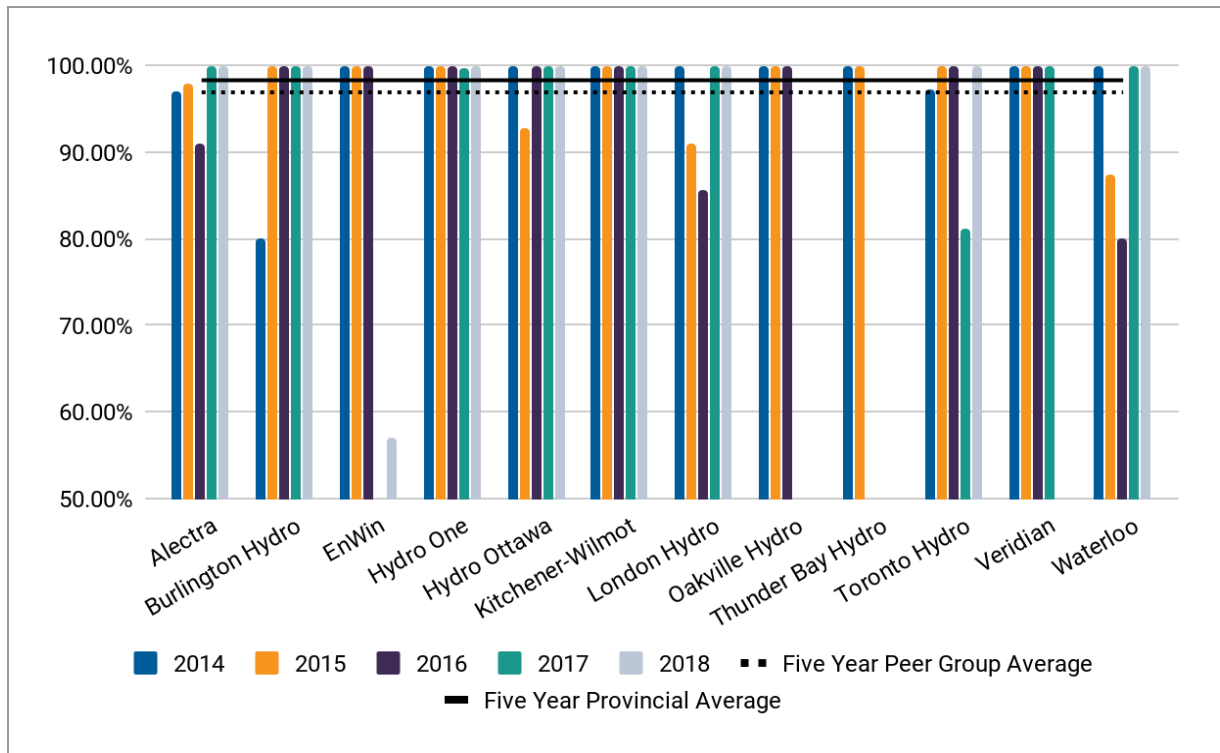
Electricity distributors are required to conduct a Connection Impact Assessment (“CIA”) for large generation facilities that exceed 10 kW within OEB-defined timelines, as set out in the DSC. A CIA consists of an assessment, a detailed cost estimate, and an Offer to Connect within the time prescribed. Timelines vary from 60 to 90 days, depending on a number of variables such as the size of the project and whether system expansion or reinforcement is required.

Hydro Ottawa performs all CIA work internally and regularly reviews its processes for continuous improvement to benefit the customer. Over the 2014-2018 period, Hydro Ottawa

1 completed 79 CIAs for projects with a total nameplate capacity of 55,173 kW. All but one of
2 those CIAs were completed within the prescribed timeline. One CIA completed in 2015
3 exceeded the DSC's prescribed timeline as a result of modifications to the customer's project
4 plan. The delay was thus a result of a change in the customer's needs midway through the
5 project. The revised connection timeline was met to the customer's satisfaction. Hydro Ottawa
6 considers this one scenario to be an anomaly and anticipates that it will continue to complete its
7 CIAs within the timelines prescribed by the DSC.

8
9 Figure 25 below presents an overview of Hydro Ottawa and its peer group's CIA performance
10 metrics over the 2014-2018 period, and includes both the peer group and provincial averages.

Figure 25 – Peer Group and Hydro Ottawa Results: Percentage of Connection Impact Assessments Completed on Time

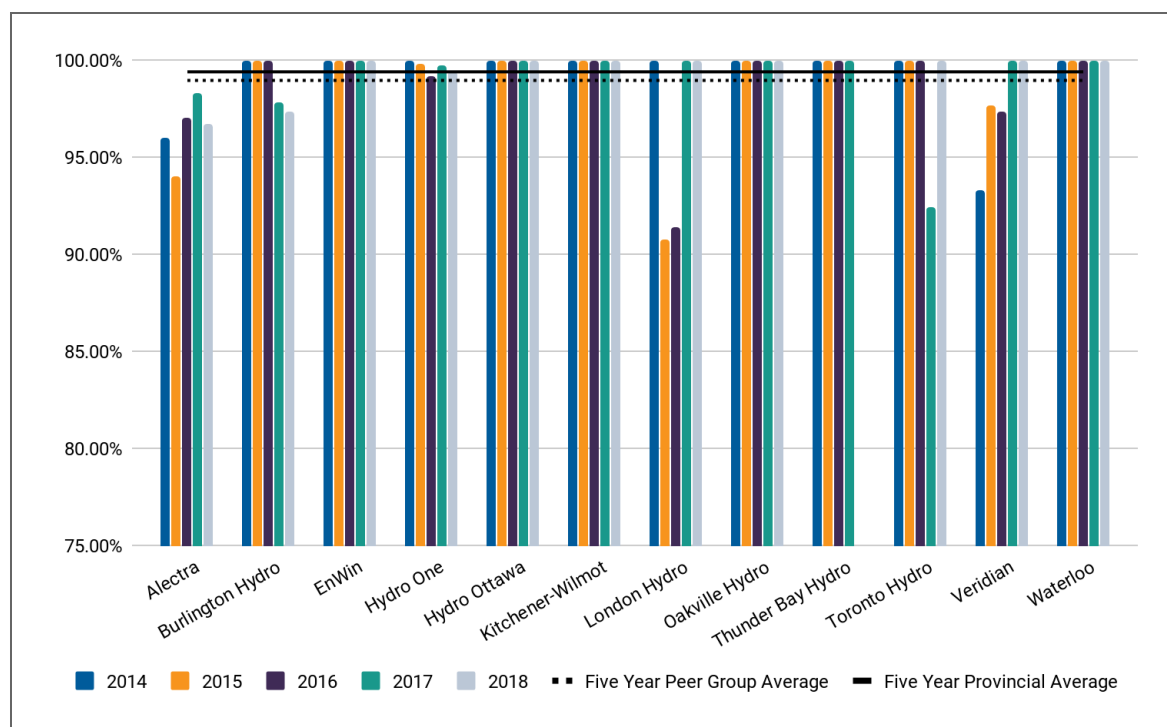


5.2.2. New Micro-Embedded Generation Facilities Connected on Time

As per the DSC, the connection of new micro-embedded generation facilities must be completed within five business days, or at such later date as agreed to by the customer and the distributor. This service condition must be met at least 90% of the time. Over the 2014-2018 period, Hydro Ottawa connected 301 micro-embedded generation facilities (less than 10 kW), all of which were connected within the prescribed timeframe or at an agreed upon date with the customer (i.e. 100% timely completion rate). This was consistently above the peer group and provincial averages. Hydro Ottawa anticipates that it will continue to connect any micro-embedded generations facilities in accordance with the timelines set out by the OEB.

Figure 26 below provides an overview of connection performance standards of the peer group over the 2014-2018 period.

Figure 26 – Peer Group and Hydro Ottawa Results: Connection of New Micro-Embedded Generation Facilities on Time



6. FINANCIAL PERFORMANCE

6.1. FINANCIAL RATIOS

6.1.1. Liquidity: Current Ratio

The Current Ratio is a liquidity ratio that measures a company's ability to pay short-term obligations, or those due within one year. Liquidity ratio indicates what a company has in current assets to cover the liabilities. Over the 2014-2018 period, on average, Hydro Ottawa's liquidity current ratio was 1.02, having fluctuated between 0.8 and 1.24. Reduced liquidity can be attributed to a reduction in accounts receivable and an increase in accrued liabilities.

Table 16 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Liquidity - Current Ratio

	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	1.33	1.33	1.36	1.40	1.30	1.35
Provincial Average	1.41	1.51	1.5	1.44	1.49	1.47
Hydro Ottawa	0.86	1.04	1.196	1.23	0.8	1.02

Figure 27 – Peer Group and Hydro Ottawa Results: Liquidity - Current Ratio

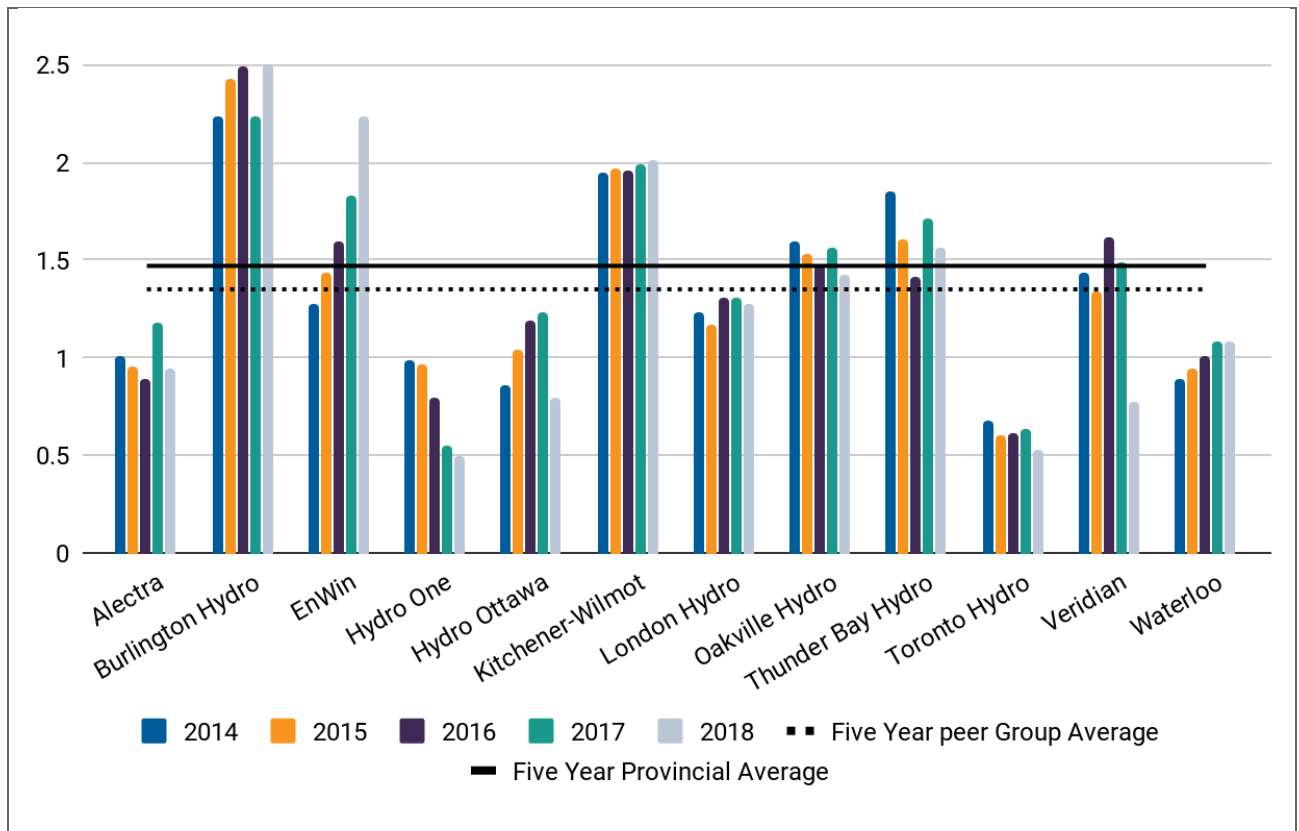
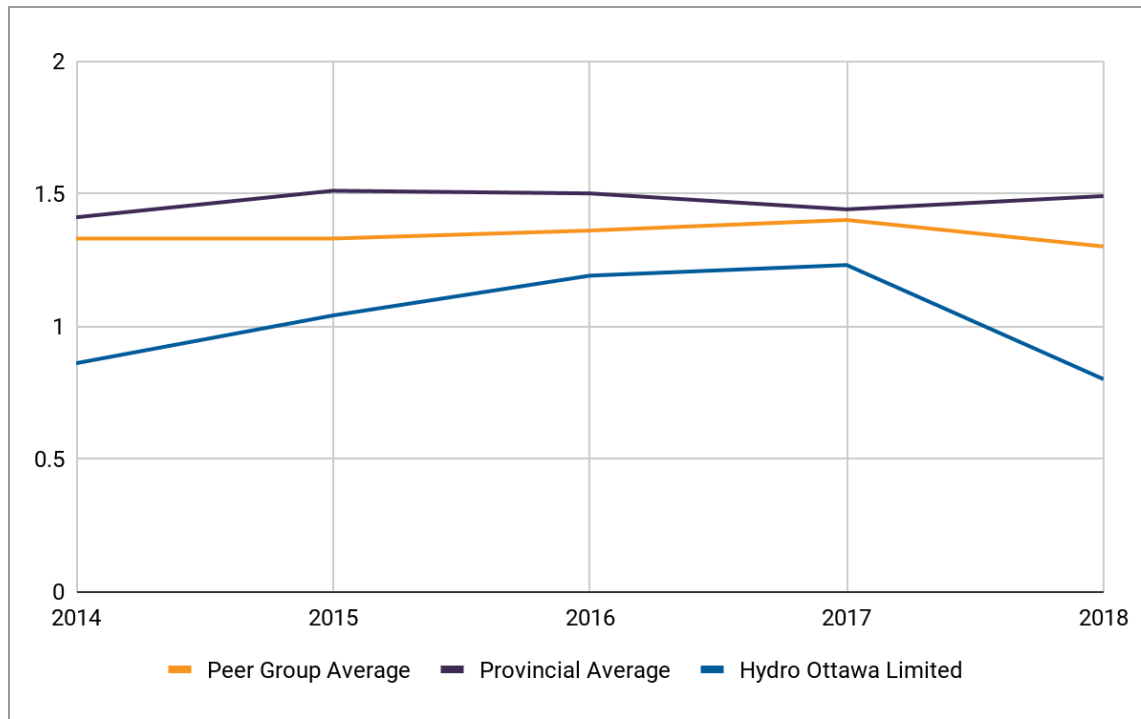


Figure 28 – Peer Group and Provincial Averages and Hydro Ottawa Results: Liquidity - Current Ratio



6.1.2. Leverage: Total Debt to Equity Ratio

The OEB uses a deemed capital structure of 60% debt and 40% equity for electricity distributors when establishing rates. A debt to equity ratio of more than 1.5 indicates that a distributor is more highly leveraged than the deemed capital structure. Hydro Ottawa seeks to maintain its financial health and the viability of its assets to performance standards set by the OEB for the ultimate benefit of its customers. Since 2015, Hydro Ottawa has carried a higher debt to equity ratio as a result of the ongoing significant capital expenditure program that is necessary to replace aging distribution system infrastructure.

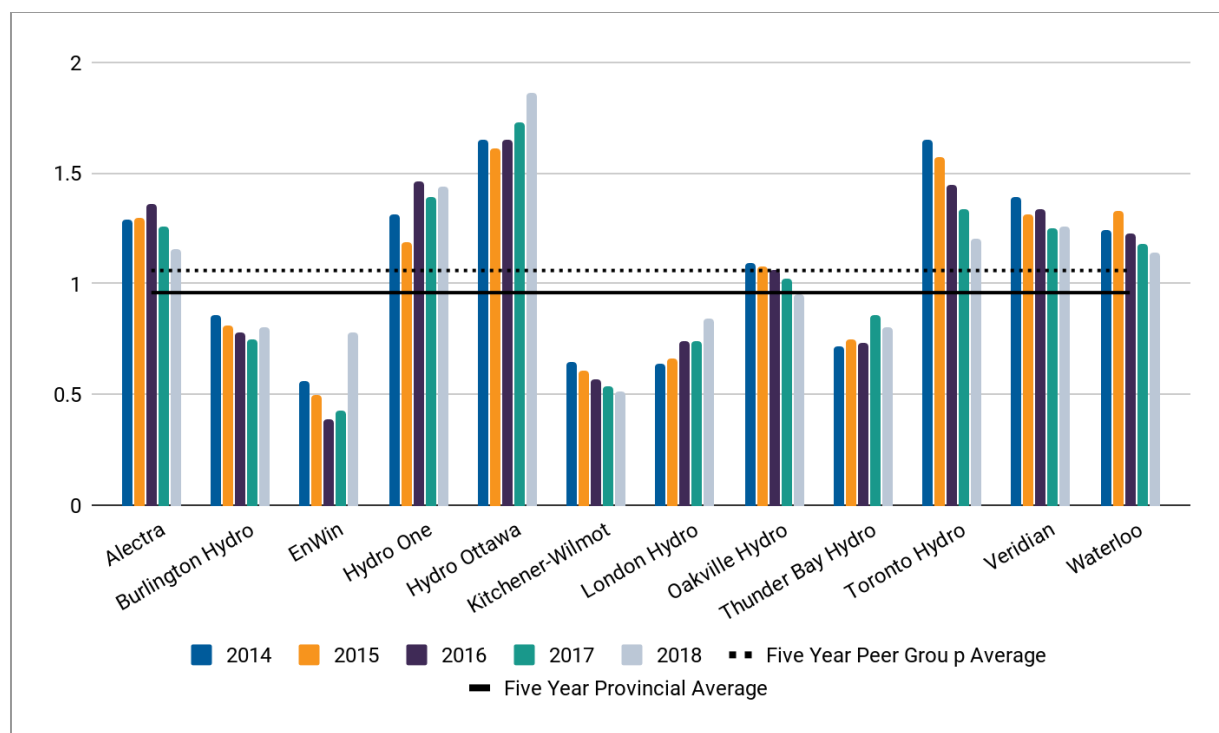
Although Hydro Ottawa is more highly leveraged than the deemed capital structure, the utility has been able to mitigate its cost of borrowing due to favourable interest rates on its long-term

debt. Hydro Ottawa expects that it will continue to maintain a high debt to equity ratio through the 2021-2025 period while its capital infrastructure replacement program continues.

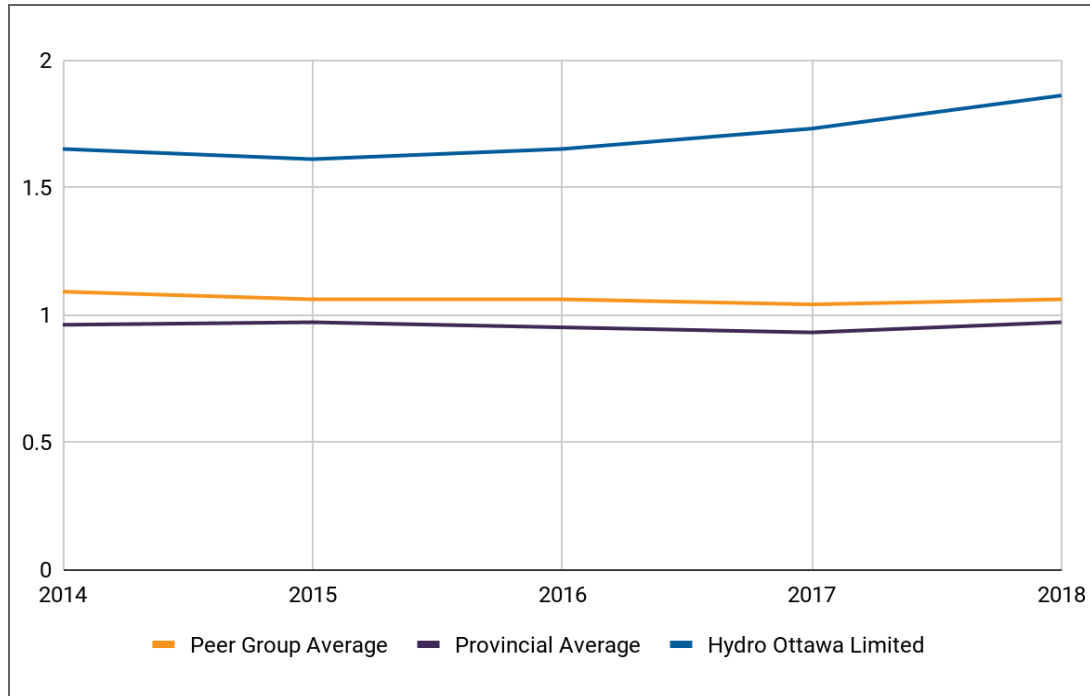
Table 17 – Peer Group and Provincial Averages vs. Hydro Ottawa Results: Leverage - Total Debt to Equity Ratio

	2014	2015	2016	2017	2018	5-Year Average
Peer Group Average	1.09	1.06	1.06	1.04	1.06	1.06
Provincial Average	0.96	0.97	0.95	0.93	0.97	0.96
Hydro Ottawa Limited	1.65	1.61	1.65	1.73	1.86	1.7

Figure 29 – Peer Group and Hydro Ottawa Results: Leverage - Total Debt to Equity Ratio



**Figure 30 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
Leverage - Debt to Equity Ratio**



6.1.3. Profitability: Regulatory Return on Equity

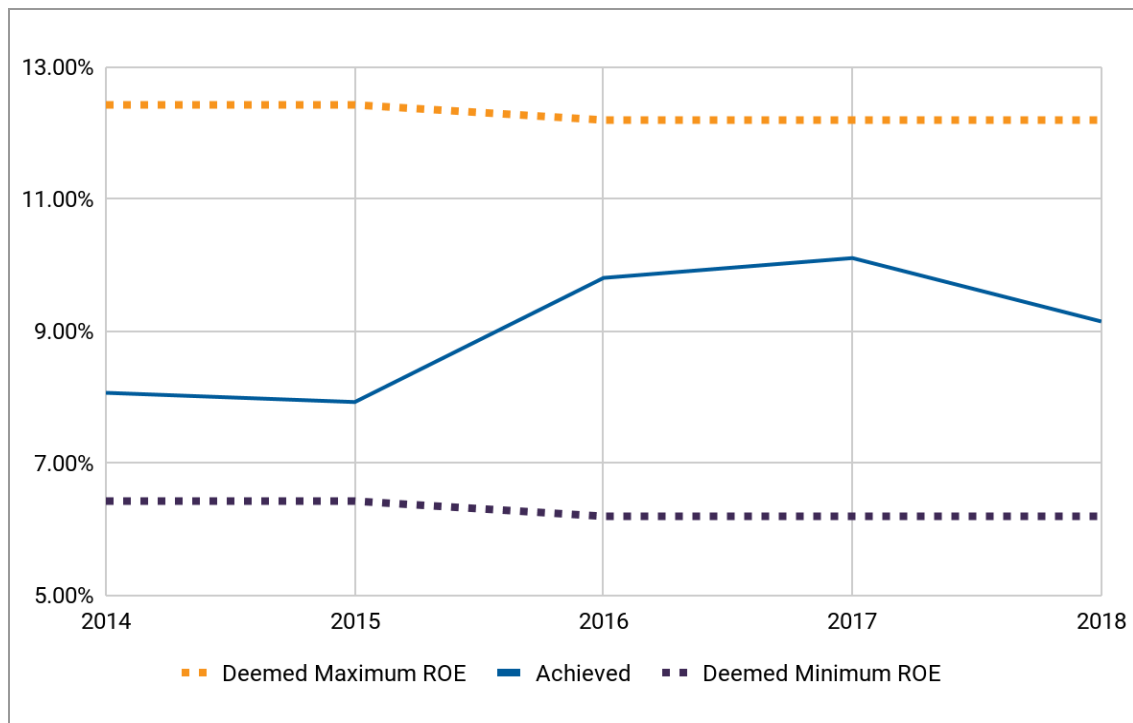
The OEB allows distributors to earn within +/- 3% of their deemed Return on Equity ("ROE"). When a distributor performs outside of its deemed range (whether underearning or overearning), the OEB may trigger a regulatory review. In 2014 and 2015, Hydro Ottawa's deemed ROE was 9.42%. For the years 2016, 2017, and 2018, the utility's deemed ROE was 9.19%, as per the approvals issued by the OEB with respect to Hydro Ottawa's 2016-2020 Custom Incentive Rate-Setting application.

Over the 2014-2018 period, Hydro Ottawa's Achieved ROE remained well within the +/- 3% allowable range, thus demonstrating prudent spending and value for both customers and the utility's shareholder.

Table 18 – Hydro Ottawa’s Achieved vs. Deemed ROE

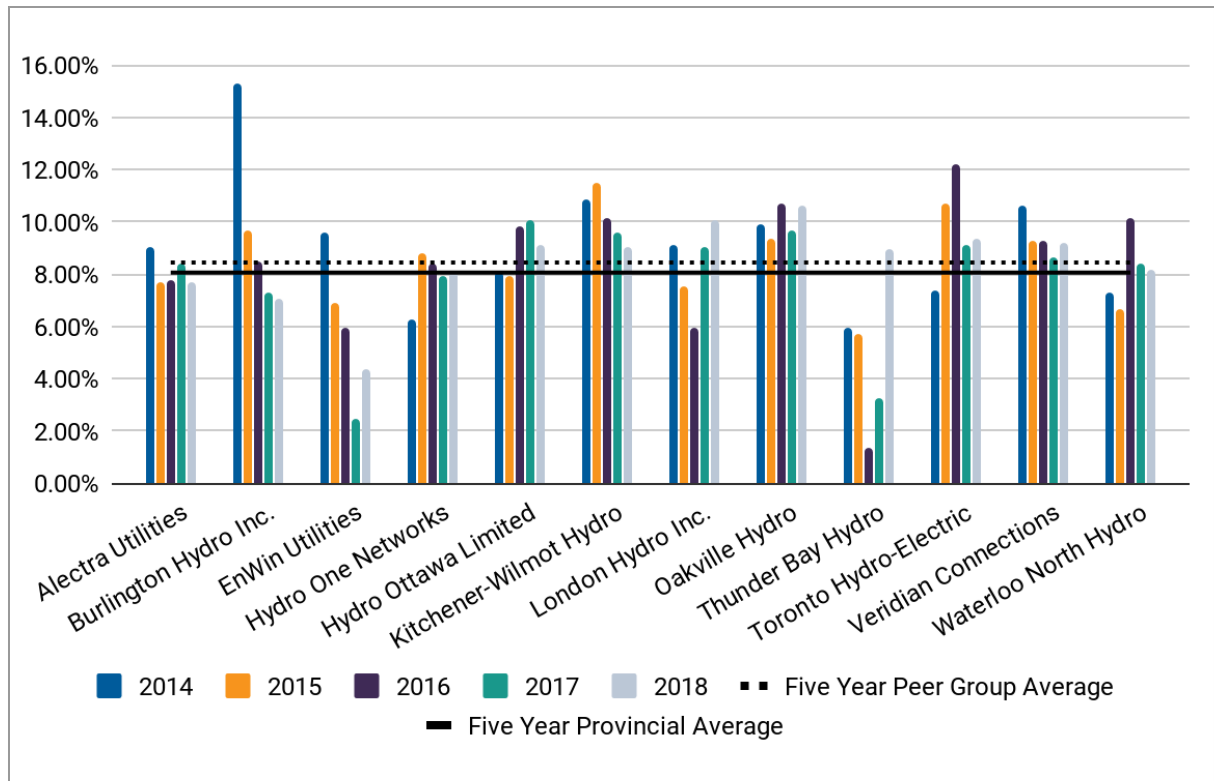
	2014	2015	2016	2017	2018
Hydro Ottawa Deemed	9.42%	9.42%	9.19%	9.19%	9.19%
Hydro Ottawa Achieved	8.06%	7.92%	9.80%	10.10%	9.14%
<i>Difference</i>	<i>-1.36%</i>	<i>-1.50%</i>	<i>+0.61%</i>	<i>+0.91%</i>	<i>-0.05%</i>

Figure 31 – Hydro Ottawa’s Achieved vs. Deemed ROE

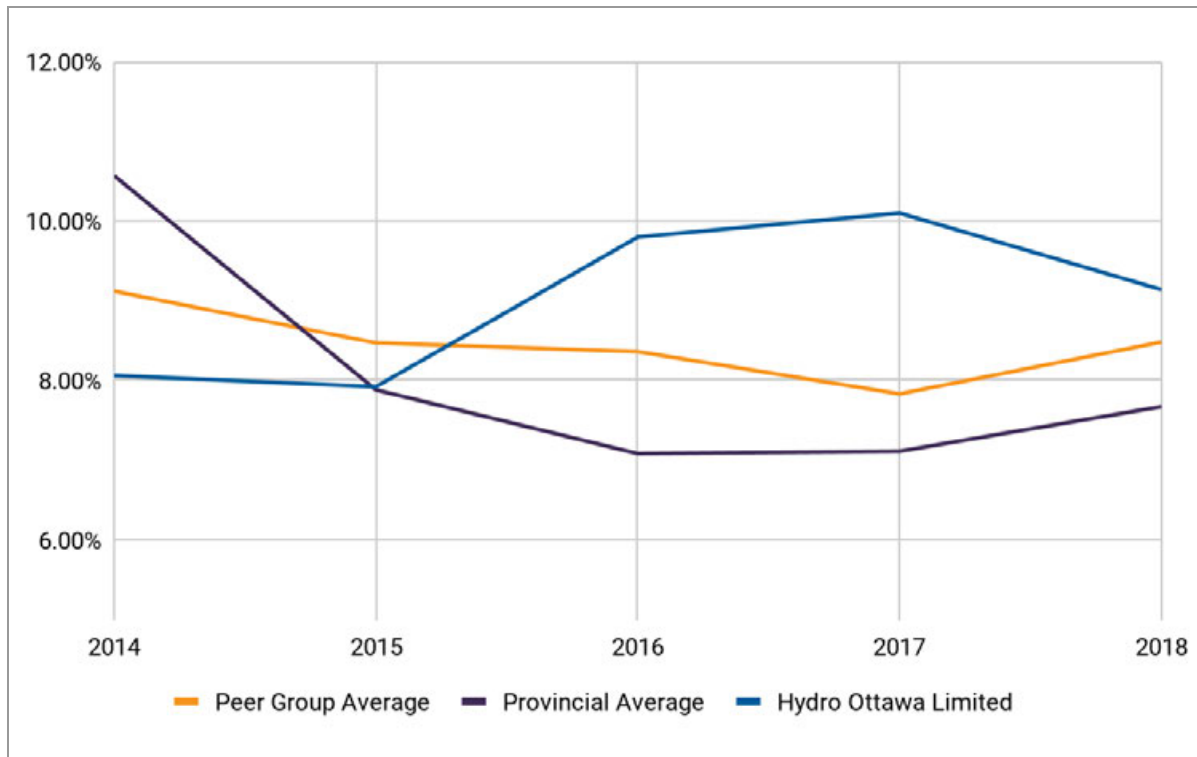


Hydro Ottawa compares favourably to both the peer group and the province in its Achieved ROE over the 2014-2018 period, as reflected in Figures 32 and 33 below.

Figure 32 – Peer Group and Hydro Ottawa Results: Achieved ROE



**Figure 33 – Peer Group and Provincial Averages vs. Hydro Ottawa Results:
 Achieved ROE**



ONTARIO ENERGY BOARD ELECTRICITY DISTRIBUTOR YEARBOOK AND PERFORMANCE DASHBOARD

1. INTRODUCTION

Annually, the OEB issues an Electricity Distributor Yearbook (“yearbook”) that contains financial and operational data for electricity distributors in Ontario. First launched in 2005, the yearbook provides a detailed look at the entire electricity distribution system in Ontario for a given calendar year. The comprehensive data as published in the yearbook presents an opportunity for distributors to compare and benchmark both individual year-over-year performance, as well as performance trends relative to other Ontario Local Distribution Companies (“LDCs”).

Using the yearbook as a basis, the analysis in this Attachment provides an overview of where Hydro Ottawa is situated in four key areas as compared with the rest of the province as a whole, as well as a specified peer group.¹ The areas examined below were chosen for analysis so as to align with the OEB’s “Consolidated Key Metrics of Ontario’s Electricity Distributors’ Sector” as presented in the opening industry overview pages of the 2018 yearbook.² In addition, select information that allows for direct comparison from the “Unitized & Other Statistics” section of the yearbook has been included, as well as information derived from the OEB’s online Performance Dashboard.³

Hydro Ottawa generally compares very favourably amongst its peer group and within the province across these key areas. Key financial ratios on the balance sheet and income statement indicate that Hydro Ottawa is in a strong financial position and compares favourably to the provincial and peer group averages in most areas. As a result of its significant capital expenditure program required to replace aging distribution system infrastructure, Hydro Ottawa has carried a higher debt to equity ratio than the deemed capital structure. Although Hydro

¹ The peer group that is utilized is the same as that which is defined in Attachment 1-1-12(C): Hydro Ottawa’s Electricity Utility Scorecard Analysis 2014-2018, section 2.

² Ontario Energy Board, *2018 Yearbook of Electricity Distributors* (August 19, 2019), pages 5-13.

³ <https://www.oeb.ca/utility-performance-and-monitoring/electricity-utility-performance-dashboard>.

Ottawa is more highly leveraged than the deemed capital structure, the utility has been able to mitigate its cost of borrowing due to favourable interest rates on its long-term debt.

While Hydro Ottawa is one of the largest LDCs in the province, both geographically and in terms of customer count, its operations, maintenance and administration (“OM&A”) per customer and its Distribution Revenue per customer have remained lower than both the provincial and peer group averages for the last five years. In terms of reliability, yearbook comparisons highlight Hydro Ottawa’s unique location, in that it is completely surrounded by the service territory of Hydro One Networks Inc. (“HONI”). As a result, Loss of Supply continues to be the leading cause code for both System Average Interruption Duration Index (“SAIDI”) and System Average Interruption Frequency Index (“SAIFI”). Occurrences of Loss of Supply in Hydro Ottawa’s service territory are nearly double the provincial average in terms of SAIDI, and nearly quadruple the provincial average in terms of SAIFI. Hydro Ottawa also experienced three Major Event Days (“MEDs”) in 2018. Consequently, MED contributions to SAIDI and SAIFI in the utility’s service area are both significantly above provincial averages in 2018. Notwithstanding this, however, Hydro Ottawa’s overall SAIDI and SAIFI have remained below the OEB’s prescribed targets on the Electricity Utility Scorecard for the last five years.⁴

As exhibited in the OEB’s online Performance Dashboard rate comparison, Hydro Ottawa’s average estimated monthly bill for residential customers remains below the provincial and peer group averages. Furthermore, it falls below the average of the OEB’s selected North American jurisdictions.

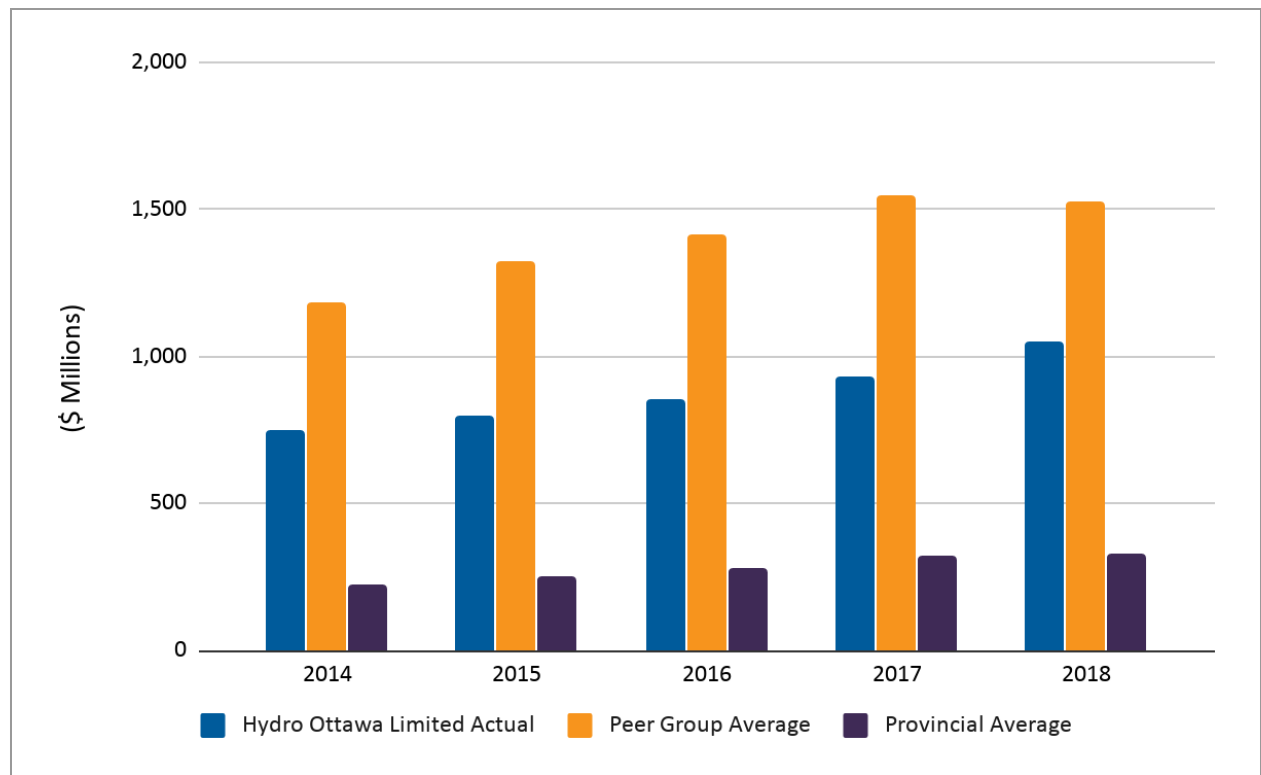
2. BALANCE SHEET

Figures 1 through 5 below compare Hydro Ottawa to the province and its peer group in terms of Net Property, Plant & Equipment, Current Ratio, Debt to Equity Ratio, and Debt Ratio for the years 2014-2018.

⁴ For further detail on reliability metrics and scorecard targets, please see Attachment 1-1-12(C): Hydro Ottawa’s Electricity Utility Scorecard.

Hydro Ottawa's average Property, Plant & Equipment is significantly higher than the provincial average, but below the peer group average for the years 2014-2018, as shown in Figure 1.

Figure 1 – 2014-2018 Net Property, Plant & Equipment



In terms of financial ratios, Hydro Ottawa's Current Ratio is on par with the provincial average, yet lower than the peer group average. Its Debt to Equity Ratio is higher than both the provincial and peer group averages. The utility's Debt Ratio and Interest Coverage Ratios are both lower than the provincial and peer group averages.

Figure 2 – 2014-2018 Current Ratio (*Current Assets/Current Liabilities*)

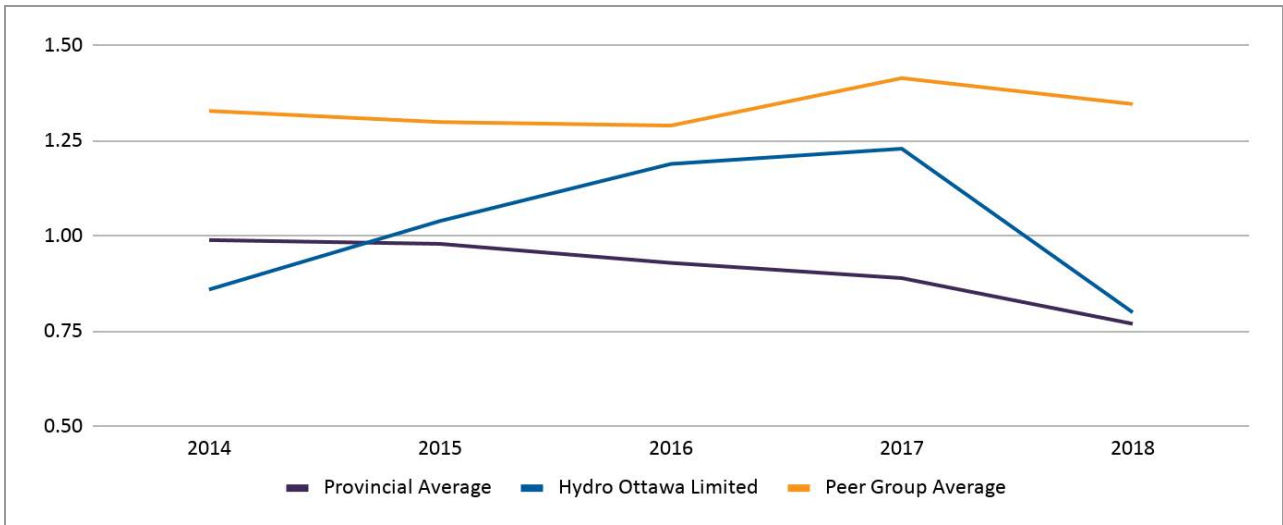


Figure 3 – 2014-2018 Debt to Equity Ratio (*Debt/Total Equity*)

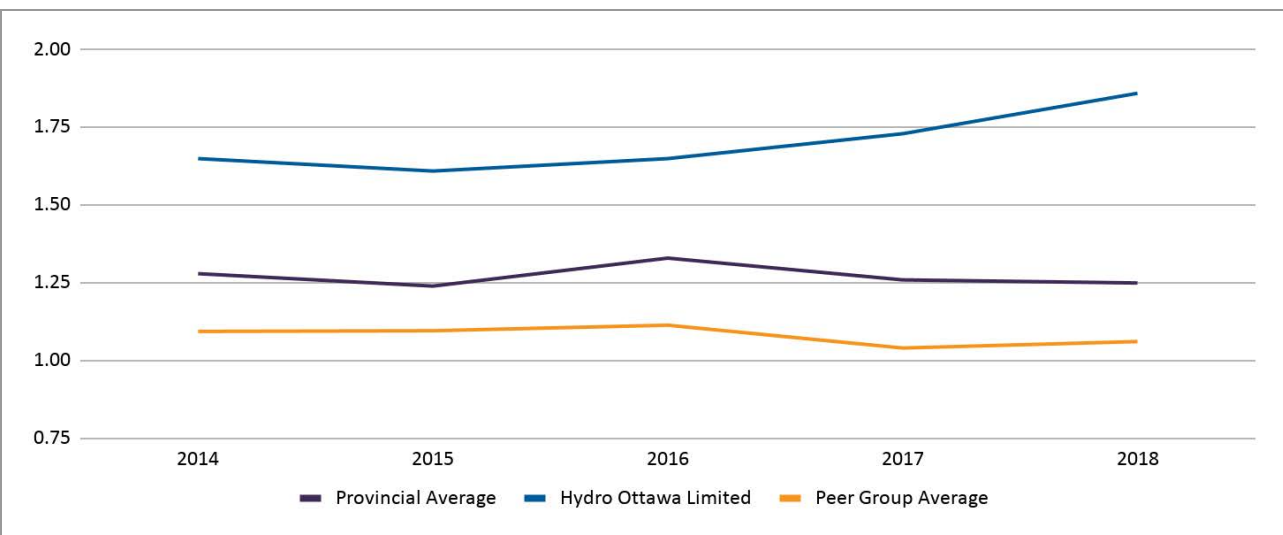


Figure 4 – 2014-2018 Debt Ratio (*Debt/Total Assets*)

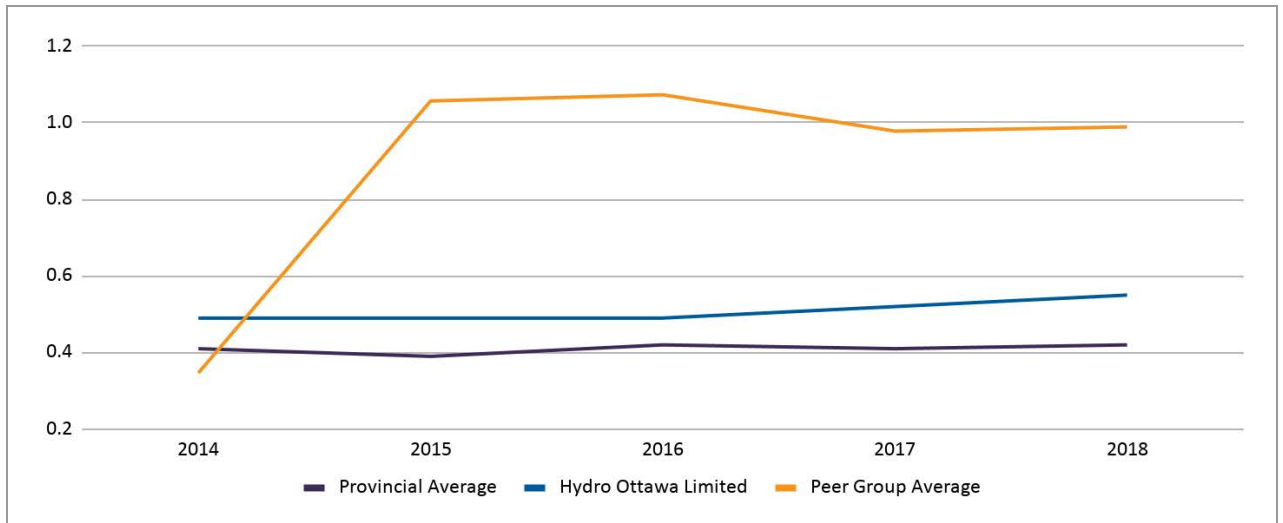
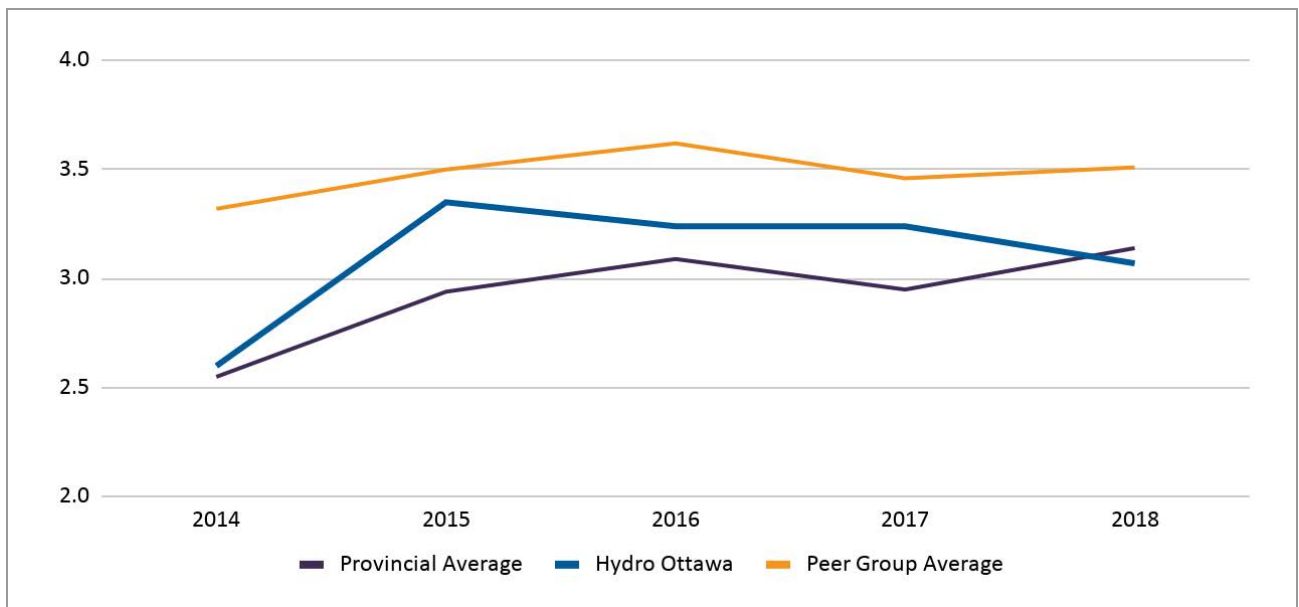


Figure 5 – 2014-2018 Interest Coverage (*EBIT/Interest Charges*)



3. INCOME STATEMENT

Figures 6 and 7 below show Hydro Ottawa's Return on Assets and Return on Equity relative to the province and its peer group for the years 2014-2018. Hydro Ottawa's Return on Assets is lower than both the provincial and peer group averages, while its Return on Equity is higher than the provincial and peer group averages.

Figure 6 – Financial Statement Return on Assets (*Net Income/Total Assets*)

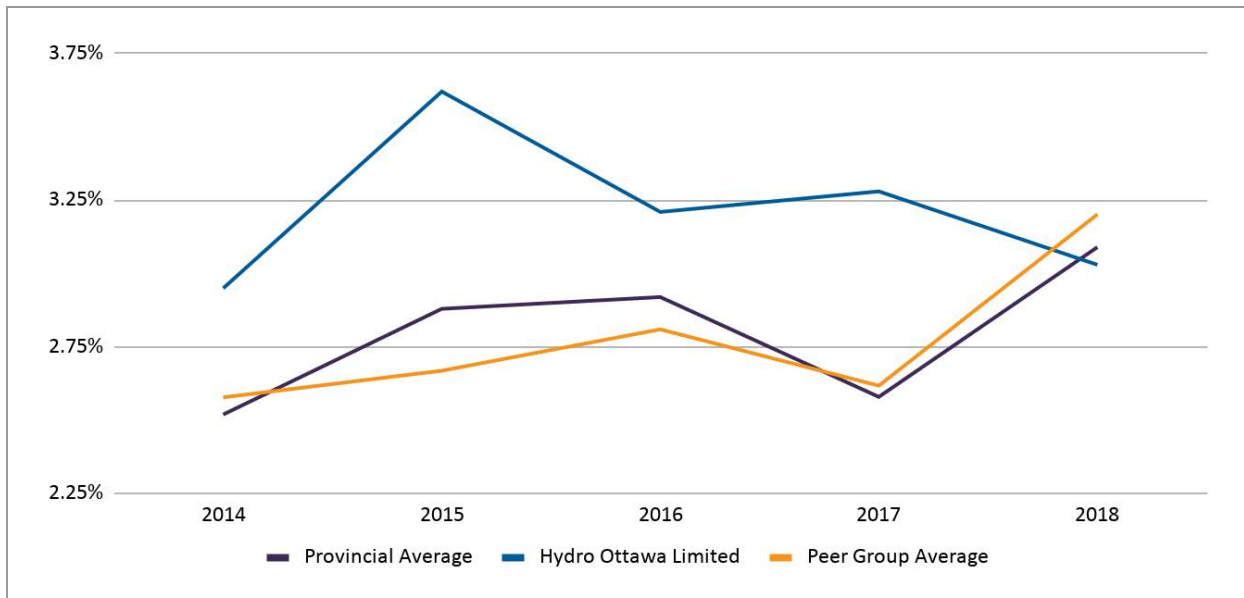
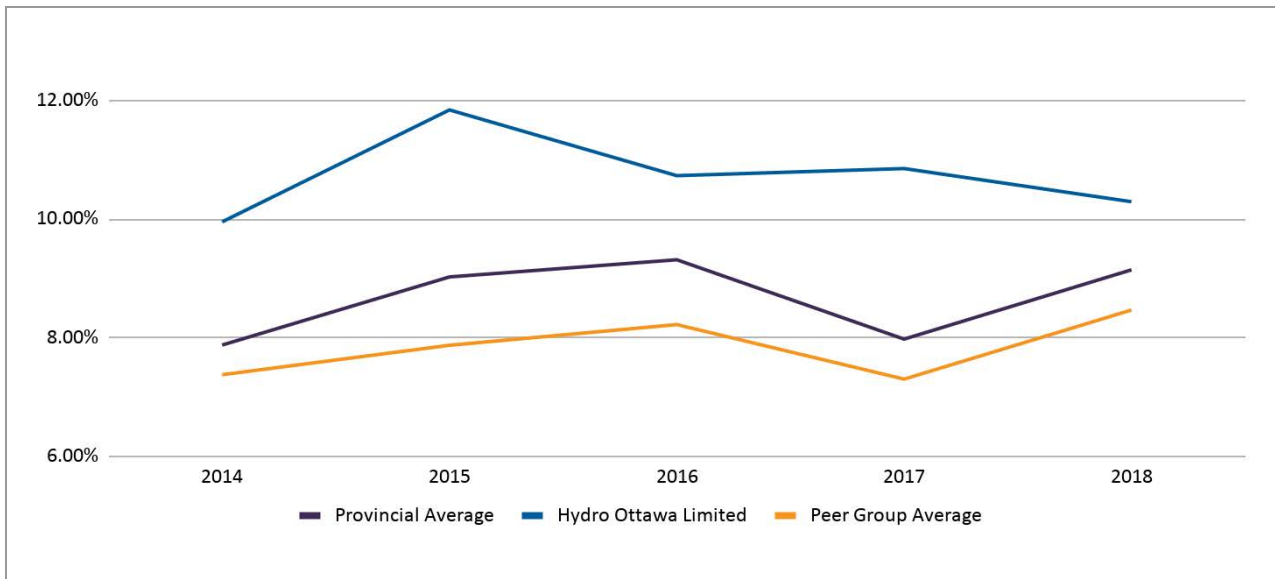


Figure 7 – Financial Statements Return on Equity (*Net Income/Shareholder Equity*)



4. RELIABILITY

Figure 8 below shows Hydro Ottawa's cause code contributions for both SAIDI and SAIFI in 2018. Subsequently, Figure 9 shows the provincial average cause code contributions to SAIDI and SAIFI in 2018 which is derived from the 2018 yearbook. Loss of Supply is the leading cause of outages in Hydro Ottawa's service territory for both SAIDI and SAIFI, and surpasses the provincial average.⁵

⁵ For a comprehensive analysis and discussion of Hydro Ottawa's reliability metrics, cause codes and Major Events, please see Exhibit 2-4-6: Service Quality and Reliability Performance. Further discussion of Hydro Ottawa's historical reliability performance can be found in section 4.3 of Exhibit 2-4-3: Distribution System Plan.

Figure 8 – Hydro Ottawa SAIDI and SAIFI by Cause Code (2018)

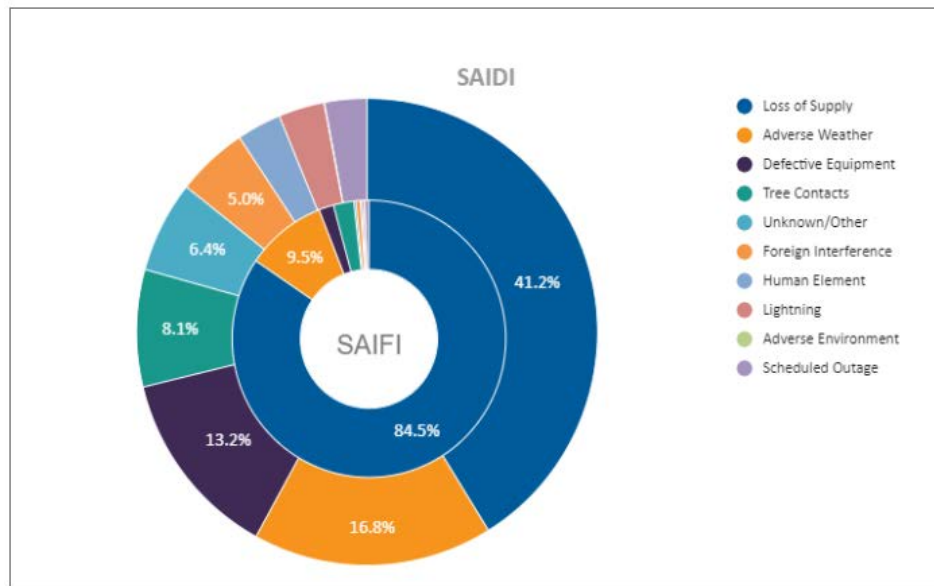


Figure 9 – Provincial SAIDI and SAIFI by Cause Code (2018)

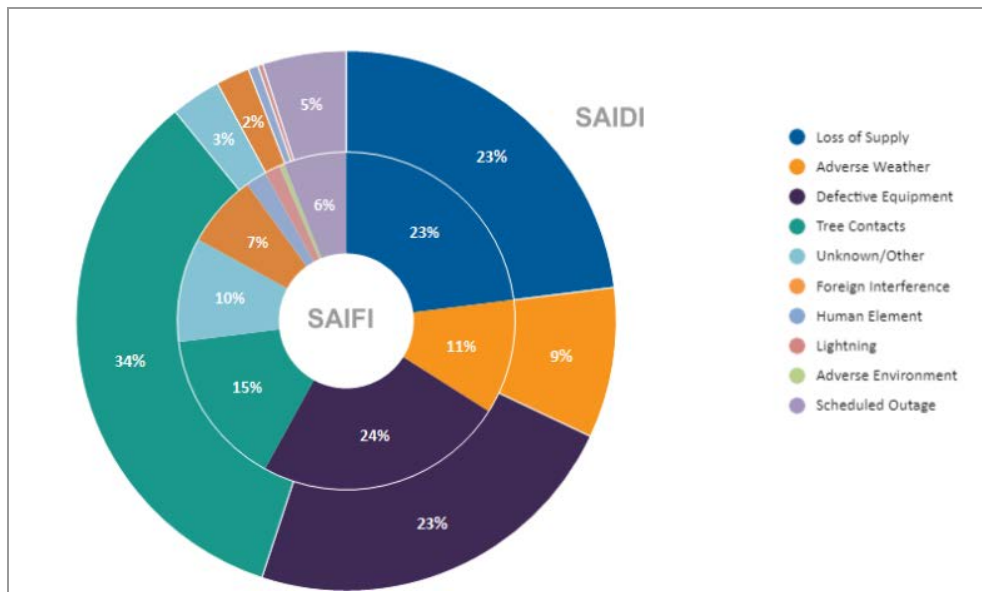
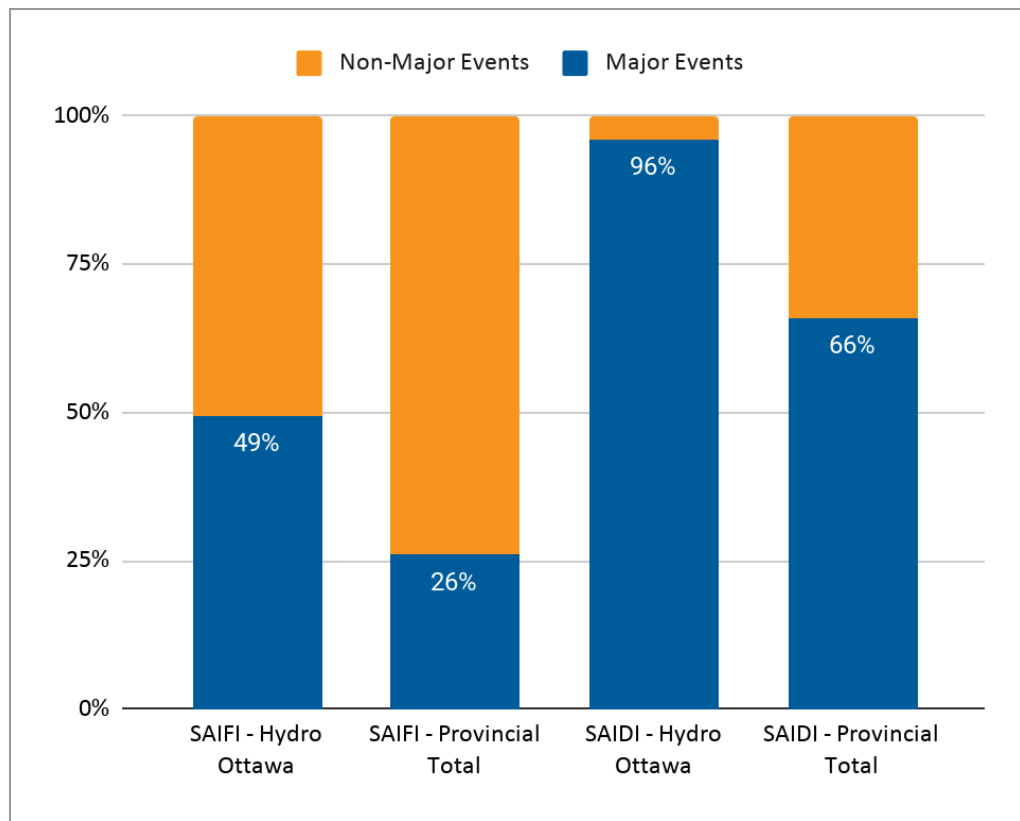


Figure 10 illustrates the contribution of Major Events to both SAIDI and SAIFI in 2018, and compares Hydro Ottawa to the provincial average. Major Event contribution to reliability in the utility's service territory is much higher than the provincial averages.

Figure 10 – Major Events Contribution to Reliability (2018)



5. UNITIZED STATISTICS

5.1. OPERATIONS, MAINTENANCE & ADMINISTRATIVE EXPENSES

Figures 11 and 12 express Hydro Ottawa's OM&A per customer, as calculated in the yearbook for the years 2014-2018, relative to the rest of Ontario as well as the peer group. Hydro Ottawa's average OM&A per customer over this period remains lower than both the provincial and peer group averages.

Figure 11 – 2014-2018 Average OM&A per Customer

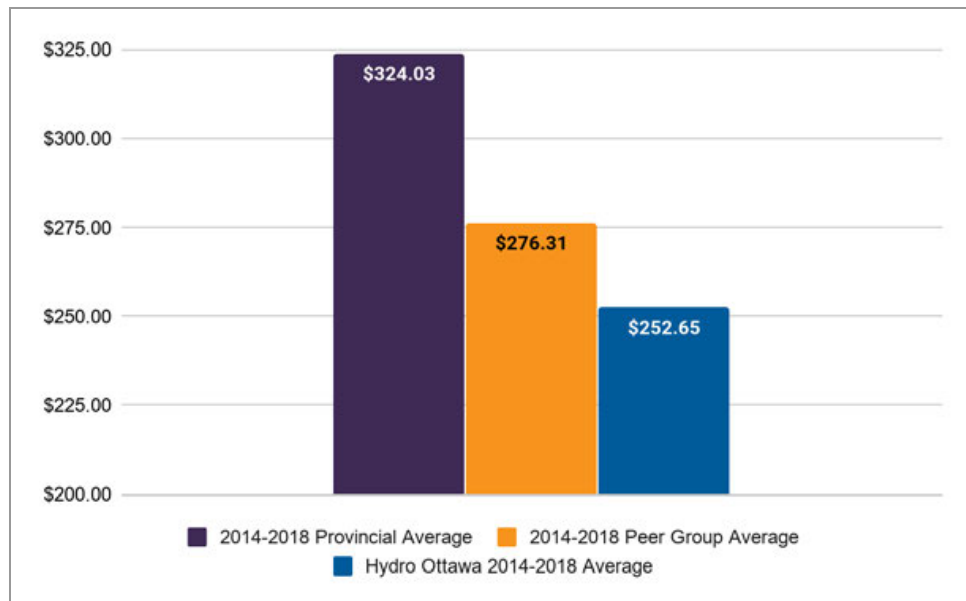
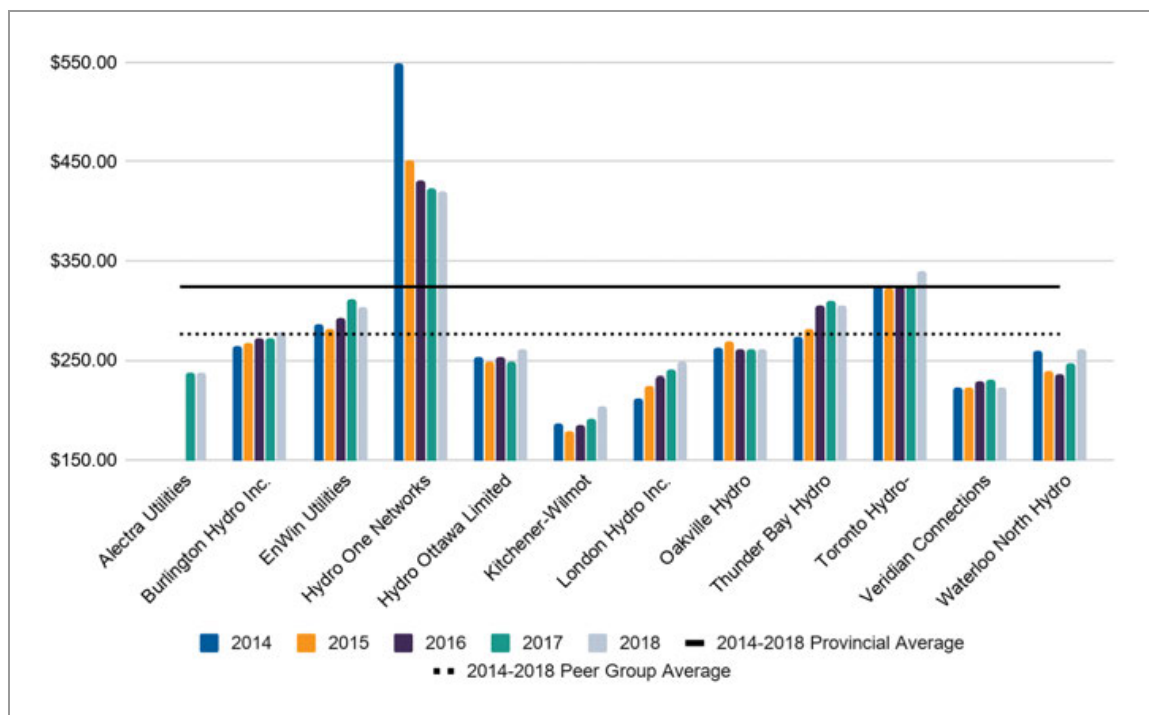


Figure 12 – 2014-2018 OM&A Expenses per Customer



5.2. DISTRIBUTION REVENUE

Figures 13 and 14 display Hydro Ottawa's Distribution Revenue per customer, as calculated in the yearbook for the years 2014-2018, relative to the rest of Ontario as well as the peer group. Hydro Ottawa's average Distribution Revenue per Customer is below both the provincial and peer group averages.

Figure 13 – 2014-2018 Average Distribution Revenue per Customer

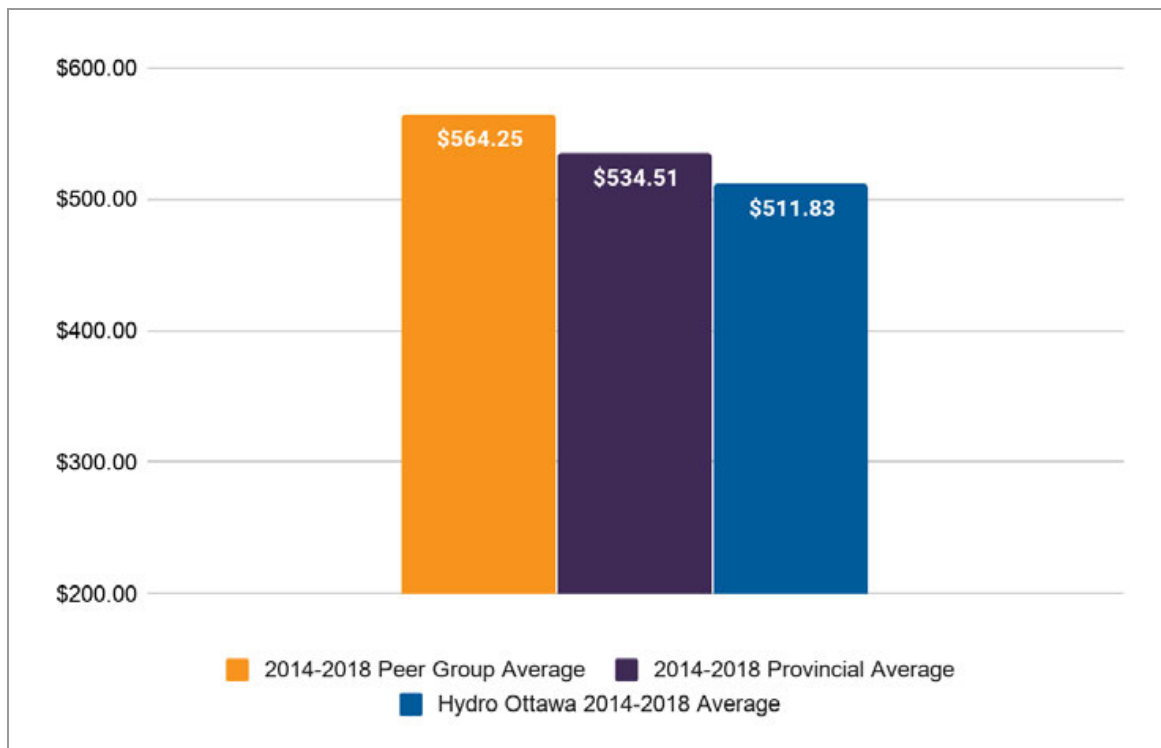
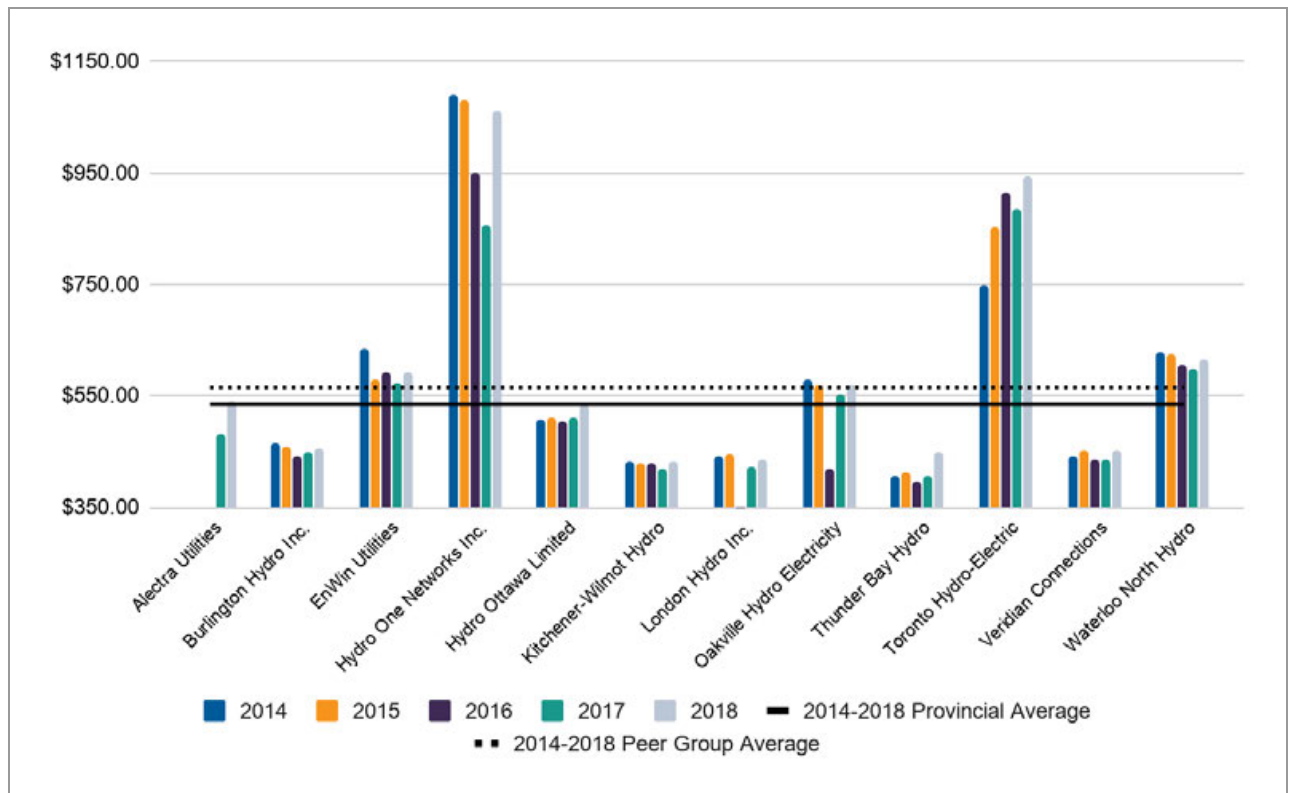


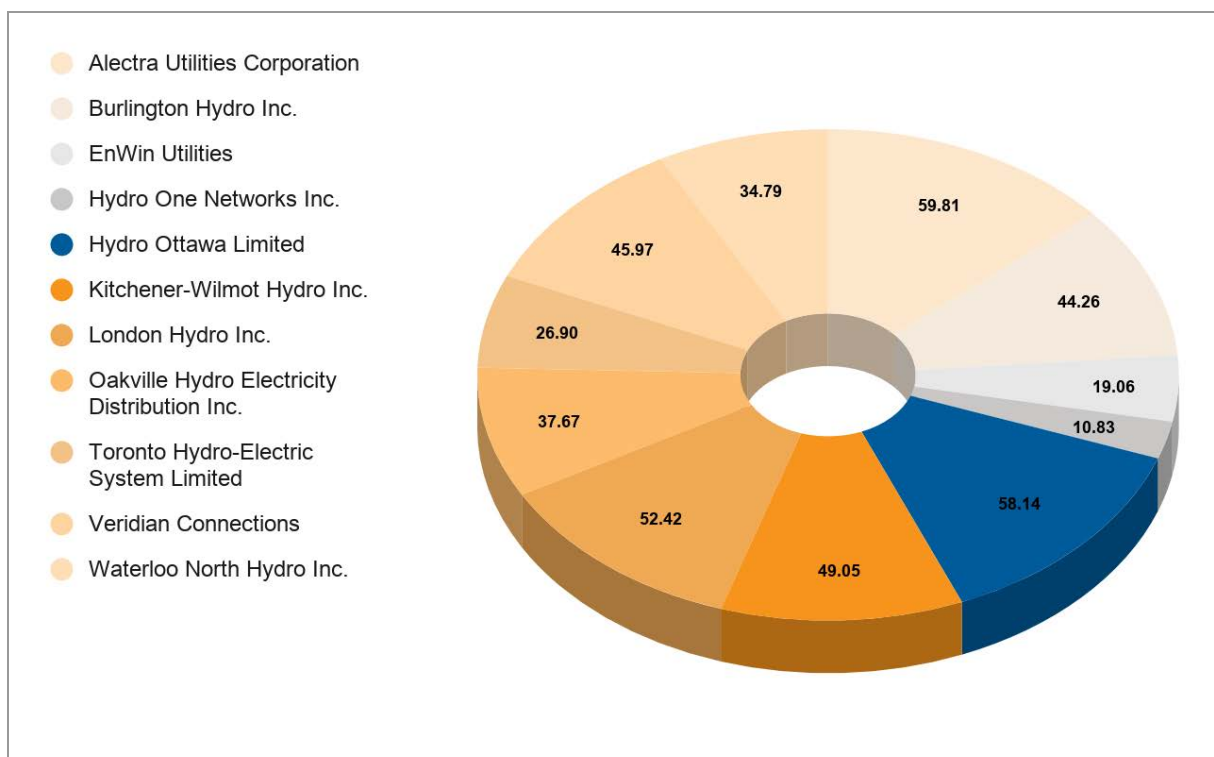
Figure 14 – 2014-2018 Total Distribution Revenue per Customer



5.3. CUSTOMERS PER KILOMETRE OF LINE

Figure 15 displays the number of customers per kilometre of line in Hydro Ottawa's service territory relative to the number of customers per kilometre of line in the peer group. Hydro Ottawa has the second highest number of customers per kilometre of line in Ontario at 58.14.

Figure 15 – Number of Customers per km of Line (2018)



6. ELECTRICITY UTILITY PERFORMANCE DASHBOARD

On its website, the OEB maintains an Electricity Utility Performance Dashboard (“Dashboard”) for residents and consumers to access at-a-glance statistics about their utility. The Dashboard includes all scorecard metrics, as well as available rates comparison information.⁶ At the date of compilation, the most recent available rates data on the Dashboard is for 2017.

Figure 16 below expresses the estimated total monthly bill for residential customers (before tax) for Hydro Ottawa and the peer group. Hydro Ottawa is below the peer group average.

⁶ For a comprehensive analysis of Hydro Ottawa’s scorecard metrics, please see Attachment 1-1-12(C): Hydro Ottawa’s Electricity Utility Scorecard.

Figure 17 presents the estimated monthly bill for small commercial customers (before tax) for Hydro Ottawa and the peer group. Hydro Ottawa's estimated monthly bill for small commercial customers is essentially on par with the peer group average.

Figure 18 reveals the estimated total monthly bill for residential customers of Hydro Ottawa, select Ontario and other municipalities/service areas in North America. The average of the selected group is \$115.05 per month. Hydro Ottawa's estimated total monthly bill for residential customers is nearly 20% lower than the group, at \$95.25 per month.

Figure 16 – 2017 Estimated Total Monthly Bill - Residential (Before Tax)

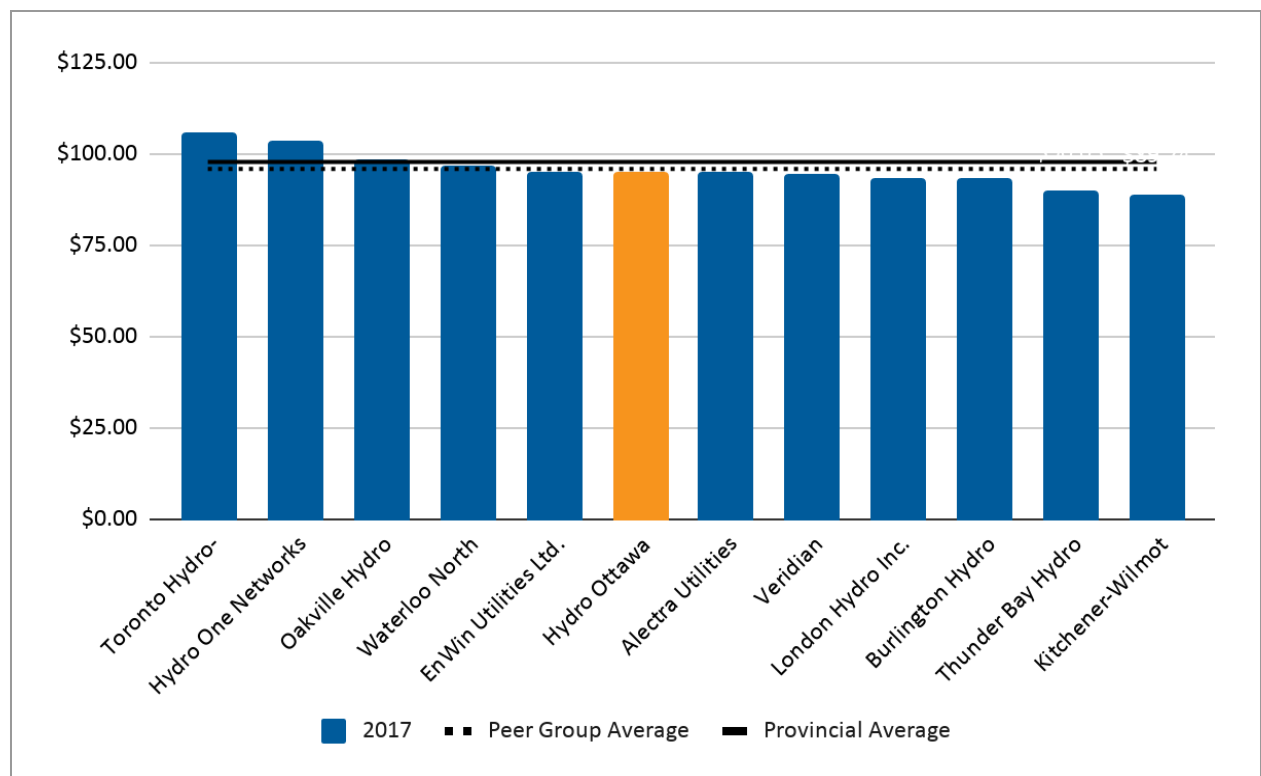
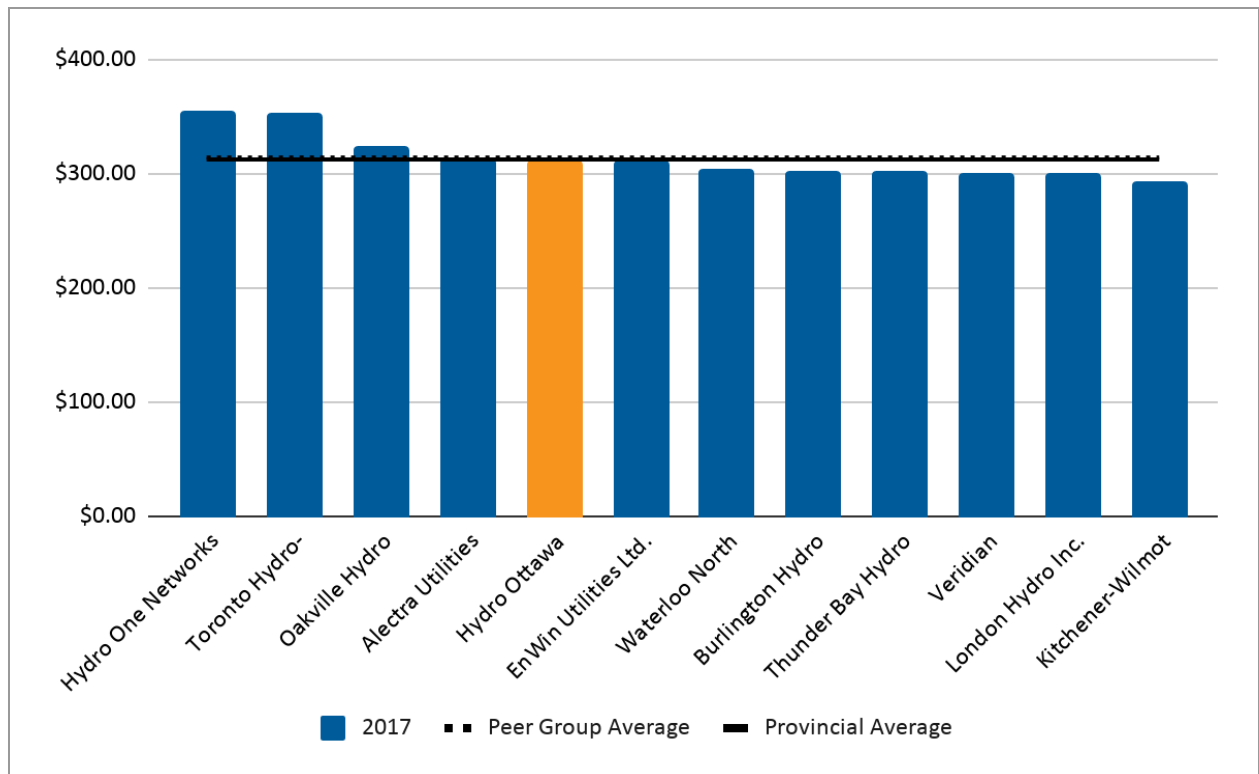
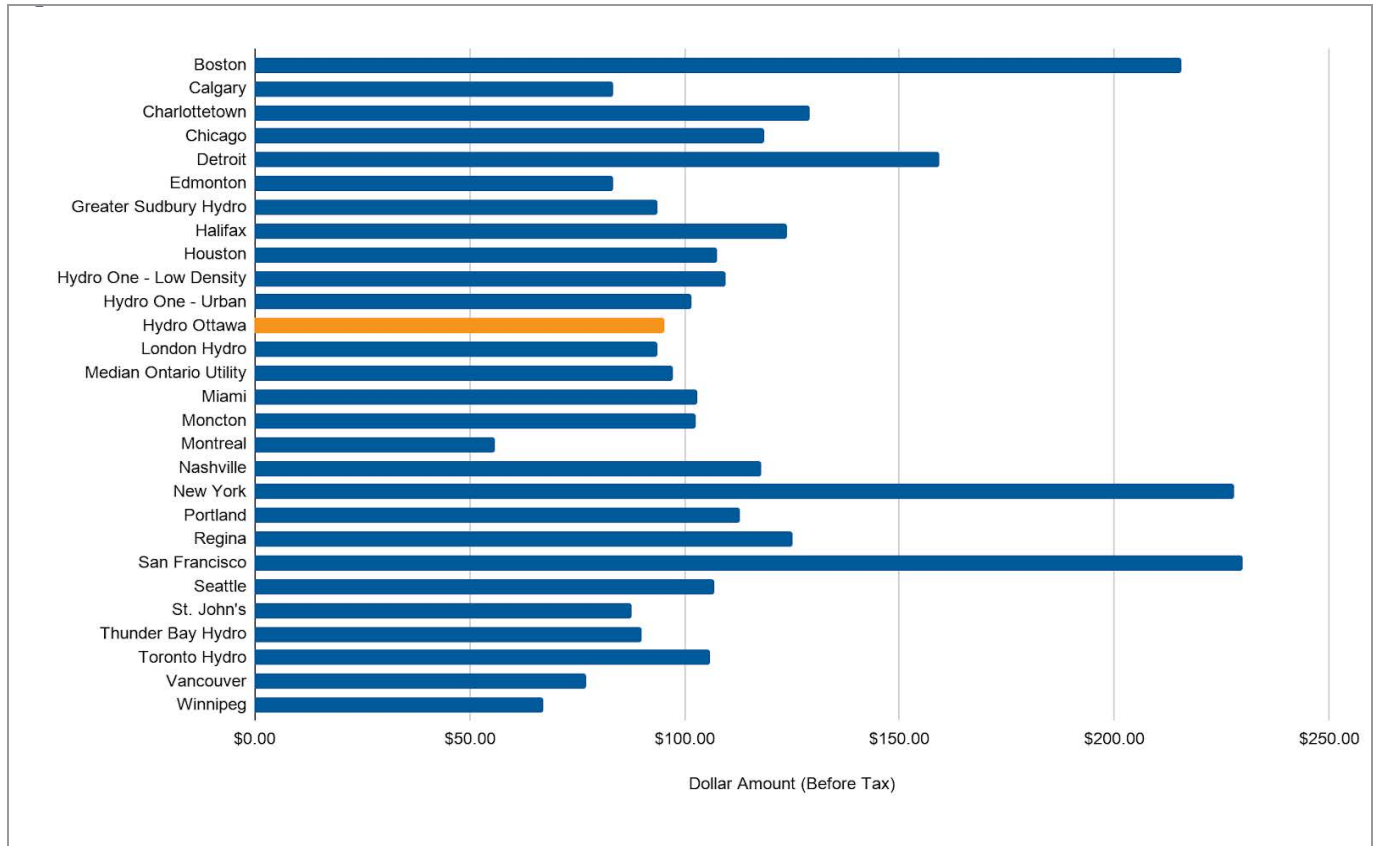


Figure 17 – 2017 Estimated Total Monthly Bill - Small Commercial (Before Tax)



1 **Figure 18 – 2017 Estimated Total Monthly Bill Amount for Residential Customers in**
 2 **Select Jurisdictions in Canada and the United States**



PEG BENCHMARKING FORECAST

1. INTRODUCTION

Section 2.1.8 of the *Chapter 2 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019 ("Filing Requirements"), stipulates that an applicant "must provide a forecast of its efficiency assessment using the PEG forecasting model for the test year for the purposes of providing the OEB with a directional indication of efficiency."

This Attachment sets forth the results from the aforementioned assessment. In addition, this Attachment offers observations on the benchmarking approach that is employed in the Pacific Economics Group's ("PEG") model, and provides rationale in support of Hydro Ottawa's use of an alternative study to evaluate the utility's total cost performance.

2. PEG BENCHMARKING FORECAST MODEL – BACKGROUND

As part of the ongoing implementation and refinement of its policies governing incentive rate-making for electricity distributors, the OEB has engaged PEG to conduct annual benchmarking of the total cost performance of all regulated distributors in Ontario.

The PEG model renders a comparison of each distributor's "actual" total costs relative to their predicted costs. Each distributor is then assigned to one of five cohorts, with the best cost performers placed in Cohort 1 and the poorest cost performers placed in Cohort 5. These rankings are used to assign stretch factors, which are one of two components comprising the "X factor." The X factor serves as a means of embedding expected productivity gains into the rate-setting framework for a distributor.

Accordingly, the intent of the stretch factors that are yielded through the PEG model is to incentivize distributors to continuously enhance their performance, to reward distributors for cost

1 efficiency improvements commensurate with their performance, and in turn, to help lower
2 distribution rates for customers.

3
4 In addition to the rankings of distributors' efficiency and total cost performance, other key
5 metrics that the PEG model generates are Total Cost per Customer and Total Cost per Km of
6 Line. Together, these three metrics serve as critical inputs into the Electricity Utility Scorecard
7 produced by the OEB on an annual basis for each distributor in Ontario. The metrics are
8 included under the Cost Control category on the Electricity Utility Scorecard, which is intended
9 to help measure the performance of distributors relative to the Operational Effectiveness
10 outcome under the Renewed Regulatory Framework ("RRF").

11 12 **3. PEG BENCHMARKING FORECAST MODEL – RESULTS**

13 Hydro Ottawa has completed the PEG forecasting model and has included the results on the
14 last page of this Attachment.

15
16 As shown in those results, the model predicts that Hydro Ottawa will remain in Cohort 4 for the
17 duration of its 2021-2025 Custom IR rate term. Cohort 4 denotes those distributors whose
18 actual costs are 10-25% above predicted costs, within the PEG model framework. Under the
19 model, the percentage difference between actual and predicted costs for Hydro Ottawa peaks in
20 2023, with actual costs forecasted to be 23.97% above predicted costs (based on a three-year
21 average of actual costs).

22 23 **4. COMMENTS ON PEG BENCHMARKING FORECAST MODEL**

24 Hydro Ottawa does not dispute the value of total cost benchmarking as a measure of
25 productivity and efficiency, and as a method of cost control. However, Hydro Ottawa respectfully
26 submits that there are certain limitations in the PEG model that prevent the model from taking
27 into account unique features of the utility and its operating environment. In turn, this precludes
28 the model from yielding a fully accurate and comprehensive assessment of the utility's efficiency
29 and cost performance. Hydro Ottawa believes that there are several reasons to justify this view.

1 First, the PEG model's peer group is comprised exclusively of Ontario-based distributors. The
2 practical effect of this peer group composition is that several distinguishing characteristics of
3 Hydro Ottawa in the Ontario context are overlooked in the model and its analysis. For example,
4 Hydro Ottawa has a unique service territory, which is distinct not only as the fifth physically
5 largest in the province, but also in its urban/rural split, with 40% classified as the former and
6 60% as the latter. What's more, with respect to the total number of customers served, Hydro
7 Ottawa is the only distributor in Ontario which serves twice as many customers as the utility
8 immediately below it in the rankings, while also serving less than half as many customers as the
9 utility immediately above it. As a result, the uniqueness of several aspects of the utility's
10 operating profile in a provincial context means that a fulsome assessment of Hydro Ottawa's
11 cost efficiency and performance may not be feasible under a benchmarking approach for which
12 the peer group is restricted to Ontario.

13
14 Secondly, there are limitations in the PEG model as it relates to the use of specific business
15 condition variables. These variables seek to quantify factors that influence and drive the costs
16 incurred by a utility, in light of its particular business and service territory conditions. The PEG
17 model finds that there is a statistically significant relationship between a distributor's total costs
18 and the following five business condition variables:

- 19
20
- number of customers served;
 - 21 • peak demand;
 - 22 • kWh deliveries;
 - 23 • average circuit km of line; and
 - 24 • percent of customers added over the last 10 years.¹
- 25

26 While Hydro Ottawa generally recognizes the merit and reasonableness of utilizing these
27 variables, the utility respectfully contends that they are nevertheless insufficient to account for
28 differences in the particular business and operating conditions across utility service territories.

¹ Pacific Economics Group, *Spreadsheet Model for Benchmarking Ontario Power Distributors - User's Guide* (May 2015), page 41.

1 Few, if any, of these variables are well-suited to considering and making adjustments for the
2 spectrum of challenges and constraints that a utility may face in operating a distribution network.
3 Operational constraints may be related to matters of geography, topography, weather and
4 climate patterns, density of the customer base, and technology (to name a few). The fact that
5 such constraints and considerations are overlooked in the PEG model is a source of concern for
6 Hydro Ottawa, insofar as it impedes the ability of the model to paint an exact picture of a utility's
7 efficiency based on a diverse, robust, and pertinent set of variables.

8
9 Finally, Hydro Ottawa observes that several years have elapsed since the PEG benchmarking
10 model, in its current form, was first introduced. As noted in PEG's most recent update report to
11 the OEB on distributor stretch factor assignments, the methodology and parameters employed
12 by the model remain essentially the same as what they were in 2013, when the OEB
13 established the current framework for total cost benchmarking of distributors.² Hydro Ottawa
14 respectfully submits that, in the absence of any meaningful modifications or refinements to the
15 PEG model in the ensuing years, the examination of alternative benchmarking models and
16 methodologies, which may have the benefit of updated parameters and/or principles, is
17 warranted.

18 19 **5. CLEARSRING ENERGY ADVISORS' ECONOMETRIC BENCHMARKING OF** 20 **HYDRO OTTAWA'S TOTAL COST PERFORMANCE**

21 In order to inform the development of the proposals and evidence set forth in this Application,
22 Hydro Ottawa engaged a third party expert to perform a separate study of the utility's total cost
23 benchmarking performance. In so doing, the utility was motivated by the reasons discussed in
24 section 4 above. In addition, the OEB has explicitly signalled that the Filing Requirements are
25 not binding on Custom IR applicants.³ Accordingly, the OEB's policy can be interpreted as
26 allowing for the submittal of additional or alternative total cost benchmarking evidence, separate

² Pacific Economics Group, *Empirical Research in Support of Incentive Rate-Setting: 2018 Benchmarking Update - Report to the Ontario Energy Board* (August 2019), pages 2-4.

³ Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 25: "A Custom IR application is by its very nature custom, and therefore no specific filing requirements have been established."

1 and apart from the standard requirement for a utility to complete the PEG benchmarking
2 forecast model.

3
4 For this purpose, Hydro Ottawa retained Clearspring Energy Advisors ("Clearspring"), a firm
5 with robust expertise and credentials in econometric benchmarking. The lead author of the
6 study was Mr. Steve Fenrick, who has more than 20 years of experience with performance and
7 econometric benchmarking (including the PEG model), and who has served as an expert
8 witness in numerous utility rate application proceedings before the OEB.

9
10 A copy of the study prepared by Clearspring is included in this Application as Attachment
11 1-1-12(A): Econometric Benchmarking Study of Hydro Ottawa's Total Cost and Reliability. For
12 Hydro Ottawa's analysis and interpretation of the results of this study, please see Exhibit 1-1-12:
13 Benchmarking.

14
15 Clearspring utilizes an econometric benchmarking approach that is very similar to that which is
16 employed in the PEG model, and is therefore wholly consistent with the general benchmarking
17 paradigm with which the OEB is familiar. However, whereas the PEG model is hindered by
18 certain limitations (as discussed above), Clearspring's approach is not.

19
20 For example, the peer group in Clearspring's study is more expansive and is more conducive to
21 assessing the efficiency of a utility with Hydro Ottawa's profile and characteristics. The peer
22 group is comprised of almost 90 utilities, including more than 80 U.S. utilities and seven of the
23 largest utilities in Ontario. Among other things, relative to the PEG model, this peer group
24 boasts a much bigger share of utilities with customer counts and/or service territory sizes that
25 are of similarly large scale as those of Hydro Ottawa.⁴ What's more, alongside a peer group with
26 a more substantive composition, Clearspring's model has the benefit of a more populous and
27 robust dataset. Data samples for the U.S. utilities cover the 2002-2017 period, with samples for

⁴ In this regard, it should be noted that, of the other 62 utilities in PEG's Ontario dataset, 57 of these utilities (which is over 90% of the PEG sample) serve less than 100,000 customers. Moreover, 46 of the utilities serve less than 50,000 customers.

1 the Ontario utilities covering 2006-2017. Altogether, the study is underpinned by 1,370 data
2 observations – a sufficiently rigorous number to ensure the statistical significance of the model.

3
4 Furthermore, in Hydro Ottawa's view, the business condition variables applied by Clearspring
5 enable a greater measure and depth of insight into utility costs than those which are utilized by
6 PEG. These variables include the following:

- 7
- 8 ● standard deviation of elevation;
 - 9 ● percentage of forestation;
 - 10 ● congested urban;
 - 11 ● percentage of smart meters;
 - 12 ● rural density; and
 - 13 ● temperature.
- 14

15 Variables such as these are better equipped to account and adjust for quantifiable differences
16 between the service territories and business conditions of different utilities than a mere
17 examination of such variables as number of customers served and average circuit km of line. As
18 noted in Clearspring's report, for example, it can be expected that a service territory with greater
19 elevation changes would be more challenging and costly to serve, while increased levels of
20 forestation would translate into higher operations, maintenance and administration ("OM&A")
21 expenses for right-of-way clearing and service restoration.⁵ Such differences, however, cannot
22 be acknowledged or accounted for under the PEG model.

23
24 A third strength of Clearspring's model is that it estimates parameter values using the latest
25 electricity distributor data that is available at the time of the study. In contrast, the results yielded
26 by the PEG model do not have the benefit of fresh data. In its latest calculation of stretch factor
27 assignments for Ontario distributors (i.e. 2019 assignments for the 2020 incentive rate
28 mechanism for rate-setting), PEG states that its "parameters were estimated using Ontario

⁵ Attachment 1-1-12(A): Econometric Benchmarking Study of Hydro Ottawa's Total Cost and Reliability, pages 16-17.

1 LDC data from 2002-2012.”⁶ The vintage of the data underpinning a key design element of the
2 PEG model therefore serves as an additional consideration favouring Clearspring’s approach.

3
4 Finally, one other advantage of Clearspring’s analysis that substantially sets it apart from that of
5 PEG is the examination of Hydro Ottawa’s total cost benchmarking projections in isolation of
6 once-in-a-generation capital projects that are being executed concurrently. As discussed in
7 more detail in Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework and Exhibit
8 1-1-12: Benchmarking, Hydro Ottawa is presently in the unusual position of having to undertake
9 two of the largest and most costly capital expenditures in its history – the Facilities Renewal
10 Program and construction of the Cambrian Municipal Transformer Station (“MTS”). In turn, the
11 effects of these projects and their costs on the utility’s total cost scoring are lopsided and
12 distortive, and skew the scoring results in a way that would not otherwise occur if these projects
13 were being implemented at separate junctures over a more prolonged time horizon. Whereas
14 the customized benchmarking analysis performed by Clearspring is able to take these
15 exceptional circumstances into consideration, the blanket, “one size fits all” approach employed
16 through the PEG model is not.

17 18 **6. CONCLUSION**

19 For the reasons outlined above, Hydro Ottawa respectfully submits that, relative to the PEG
20 model, the study prepared by Clearspring is better-suited to providing an accurate, effective
21 assessment of Hydro Ottawa’s efficiency. Clearspring’s analysis is therefore an appropriate tool
22 for evaluating the utility’s total cost benchmarking performance and assigning the utility a stretch
23 factor in the context of this Application.

⁶ Pacific Economics Group, *Empirical Research in Support of Incentive Rate-Setting: 2018 Benchmarking Update - Report to the Ontario Energy Board* (August 2019), page 2.

Summary of Cost Benchmarking Results

Hydro Ottawa Limited

	<u>2018</u> (History)	<u>2019</u> (Bridge)	<u>2020</u> (Bridge)	<u>2021</u> (Test)	<u>2022</u> (Test)	<u>2023</u> (Test)	<u>2024</u> (Test)	<u>2025</u> (Test)	
Cost Benchmarking Summary									
Actual Total Cost	235,095,117	252,967,886	263,441,939	279,566,433	290,163,161	296,980,087	305,120,381	311,313,312	311,313,312
Predicted Total Cost	195,913,974	203,379,556	211,049,855	219,007,827	227,262,115	235,844,557	244,766,542	251,223,287	251,223,287
Difference	39,181,143	49,588,331	52,392,084	60,558,606	62,901,046	61,135,530	60,353,840	60,090,025	60,090,025
Percentage Difference (Cost Performance)	18.2%	21.8%	22.2%	24.41%	24.43%	23.05%	22.04%	21.45%	21.45%
Three-Year Average Performance	18.2%	20.0%	20.7%	22.80%	23.67%	23.97%	23.17%	22.18%	22.00%
Stretch Factor Cohort									
Annual Result	4	4	4	4	4	4	4	4	
Three Year Average			4	4	4	4	4	4	

Hydro Ottawa IT Budget Assessment Benchmark

Catherine Taylor, Associate Director, Gartner
Nick Lal, Managing Partner, Gartner
6 March 2019
Project: 330054500



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Background and IT Budget Assessment Methodology

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Background

- Hydro Ottawa's Information and Technology organization is responsible for the development and implementation of technology initiatives that support the advancement of Hydro Ottawa's business strategy and priorities.
- Hydro Ottawa has outlined the importance of technology in its 2016-2020 Strategic Direction. Hydro Ottawa has a digital strategy which is aligned with the strategic direction for the organization.
- The 2018 financial results for Information and Technology reflects investments in the strategy intended to improve reliability and functionality of systems used by Hydro Ottawa employees as well as direct customer facing improvements.
- The Information and Technology organization includes functions such as Technology Planning and Governance, Cybersecurity, Grid Technology, Enterprise Architecture, System Development and Integration, Billing and Billing Infrastructure and IT/OT Operations.
- Hydro Ottawa is interested in assessing its overall information technology (IT) spending in terms of enterprise level metrics and the distribution of IT spending. The IT Budget Assessment will enable Hydro Ottawa to understand and compare IT spending within the organization. The assessment will include comparison and analysis of metrics and spending and staffing distributions aimed at providing insight into how IT spending at Hydro Ottawa aligns with peer organizations. The peer organizations used for comparison are pulled from the Gartner Benchmarking database.

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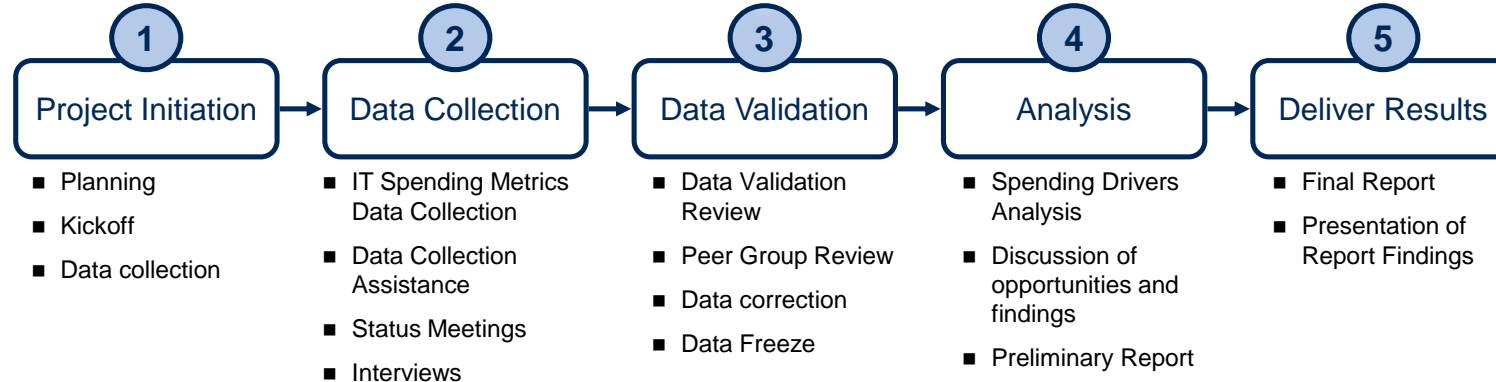
IT Budget Assessment Methodology — Project Approach

- Using industry, revenue, and employee data, Gartner will compare Hydro Ottawa against similar organizations, and will require the following inputs:
 - IT budget spending (capital and operations)
 - Revenue and operating expense
 - Number of employees
 - IT staffing levels
- Functional areas in scope include:
 - Data Center (Computing and Storage)
 - End User Computing and Service Desk
 - Voice and Data
 - Applications Development and Support
 - IT Management and Administration
- Metrics available from this analysis include:
 - IT Budget as a % of Revenue
 - IT Budget as a % of Operating Expense
 - IT Budget Per Company Employee
 - Distribution of IT Budget – by Category (hardware, software, outsourcing and personnel)
 - Distribution of IT Budget – by Domain (data center, end user computing, service desk, voice, data, applications development, applications support, corporate IT management, finance and administration)
 - Distribution of IT Support – by Domain (data center, end user computing, service desk, voice, data, applications development, applications support, corporate IT management, finance and administration)
 - IT Employees as a % of Company Employees
 - IT Contractor Usage
 - Capital Vs. Operational Budget
 - Run, Grow, Transform Budget

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IT Budget Assessment Methodology — Gartner Approach

Project Plan



- Using Gartner's Cost Model for IT Spending, Gartner will collect IT spending and staffing data and perform a cost analysis report use Gartner benchmarking databases.
- The preliminary report will validate data and assumptions, working toward a final report deliverable.
- Timeframe for results range from four weeks onward depending access to data.

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IT Budget Assessment Methodology — Key Definitions

- The IT Budget Assessment follows the Gartner Benchmarking chart of accounts. In order to match the Gartner Benchmark chart of accounts, the data presented in the benchmark will not completely align with the official Information and Technology budget or organization. For example, the Gartner Benchmark chart of accounts has historically excluded operational technology.
- IT Budget Definition
 - The total budget at the end of the twelve month budget period for information technology to support the enterprise. IT Budget can come from anywhere in the enterprise that incurs IT costs, and it is not limited to the IT organization. It is calculated on an annualized “cash out” basis and therefore contains capital budget, and operational expenses. Gartner definitions for IT budget include all IT services, for example:
 - Hardware, software, personnel (including travel and benefits and training), contractors and consultants, outsourcing, disaster recovery, occupancy, data and voice communications/transmission, associated with supporting information technology within the enterprise.
 - Costs for the facilities being used by the staff supporting the enterprise. Some examples include office space, furniture, electricity, maintenance, property taxes, security, and office supplies. Occupancy costs for space dedicated to IT functions such as the data center and IT service desk are also included.
 - The data center (servers, storage etc), client devices (desktops, laptops, tablets, thin clients, handhelds), voice and data networks (including but not limited to voice and data transmission, fixed and mobile telephony, Internet access services), IT service desk, application development and maintenance. IT Support functions such as the office of the CIO, supervisory management, finance and administrative costs, such as purchasing, asset management, process management, and marketing of IT services.

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IT Budget Assessment Methodology — Hydro Ottawa Profile

- Hydro Ottawa Business Information
 - Revenue and operating expense include power recovery and cost of power in accordance with Gartner Benchmarking definitions
 - Data reflect 2018 financial results
 - Revenue: \$1.081 billion
 - Business Operating Expense: \$973 million
 - Company Employees: 657
 - 2018 Number of Customers: 335,457
- Hydro Ottawa Information and Technology Information
 - Excludes operational technology in accordance with Gartner Benchmarking chart of accounts
 - Capital: \$9.253 million
 - Operations: \$16.992 million
 - Total Capital and Operations: \$26.245 million
 - IT Employees (full time equivalents): 55

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IT Budget Assessment Methodology — Peer Group Profile

- Hydro Ottawa is compared against a peer group of other electric utility organizations.
- Nine organizations were selected for the peer group. Five are located in US cities, two in Australia cities, and two in Canadian cities.
- Peer Group Demographics:
 - Peer Group Average Revenue: \$1.372 billion
 - Peer Group Average Operating Expense: \$1.158 billion
 - Peer Group Average Company Employees: 1,157
 - Peer Group Average Number of Customers: 391,747

Executive Summary

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Executive Summary

IT Budget Assessment Results

- For fiscal 2018, Hydro Ottawa's IT budget expressed as a percentage of revenue and operating expense is lower compared to the peer group and the 25th percentile (lowest) of the peer group. IT budget expressed per company employee is similar to the peer group.

Metric	Hydro Ottawa	Peer - Avg	Peer 25 th	Observation
IT Budget as a % of Revenue	2.4%	3.7%	2.7%	Below 25 th percentile
IT Budget as a % of Operating Expense	2.7%	4.5%	3.4%	Below 25 th percentile
IT Budget per Company Employee	\$39,947	\$39,151	\$34,757	Similar to peer average

- In fiscal 2018, Hydro Ottawa is allocating over half (53%) of the budget to transformation (45%) and growth (8%) initiatives and 47% to run. The peer group average has a higher allocation to run at 69% and 31% to growth (22%) and transformation (9%). There is variation among individual peer group members however with some reporting lower run allocations.
- Hydro Ottawa initiatives reflected in the fiscal 2018 data include:
 - Telecom master plan, Data Center infrastructure and control room upgrades, application upgrades, PC/peripheral replacement, Customer Care and Billing, security, outage mobile app, data loss.
 - Some of these initiatives result in a higher proportion of the budget going to hardware for fiscal 2018. In future years the hardware allocation is expected to decrease.

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Executive Summary

IT Budget Assessment Results

- Hydro Ottawa has a lower ratio of IT full time equivalent staff (FTEs) as a percentage of company employees compared to the peer group average at 8.4% versus 10.1%.
 - Hydro Ottawa reported a higher allocation to outsourcing and managed services compared to the peer group average. The benchmark does not convert managed services contracts to an adjusted IT FTE. As a result, organizations using more managed services than a peer group using more in-house or staff augmentation will have a lower IT FTE per company employee ratio.
 - The peer group average reports a higher usage of contractors for staff augmentation (33% of FTEs on average are external) than Hydro Ottawa.
- By functional area, Hydro Ottawa has a higher allocation of FTEs to application development, and a lower allocation to infrastructure functions such as server and storage. Hydro Ottawa's usage of managed services along with the fiscal 2018 project portfolio also impacts the staff distribution by function.
 - Compared to the peer group average, Hydro Ottawa is allocating more FTE resources to application development, however as in the run, grow and transform allocation, there is variation among the individual peer group members.
 - Hydro Ottawa and the peer group average allocate a similar percentage of resources to IT management and administration roles – these are roles associated with the business of IT, as well as organization wide roles such as cyber security.
 - Industry trends suggest that the allocations of resources to management and administration may increase as organizations shift to cloud services and roles such as business relationship, data and analytics, digital transformation, privacy and security increase.

Executive Summary

Utility Industry CIO Agenda for 2019

- Gartner surveyed 106 global utility CIOs to identify CIO priorities for 2019. The survey results can be considered when interpreting the benchmark results. Survey respondents indicated the following:
 - Strong business prioritization on internal improvements.
 - Digital remains the highest ranking single priority this year, followed by operational excellence and cost optimization.
 - Digital ambitions are focused on optimization initiatives and less on digital transformation. Given utilities' asset-intensive nature and large customer bases, the application of digital technologies to improve performance and reduce costs continues to gain momentum.
 - Some examples of digital initiatives in the customer domain that contribute to operational excellence and cost optimization include opening new digital interaction channels and providing customers with an up-to-date insight into emergency restoration activities.
 - Data analytics, artificial intelligence (AI) and the Internet of Things (IoT) rank at the top of game-changing technology areas for utility businesses. Cloud also remained in contention. There is an overall theme of the connection of monitoring and controlling an increased number of intelligent devices to linear networks of wires and poles.
 - The top two technology areas for increases in funding were business intelligence and cyber/information security. This is reflective of the bimodal nature of utility information and technology operations – gathering, analyzing and acting on asset and customer information, while protecting it from an ever-increasing threat universe.
 - Customer experience is the third area of increased funding.
 - Survey results also indicate that utilities as a group are behind other industries in modernizing legacy systems of record. This is apparent in the benchmark peer group results where there are varying levels of application investment.

Executive Summary

Discussion of Opportunities

- The benchmark results indicated that Hydro Ottawa has a number of initiatives to support optimization and transformation. This is in line with Gartner Research findings and recommendations:
 - According to Gartner Research, utility information and technology budgets will increasingly shift from maintaining infrastructure and applications for on-premises delivery toward digital initiatives that support optimization of the core business processes and digitally enabled innovation and transformation. Consequently, restructure your IT investment portfolio to reduce the run-the-business portion and increase emphasis on the grow and transform portions of your IT budget. Hydro Ottawa data for fiscal 2018 reflects this shift.
 - Utilities will have to maintain the balance between addressing trends that drive and enable traditional utility business process optimization and those that address the need for digital innovation initiatives and considerations. Reliable service mandates remain.
 - With the number of projects underway, consider the following best practices to keep efforts on track and maximize benefits:
 - Manage stakeholder expectations carefully due to the number of transformation and modernization initiatives currently underway. It will take time as well as stakeholder involvement and senior management sponsorship to fully implement projects and realize the benefits.
 - Conduct a project portfolio review if needed to understand metrics such as the number of mandatory projects, number of transformation projects, number of growth projects, etc.
 - Ensure that the impact of new projects on ongoing operating expenses (full total cost of ownership) is understood. According to Gartner Research, new capital projects add 25 percent annually to operating expenses on average.
 - Measure benefits realized from transformation projects. Develop a small set of meaningful metrics, such as business productivity improvement, improvement maintenance, customer impact.

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Executive Summary

Discussion of Opportunities

- Maintaining and accelerating the transformation roadmap will depend on ensuring that the information and technology operating model aligns with the organization's digital ambition. Best practices include:
 - Assess the current strategy and execution maturity level to determine alignment with digital ambition. Identify any gaps between the current and target state and develop plans to fill the gaps. For many utilities gaps exist in the following:
 - Talent and workforce: may need new skills and capabilities, such as in data analytics or the Internet of Things (IoT). Other capabilities include Cloud and vendor management.
 - With a cloud emphasis in Hydro Ottawa, a review of skills and capabilities is suggested. Best practices to realize benefits include investments in cloud strategy and architecture, cloud product management and cloud financial expertise.
 - How work gets done – there is a movement toward digital product management and business-IT product teams.
 - Financial models to enable more spending on innovation and more operating expense associated with I&T (versus capital expense). Results suggest Hydro Ottawa has taken action on this.
 - The organization's culture will need to become more innovative and take on a greater degree of risk while maintaining stability and reliability. Movement beyond digital optimization toward digital transformation requires business involvement. This widens the scope and complexity of organizational change management required.

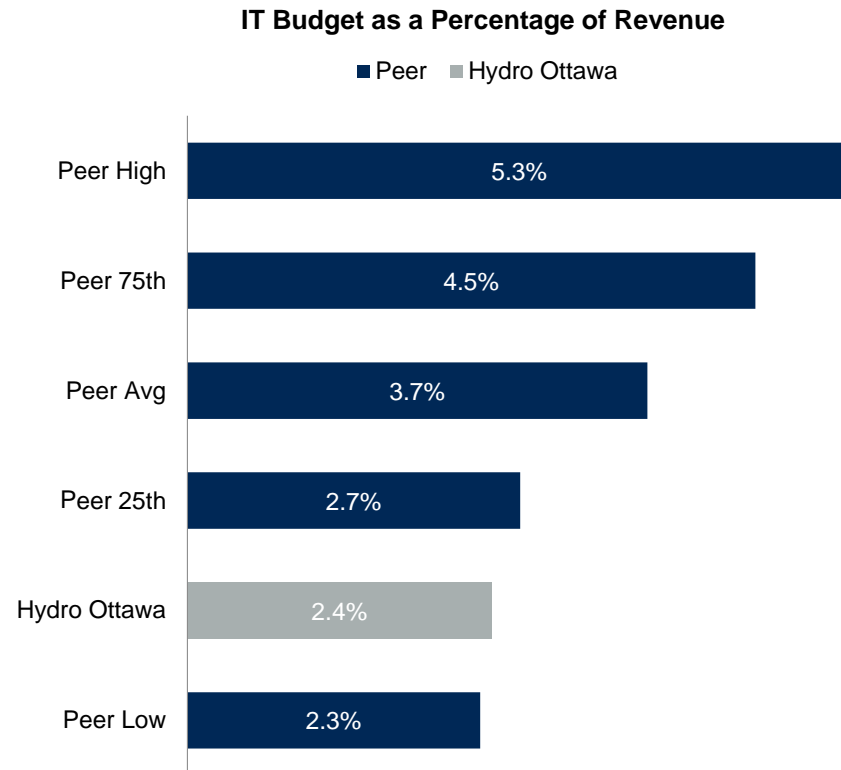
IT Budget Assessment Detailed Results

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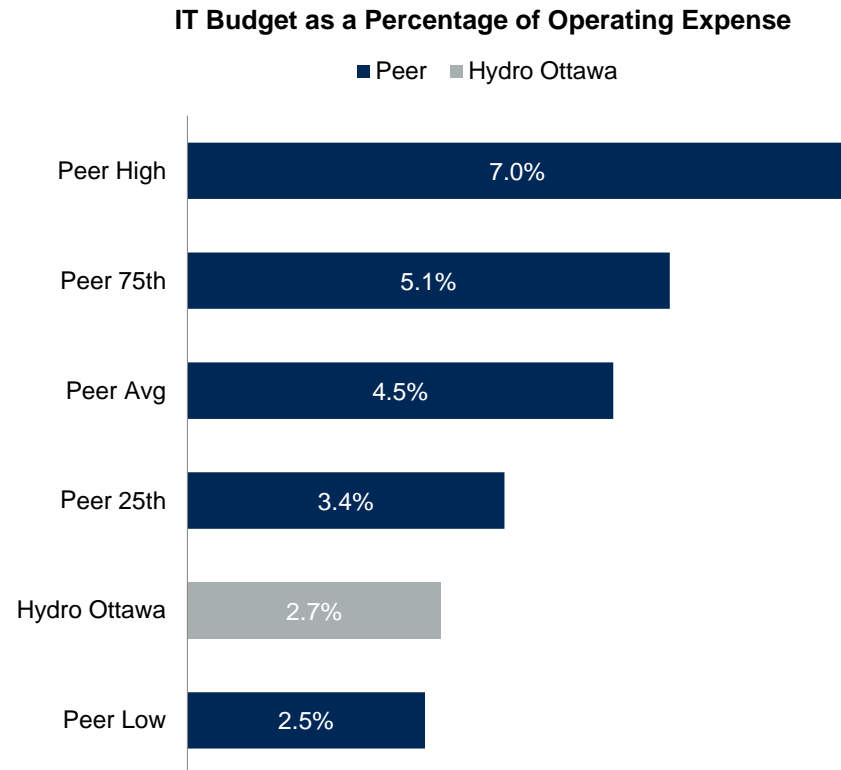
IT Budget as a Percentage of Revenue



- IT budget as a percentage of revenue is a common measure of IT's role in the business, and a measure to assess the comparative level of spending with industry peers.
- Being above or below average does not necessarily mean spending is "too high" or "too low," but significant variances should be analyzed to justify spending levels (e.g., investment in business transformation). Low investment could indicate underserved business needs.
- Hydro Ottawa is below the average and the 25th percentile of the peer group.
- Definitions:
 - Calculation: IT Budget/Organization Revenue
 - Revenue includes power recovery in order to match Gartner definitions
 - IT Budget includes capital and operations spending for technology during the study period, including labour, software, hardware, telecommunications expenses

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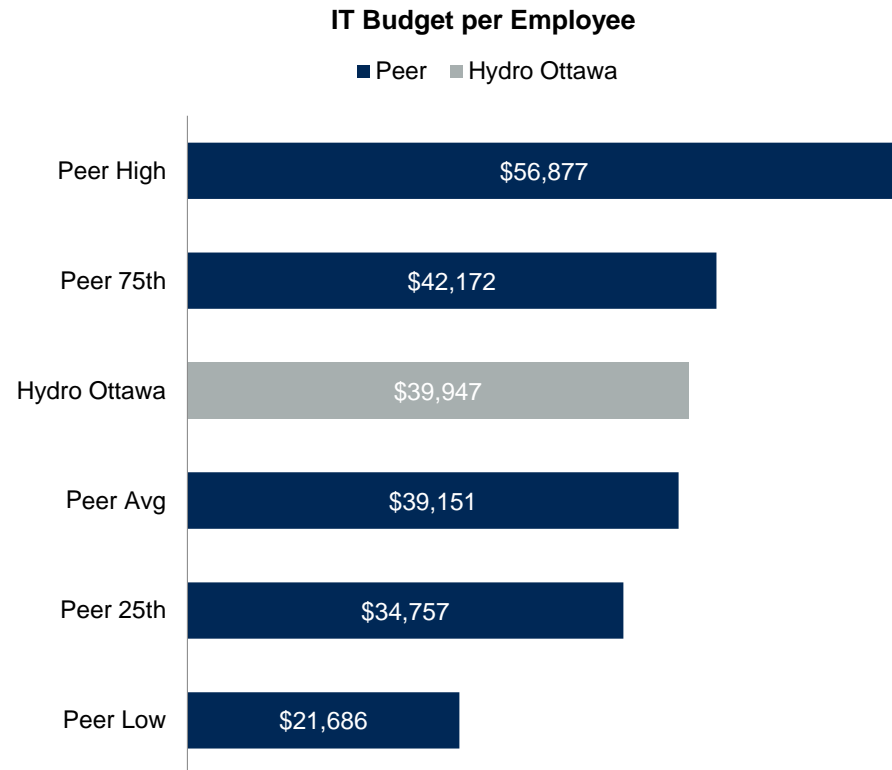
IT Budget as a Percentage of Operating Expense



- IT budget as a percentage of operational expenses provides a view of the role IT plays in business spending patterns. The greater the amount of operating expenses is dedicated to IT, the greater the business will require visibility into IT investments. For most organizations in the utility industry, technology enables business processes throughout the organization.
- Hydro Ottawa is below the average and 25th percentile of the peer group.
- Definitions:
 - IT Budget/Organization Operating Expenses
 - Operating Expenses includes cost of power in order to match Gartner definitions
 - IT Budget includes capital and operations spending for technology during the study period, including labour, software, hardware, telecommunications expenses

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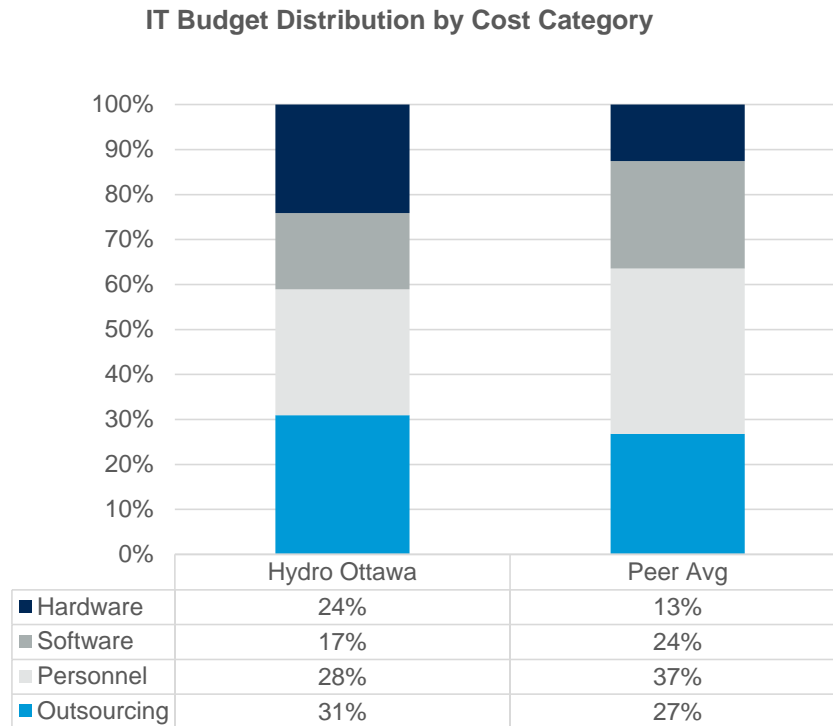
IT Budget per Employee



- IT budget per employee provides insight into the amount of technology support an organization's workforce receives.
- High spending can imply higher levels of automation and/or higher investment in IT in general. Low spending levels can be related to higher overall staffing levels and/or lower IT investment than peers.
- Large variations within industry groups can represent different business models for service or product delivery.
- Hydro Ottawa budget per employee is similar to the peer group average.
- Hydro Ottawa has fewer organization employees than the peer group average. Differences in this metric between Hydro Ottawa and the peer group appear to be driven by the differences in employee numbers.
- Definitions:
 - IT Budget/Organization Employees
 - Organization Employees includes Hydro Ottawa employees
 - IT Budget includes capital and operations spending for technology during the study period, including labour, software, hardware, telecommunications expenses

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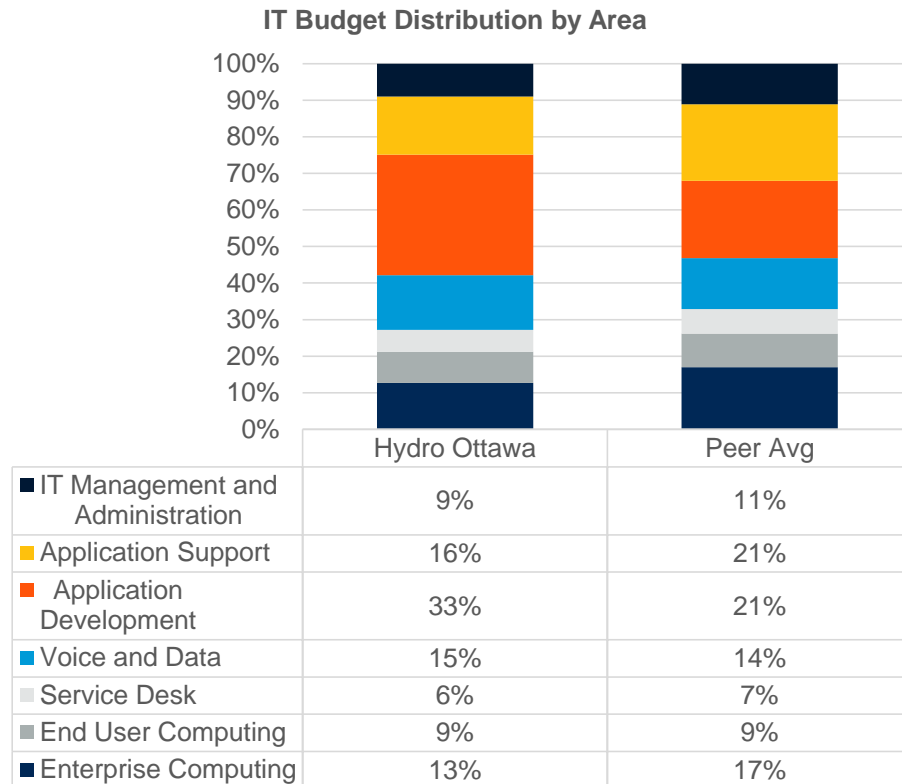
IT Budget Distribution by Cost Category



- During fiscal 2018 Hardware and Outsourcing costs are higher than Hydro Ottawa’s run-rate due to a long-term investment in a fibre optic infrastructure project.
- This measure can be helpful in adding context to the IT investment strategy from a sourcing perspective, in terms of accounting-based resources that may be insourced (for example, IT hardware, software, personnel and occupancy/facilities costs) versus services delivered by a third party (for example, outsourced services and data/voice transmission costs).
- As an organization increases or decreases the level of third-party/outsourced services, it may find an inverse effect in its associated personnel, hardware and/or software expenditures, depending on the scope of third-party services retained and on business requirements.
- The cyclical nature of capital investments in IT hardware and software may also play a significant role in an organization's IT spending outlay.
- Definitions:
 - Allocates the IT budget among the different asset categories

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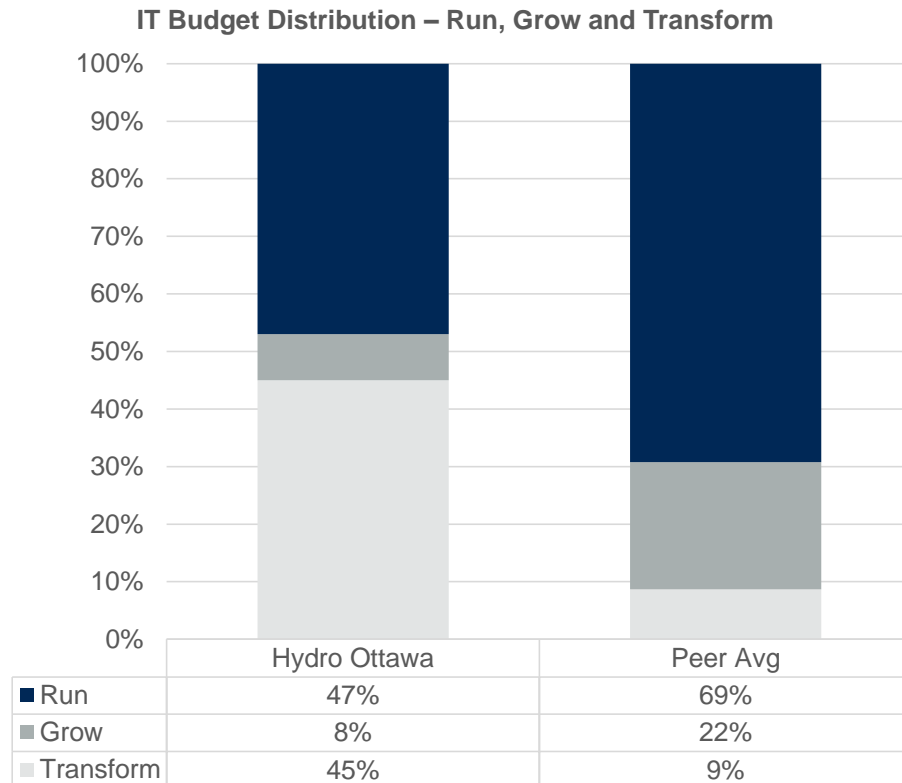
IT Budget Distribution by Area



- During fiscal 2018 End User Computing costs are higher than Hydro Ottawa's run-rate due to peripheral replacements in preparation for Hydro's Facilities Renewal Program.
- The distribution of IT budget spending into these categories helps to define the relative level of IT resources required per year to support the technology environment portfolio.
- This is often leveraged in tandem with IT resource planning exercises, wherein spending and staff resource allocations can be viewed in terms of IT infrastructure (data center, end-user computing, IT service desk, voice and data network) versus applications (application development and application support) versus IT overhead (IT management, IT finance and IT administration).
- While this measure is helpful in identifying relative volumes of IT resource consumption by IT functional area, as compared to industry, it does not aid in identifying whether resources are being leveraged in a cost-effective or productive manner.
- Definitions:
 - Allocates the IT budget among the different functional areas

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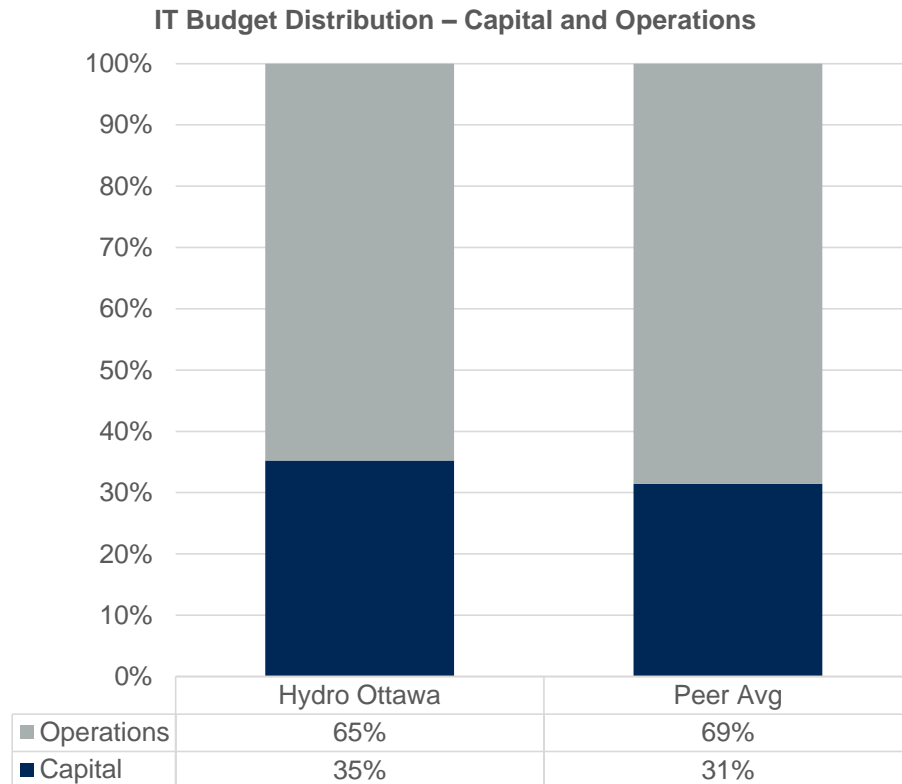
IT Budget Distribution by Run, Grow and Transform



- The distribution of IT spending to “run”, “grow” and “transform” the business provides a view of the investment profile in business terms (how IT will enable the business to grow or transform revenue, operating income and/or profit margins). Hydro Ottawa has a lower allocation to run compared to the peer group average.
- A common misconception with this measure is that an IT initiative that may transform the IT organization, such as data center modernization, should be classified as a "transform the business" investment. While these IT initiatives do transform the IT organization, they should primarily be classified as "run the business" investments because they support pre-existing IT services.
- IT transformation often leads to new business process improvements that enable the business to grow or build new revenue streams. Therefore, these costs would need to be evaluated and distributed based on IT service and business performance.
- Definitions:
 - Allocation of the IT budget by run, grow and transform categories
 - Run: Essential (and generally non-differentiated) business processes.
 - Grow: Improvements in operations and performance, within current business models
 - Transform: New markets, new products and new business models

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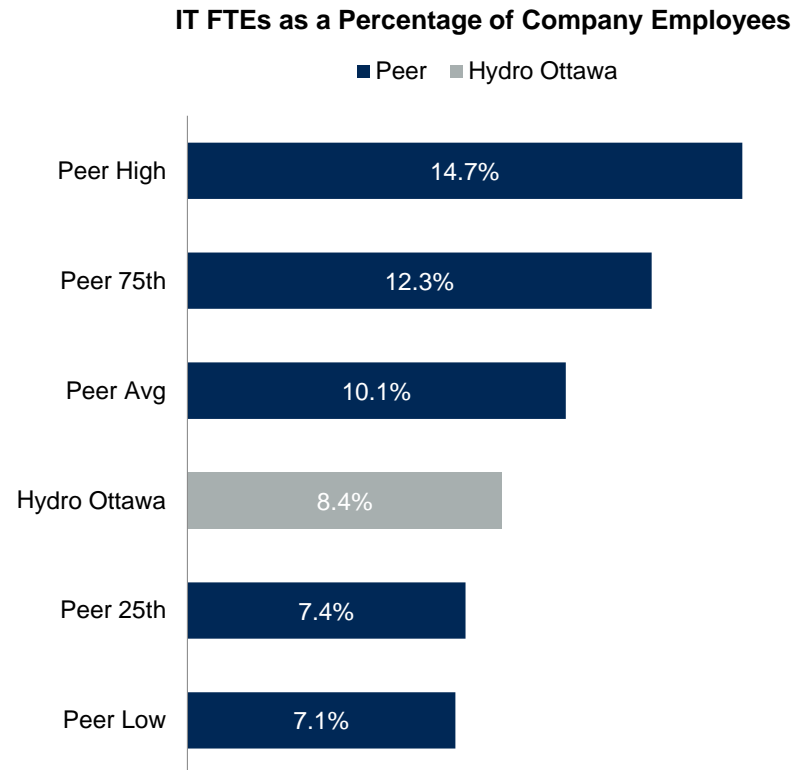
IT Budget Distribution by Capital and Operations



- Hydro Ottawa’s capital allocation is focused on hardware with expenditures in data center, telecom, and other hardware refresh occurring in the 2018 fiscal period.
- This metric can provide visibility into the cyclical nature of capital investments (such as hardware, software and large service contracts) compared with recurring operational expenses (such as personnel, facilities and maintenance expenses).
- The challenge is in leveraging this information to communicate the linkage between IT investment and business results, because it is a traditional accounting view of IT cash flow and does not highlight how IT investment enables improved business performance.
- Cloud adoption and resulting variances in approaches to accounting can have an impact the capital and operations distribution. A shift to cloud may result in expenses that were previously capitalized now reported as ongoing expenses. Hydro Ottawa is using a cloud adoption approach that allows for capitalization.
- Definitions:
 - Distribution of IT capital and IT operations budget

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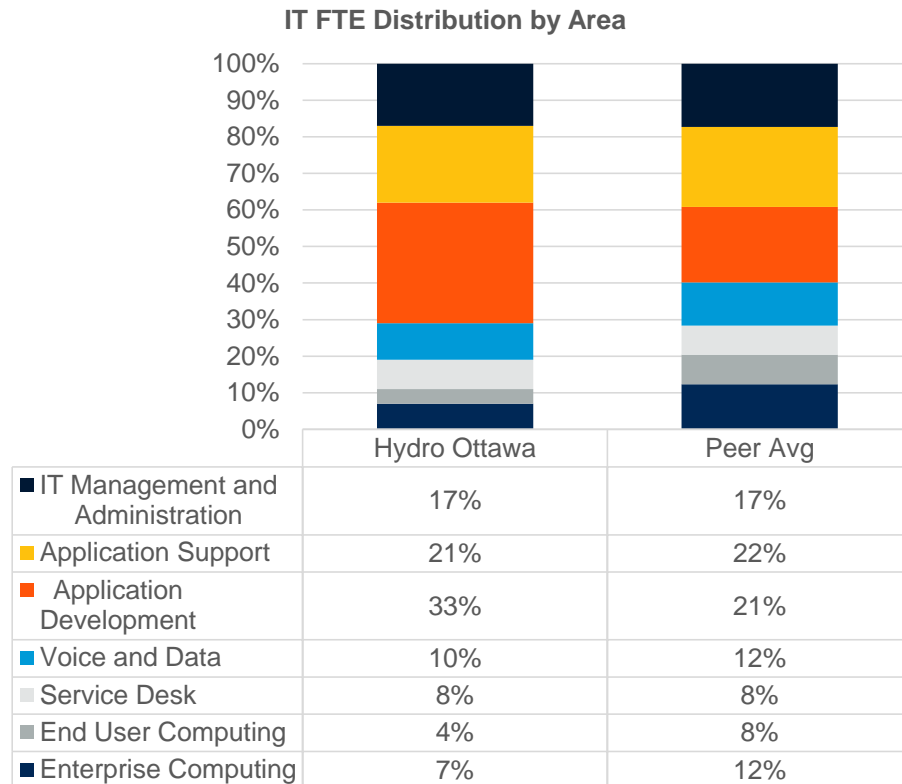
IT FTEs as a Percentage of Company Employees



- The percentage of IT employees in the organization compared to the total number of employees indicates the role IT support provides to the business. This measure can be heavily influenced, however, by the level of outsourcing an organization may have.
- The peer group is using less outsourcing than Hydro Ottawa on average as reflected in the distribution of the budget by category. The peer group also uses more contract staff augmentation for IT than Hydro Ottawa.
- Organizations using less outsourcing have a higher ratio of IT FTE as a percentage of company employees, since outsourcing contracts are not converted to full time equivalents.
- The peer group has a higher number of company employees on average compared to Hydro Ottawa.
- Definitions:
 - IT FTE/Company Employees
 - IT FTE includes in-house and contractor FTEs, does not include managed services adjusted FTEs
 - Company employees includes organization employees

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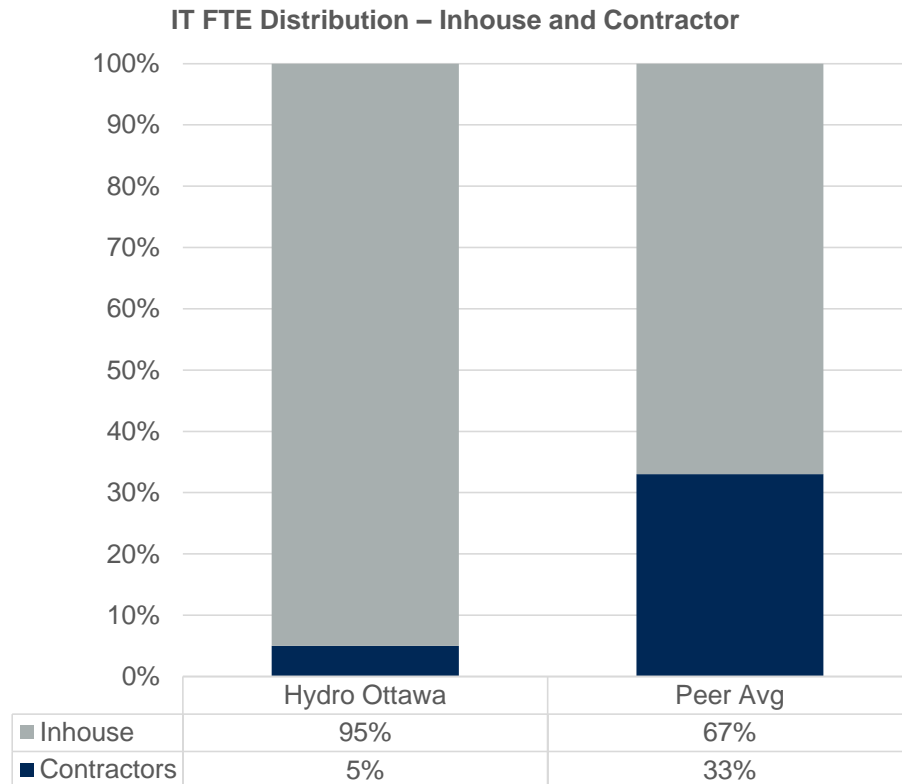
IT FTEs Distribution by Area



- By viewing human resources (IT FTEs) within the context of the total portfolio, organizations are able to identify which environment is the most labor-intensive as a percent of the IT labor pool. Typically, application activities (development and support) demand the most resources from both cost and staffing perspectives. The degree to which an organization outsources should be considered alongside such staffing metrics.
- Hydro Ottawa allocates more of the FTEs to applications development compared to the peer group average.
- Usage of managed services providers at Hydro Ottawa will impact the FTE distribution.
- Definitions:
 - Distributes the inhouse and contractor FTE among the functional areas

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IT FTEs Distribution by Inhouse and Contractor



- The distribution of IT FTEs (insourced versus contractor) can help provide a view of the IT staffing strategy.
- IT contract labor or contractor usage can be an effective approach to maintaining flexibility and agility when business conditions are changing. However, keeping contractors for extended periods can be costly and limit process standardization.
- Hydro Ottawa uses less contractor/staff augmentation than the peer group average.
- Definitions:
 - Contractor FTE/Inhouse FTE
 - Contractors are staff augmentation, not outsourcing or managed service contract labour

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Appendix

IT Budget Assessment Model

2019 CIO Survey

Suggested Gartner Research

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IT Budget Assessment Model

- Organization Profile
- Organization Revenue and Expense
- Organization Company Employees
- IT Budget
 - IT Capital Investment
 - IT Operations Spending
- IT Staffing
 - Total FTE
 - Contractor Percentage

General Information	
Enterprise Name	
Primary Industry Classification	
Organizational Scope of This Assessment	
Currency of Financial Data Entered	Select Currency
Fiscal Year	
Fiscal Year End (Month)	
Organization Profile for:	.1
Annual Revenue	0
Business Operational Expense	0
Organization Profile for:	0
Total Employees	0
Total IT Budget for:	0
IT Capital Investment	0
IT Operational Budget	0
IT Depreciation & Amortization	0
Total IT Staffing for:	0
Total IT full time equivalents (include insourced and contractors)	0
What percent of the IT FTEs listed above are contractors?	0%

Refer to "Gartner IT Spending Instruction Guide.doc" for additional information

IT Budget Assessment Model

- Distribution of IT Capital and Operations Budget
- Run, Grow and Transform Distribution
- Distribution of Spending by Functional Area/IT Domain
- Percentage of Support (FTE in-house and contractors) to Functional Areas/IT Domain

IT Spending Allocation		
Of your total Capital and Operational IT Budget, what percent of your IT Budget listed above is spent on:		
	0	
Hardware	0%	
Software	0%	
Personnel Salaries & Benefits (incl. Occupancy)	0%	
Outsourcing (incl. Transmission)	0%	
Total should equal 100%	0%	
What percent of your total Capital and Operational IT Budget is to Run, Grow, and Transform the Business?		
	0	
Run	0%	
Grow	0%	
Transform	0%	
Total should equal 100%	0%	
Of your total Capital and Operational IT Budget, what percent of your IT Budget listed above is spent on:		
	Percent Budget	Percent Support (Full Time Equivalents)
Enterprise Computing and Storage	0%	0%
End-User Computing	0%	0%
IT Service Desk	0%	0%
Voice Network	0%	0%
Data Network	0%	0%
Application Development	0%	0%
Application Support	0%	0%
Corporate IT Management	0%	0%
IT Finance & Administration	0%	0%
Total should equal 100%	0%	0%

Refer to "Gartner IT Spending Instruction Guide.doc" for additional information

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Gartner Utilities CIO Survey

Top Priorities for 2018 and 2019					
Percentage of Respondents					
Utilities (n = 87)		Top Performers (n = 225)		Typical Performers (n = 2,244)	
1	Digital	22%	Digital	31%	Digital
2	Operational excellence	21%	Revenue/business growth	20%	Revenue/business growth
3	Cost optimization/reduction	15%	Operational excellence	16%	Operational excellence
4	Business model change	11%	Customer experience	11%	Customer experience
5	Industry-specific	11%	Data and analytics	7%	Cost optimization/reduction
6	Revenue/business growth	9%	New products and services	7%	Business or financial goals
7	Customer experience	9%	Cost optimization/reduction	7%	Business model change
8	Business or financial goals	8%	Artificial intelligence or machine learning	6%	Industry-specific
9	ERP	6%	Business model change	6%	Data and analytics
10	Modernization (of legacy systems)	6%	Industry-specific	6%	New products and services

Base: All answering, excluding "prefer not to answer", n varies by segment
Showing the 10 most common answers per segment, coded open-text responses, multiple responses allowed
Q: What would you say is your organization's top priority for 2018 and 2019?
ID: 368223

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Game-Changing Technologies					
Percentage of Respondents					
Utilities (n = 99)		Top Performers (n = 230)		Typical Performers (n = 2,329)	
1	Data analytics (including predictive analytics)	33%	Artificial intelligence/machine learning	40%	Artificial intelligence/machine learning
2	Artificial intelligence/machine learning	28%	Data analytics (including predictive analytics)	23%	Data analytics (including predictive analytics)
3	Internet of Things	17%	Cloud (including XaaS)	12%	Cloud (including XaaS)
4	Cloud (including XaaS)	10%	Digital transformation	10%	Internet of Things
5	Automation	8%	Mobile (including 5G)	7%	Digital transformation
6	Mobile (including 5G)	5%	RPA	6%	Mobile (including 5G)
7	Business intelligence	4%	Internet of Things	6%	Automation
8	Industry-specific	3%	Blockchain	5%	Blockchain
9	RPA	3%	Automation	3%	Industry-specific
10	Information technology	2%	Information technology	3%	Business intelligence

Base: All answering, excluding "prefer not to answer", n varies by segment
Showing the 10 most common answers per segment, coded open-text responses, multiple responses allowed
Q: Which technology area do you expect will be a game changer for your organization?
ID: 368223

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Gartner Research References

- “Use Gartner’s Digital Business Layers to Communicate Your Digital Intent,” Published 22 February 2019 - ID G00375919
- “Utility Digital Transformation Primer for 2019,” Published: 5 February 2019 ID: G00375742
- “Top 10 Trends Driving the Utility Industry in 2019,” Published 26 February 2019 - ID G00382917
- “2019 CIO Agenda: Utility Industry Insights,” Published 15 October 2018 - ID G00368223
- “Is Your Current I&T Operating Model Right for Your Digital Ambition?” Published: 29 June 2018 ID: G00356906
- “Use Gartner Frameworks to Align Utility I&T Operating Models With Enterprise Business Models,” Published 22 October 2018 - ID G00368105 -
- “5 Utility CIO Actions to Accelerate Your CloudFirst Strategy,” Published: 21 February 2018 ID: G00351253
- “What CIOs Need to Know About Cloud Computing Roles and Competencies,” Refreshed 2 February 2018, Published 18 August 2016 - ID G00310409

Contacts

Hydro Ottawa Limited
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Exhibit 1
Tab 1
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HEALTH WEALTH CAREER

2019 MARKET BENCHMARKING



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INTRODUCTION

- As part of the Total Compensation Program Review, Hydro Ottawa has asked Mercer Canada (“Mercer”) to conduct a market benchmarking review to assess the competitiveness of Hydro Ottawa’s average salaries and target total cash compensation for its unionized and management group roles against relevant market comparators.
- As such, Mercer has used data from 2019 Canadian Mercer benchmark databases as well as MEARIE data (as provided by Hydro Ottawa) from 2016 for the management positions, and from 2017, 2018 and 2019 for the unionized positions to conduct its review.
- In addition, Mercer reviewed the employer-paid portion of insurance and wellness benefits, as well as pension, paid to all positions within the organization. This information was used to calculate the cost of benefits as a percentage of payroll, and compared to typical market norms.

METHODOLOGY

DATA SOURCES & DATA CONFIDENTIALITY

Market Data Sources

- The market review was conducted using data from the following published survey sources:

Survey Source	Data Cuts
2019 Canadian Mercer Benchmark Database ("MBD")	All MBD data; Excluding Mining
Mercer Ontario Society of Professional Engineers (OPSE) National Engineering Survey	All National Engineering data
MEARIE Survey Data ("MEARIE")	All Organizations

- MBD and National Engineering survey data is effective 2019 and has not been aged
- MEARIE survey data is effective 2016, 2017, 2018 and 2019 and has been aged by a total of 8.00%, 5.06%, 2.8% and 0% respectively to reflect the annual median salary increases since 2017 (as reported in Mercer's *Compensation Planning Surveys*)
- Throughout this report, data is incumbent-weighted and reported in thousands of dollars

Hydro Ottawa Data

- The average salary for each position at Hydro Ottawa has been used to compare positions to the market median job rate (P50)

Data Confidentiality

- To ensure statistical integrity and maintain data confidentiality, Mercer's standard reporting procedures do not report results where there are an insufficient number of observations; Mercer's standard reporting requirements are:
 - Three organizations to report a market average (mean)
 - Four organizations to report a median (50th percentile); and
 - Five organizations to report a quartile (25th and 75th percentiles)

EXECUTIVE SUMMARY

- Fifteen (15) jobs were reviewed including those core to the business, as well as technical, professional and para-professional roles that support the business. The jobs included in the study are representative of both management and non-management with five (5) management jobs and ten (10) non-management jobs at different levels of each category reviewed.
- The jobs that are core to the operational business – Manager, Distribution Operations, Supervisor, Distribution Operations, Professional Engineer and the trades jobs of Power Line Technician and System Operator were all found to be very well aligned with the utility market comparators and, in the case of the Professional Engineer job, also with the general industry market comparators.
- Some jobs, generally unionized support roles, were found to be higher than the general industry market comparators but in most cases were still at market (+/-10%) of P50 of the utility market comparators.
- Key professional roles such as Senior Procurement Agents, Management Accountants, Network Administrators were also found to be very well aligned with both the utility and general industry market comparators.
- Employer-paid benefits (i.e. insurance and wellness benefits and pension contributions) are generally aligned with what is typically seen in the market for non-executive employees. Specifically, when compared to the Ontario Public Sector where such benefits account for 20% to 22% of base salary, Hydro Ottawa's benefits were found to be within 19% to 21% of base salary.

MARKET BENCHMARKING



MARKET BENCHMARKING RESULTS

Incumbent(s) below market (< 10%) Incumbent(s) within +/- 10% of the market Incumbent(s) above market (> 10%)

- The table below compares Hydro Ottawa's average salary for each job against the market's job rate and target total cash compensation (base salary + short-term incentive).

All compensation data in \$CAD (000's)

All compensation data in \$CAD (000's)			JOB RATE ⁽¹⁾						TARGET TOTAL CASH COMPENSATION					
HYDRO OTTAWA POSITION TITLE	BENCHMARK POSITION TITLE	Data Source	Hydro Ottawa	P25	P50	P75	AVG	As % of P50	Hydro Ottawa	P25	P50	P75	AVG	As % of P50
Manager, Distribution Operations	No Match	MBD	\$117	--	--	--	--	--	\$129	--	--	--	--	--
	Manager Operations	MEARIE		\$111	\$121	\$125	\$119	97%		\$118	\$126	\$134	\$126	102%
Supervisor, Distribution Operations	No Match	MBD	\$110	--	--	--	--	--	\$110	--	--	--	--	--
	Line Supervisor	MEARIE		\$103	\$105	\$110	\$106	105%		\$106	\$110	\$113	\$109	100%
Distribution Engineer	Electrical Engineering - Senior Professional (P3)	MBD	\$103	\$91	\$98	\$104	\$100	105%	\$103	\$87	\$100	\$116	\$104	103%
	Project Engineer	MEARIE		\$101	\$104	\$109	\$104	99%		\$101	\$104	\$109	\$105	99%
System Operator	No Match	MBD	\$97	--	--	--	--	--	\$97	--	--	--	--	--
	System Control Operator	MEARIE		\$89	\$93	\$100	\$94	104%		--	--	--	--	--
Network Administrator	IT Data/Voice Network Administration - Senior Professional (P3)	MBD	\$94	\$75	\$89	\$91	\$85	105%	\$94	\$84	\$93	\$102	\$94	101%
	Systems / Program Administrator or Applications / Systems Support Professional	MEARIE		\$81	\$90	\$102	\$92	104%		\$82	\$92	\$107	\$94	102%
Powerline Technician	Electrical Engineering Technologist/Technician - Senior Para-Professional (S3)	National Engineering	\$90	\$80	\$86	\$93	\$86	104%	\$90	\$77	\$88	\$90	\$84	103%
	Lineperson	MEARIE		\$86	\$88	\$92	\$88	102%		--	--	--	--	--
Management Accountant	Accounting - Senior Professional (P3)	MBD	\$91	\$81	\$88	\$98	\$88	104%	\$91	\$82	\$92	\$109	\$95	99%
	Accountant	MEARIE		\$94	\$101	\$108	\$101	90%		--	--	--	--	--
Communications Advisor	General Communications & Corporate Affairs - Experienced Professional (P2)	MBD	\$84	\$66	\$73	\$78	\$73	115%	\$84	\$61	\$74	\$85	\$74	114%

--" indicates insufficient market data

1. Base Salary used instead of job rate for National Engineering survey as job rates are not collected

MARKET BENCHMARKING RESULTS (CONT.)

Incumbent(s)
below market
(< 10%)

Incumbent(s)
within +/- 10%
of the market

Incumbent(s)
above market
(> 10%)

- The table below compares Hydro Ottawa's average salary for each job against the market's job rate and target total cash compensation (base salary + short-term incentive).

All compensation data in \$CAD (000's)

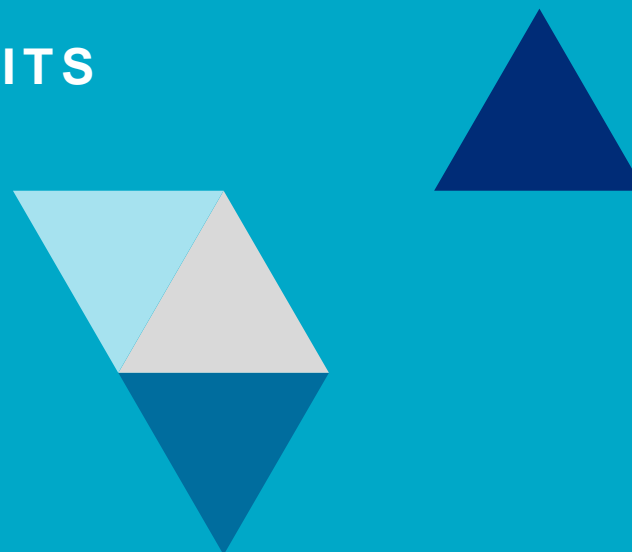
HYDRO OTTAWA POSITION TITLE	BENCHMARK POSITION TITLE	Data Source	JOB RATE ⁽¹⁾						TARGET TOTAL CASH COMPENSATION					
			Hydro Ottawa	P25	P50	P75	AVG	As % of P50	Hydro Ottawa	P25	P50	P75	AVG	As % of P50
Supervisor, Billing & Supervisor, Collections	Blend ⁽²⁾	MBD	\$88	\$68	\$71	\$84	\$75	125%	\$88	\$68	\$75	\$85	\$76	117%
	Supervisor Customer Service and/or Billing and/or Collections	MEARIE		\$91	\$97	\$101	\$95	91%		\$91	\$100	\$104	\$98	88%
Senior Procurement Agent	Procurement - Experienced Professional (P2)	MBD	\$77	\$70	\$77	\$84	\$78	100%	\$77	\$64	\$77	\$91	\$79	100%
Warehouse Attendant	Warehouse Shipping & Receiving - Senior Para-Professional (S3)	MBD	\$75	\$50	\$54	\$85	\$65	138%		\$51	\$60	\$82	\$67	125%
	Stockkeeper	MEARIE		\$67	\$73	\$78	\$73	103%		--	--	--	--	--
IT Service Desk Technician	General IT User Support - Entry Professional (P1)	MBD	\$73	\$54	\$58	\$65	\$59	127%	\$73	\$53	\$61	\$71	\$64	121%
	Systems / Program Administrator or Applications / Systems Support Professional	MEARIE		\$81	\$90	\$102	\$92	81%		\$82	\$92	\$107	\$94	80%
GIS/CAD Technician	Geographic Information Systems (GIS) - Entry Professional (P1)	MBD	\$69	--	\$73	--	\$68	95%	\$69	--	\$65	--	\$65	106%
	Technical DraftsPerson	MEARIE		\$57	\$61	\$64	\$61	112%		--	--	--	--	--
Customer Contact Agent	General Customer Service - Experienced Para-Professional (S2)	MBD	\$60	\$45	\$49	\$51	\$50	123%	\$60	\$41	\$46	\$53	\$48	129%
	Blend ⁽³⁾	MEARIE		\$58	\$62	\$69	\$63	98%		--	--	--	--	--
Billing Service Associate	Billing & Invoicing - Experienced Para-Professional (S2)	MBD	\$59	\$44	\$49	\$55	\$49	121%	\$59	\$43	\$48	\$56	\$50	123%
	Billing Clerk/ Cust Accts Rep	MEARIE		\$60	\$64	\$69	\$63	92%		--	--	--	--	--

-- indicates insufficient market data

2. Blend of Billing & Invoicing - Team Leader (Para-Professionals) (M1) and Credit & Collections - Team Leader (Para-Professionals) (M1)

3. Blend of Customer Service Rep. and Customer Service Clerk

EMPLOYER PAID BENEFITS



EMPLOYER PAID BENEFITS BENEFITS COSTING

- Hydro Ottawa provided Mercer with the employer-paid portion of insurance and wellness benefits, as well as pension, paid to all positions within the organization. As seen below, the positions have been grouped by their level and as a result, benefit costs and base salaries have been averaged accordingly.

Benefit	Employee Group			
	Upper Management - Levels 5 and 6	Middle Management - Levels 3 and 4	Union Members – Levels 5, 6, and 7	Union Members – Levels 2, 3, and 4
Average Insurance (Health, Dental, Vision, etc.)	\$8,791	\$8,326	\$7,695	\$7,743
Average Wellness Spending	\$45	\$45	\$45	\$45
Average Contribution to Pension Plan	\$14,728	\$11,225	\$9,606	\$7,140
Average Total Cost of Benefits	\$23,564	\$19,596	\$17,616	\$14,928
Average Annual Salary (all employees)	\$122,899	\$98,899	\$87,808	\$70,838
As a Percentage (%) of Median Base Salary	19%	20%	20%	21%

Normative Comparative Reference Point (as a % of base salary)

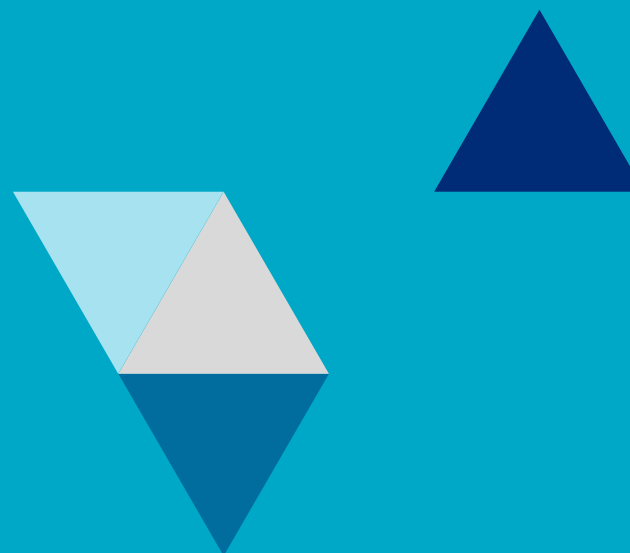
Ontario Public Sector:

- Non-executive employees = 20-22%

Observations:

- Hydro Ottawa benefits offerings are generally aligned with what we typically see in the market.
- Positioning is slightly below the reference point for the “Upper Management” group by 1%.

JOB MATCHES – HYDRO OTTAWA AND MBD



BENCHMARK MATCHES

Client Name POSITION #	Client Name TITLE	MBD Code	MBD Position title	Description MBD	Job Family	Career Stream	Meirrie Code
1	Manager, Distribution Operations	none	--	--	--	--	Manager Operations
2	System Operator	none	--	--	--	--	System Control Operator
3	Distribution Engineer	ENS.03.015.P30	Electrical Engineering - Senior Professional (P3)	Electrical Engineering researches, develops, designs, and tests electrical components, equipment, systems, and networks. Designs electrical equipment, facilities, components, products, and systems for commercial, industrial, and domestic purposes.	Engineering & Science	Professional	Project Engineer
4	Supervisor, Distribution Operations	none	--	--	--	--	Line Supervisor
5	Network Administrator	ITC.08.031.P30	IT Data/Voice Network Administration - Senior Professional (P3)	IT Data/Voice Network Administration work focuses on planning the network implementation, determining physical and logical layouts, installing, configuring, and maintaining ICT data and voice networks including: •Meeting end user needs by ensuring the uptime, performance, resource availability, and security of the networks managed within established budgets and operational guidelines •Determining and diagramming the physical layout which illustrates the physical location of and the connections between devices participating on the network •Determining and diagramming the logical layout which documents the communication protocols (e.g., IP, TCP, POP3, etc.) and type of service/application (email, file transfer, web browsing, etc.) for each segment of the network •Automating routine tasks using scripting and writing basic computer programs to address more complex systems software configuration and enhancement Responsible for supporting the development, design, and testing of electrical components, equipment, systems, and network that includes facilities, components, products, and systems for commercial, industrial, and domestic purposes.□	IT, Telecom & Internet	Professional	Systems / Program Administrator or Applications / Systems Support Professional
6	Powerline Technician	ENS.10.038.S30	Electrical Engineering Technologist/Technician - Senior Para-Professional (S3)	Specialization Match Note: Technologists apply engineering principles in the implementation of products, systems, and processes. This differs from Engineers who use theoretical aspects of engineering principles to research and conceptually design products, systems, processes, etc. Some countries may require Technologists to have a formal certification or registration and/or a formal Technologist Degree to practice as a Technologist. Professional Technicians have a Technical Degree and some incumbents have a combination of both education/experience. Para-Professional Technicians are General Communications & Corporate Affairs includes work managed or performed across multiple Communications & Corporate Affairs sub-families. Specializations in this sub-family typically perform work related to both internal and external communications, including developing the content for and producing written and visual communications. The internal portion of the work is focused on company-wide communications to employees related to organization values/strategy/performance and employee programs, policies, and tools. The external communications portion of the work includes aspects of one or more of the following: •Public Relations •Government Relations •Community Relations/Corporate Responsibility •Investor Relations In some organizations, incumbents may also develop materials for marketing/advertising communications.	Engineering & Science	Para-Professional	Lineperson
7	Communications Advisor	CCA.02.001.P20	General Communications & Corporate Affairs - Experienced Professional (P2)	Specialization Match Note: Technologists apply engineering principles in the implementation of products, systems, and processes. This differs from Engineers who use theoretical aspects of engineering principles to research and conceptually design products, systems, processes, etc. Some countries may require Technologists to have a formal certification or registration and/or a formal Technologist Degree to practice as a Technologist. Professional Technicians have a Technical Degree and some incumbents have a combination of both education/experience. Para-Professional Technicians are General Communications & Corporate Affairs includes work managed or performed across multiple Communications & Corporate Affairs sub-families. Specializations in this sub-family typically perform work related to both internal and external communications, including developing the content for and producing written and visual communications. The internal portion of the work is focused on company-wide communications to employees related to organization values/strategy/performance and employee programs, policies, and tools. The external communications portion of the work includes aspects of one or more of the following: •Public Relations •Government Relations •Community Relations/Corporate Responsibility •Investor Relations In some organizations, incumbents may also develop materials for marketing/advertising communications.	Communications & Corporate Affairs	Professional	

BENCHMARK MATCHES

Client Name POSITION #	Client Name TITLE	MBD Code	MBD Position title	Description MBD	Job Family	Career Stream	Mearie Code
8	Management Accountant	FIN.06.001.P30	Accounting - Senior Professional (P3)	Accounting includes work across multiple areas of Accounting including: •Ensuring compliance with financial transaction recording standards (e.g., general ledger, cash payments/collections, tax transactions, etc.) •Control/reconciliation of accounts and records (balance sheet, P&L, bank accounts, etc.) •Accounting reports/schedules for internal audiences (management reporting) and/or for external audiences (compliance reporting) including consolidation of financial statements, cash flow reporting, budget reporting, etc.) In some organizations, Accounting work may also include: •Cost accounting/budgeting (allocation of direct/indirect costs, variance analysis, budget preparation, etc.) •Accounts Payable/Receivable and/or Credit & Collections.	Finance	Professional	Accountant
9	Supervisor, Billing & Supervisor Collections	FIN.09.005.M10	Billing & Invoicing - Team Leader (Para Professionals) (M1)	Billing & Invoicing work is focused on designing and ensuring compliance with billing and invoicing processes including: •Information verification (e.g., ensure accuracy of billing information, negotiated terms and compliance with current legislation) •Monitoring customer accounts (e.g., ensure payments made on time, report on overdue accounts, etc.) •Resolving billing discrepancies (e.g., investigate and resolve billing & invoicing errors, recommend process improvements to avoid future errors, etc.) •May include collections activities. □ Specialization Match Note: Para-Professional incumbents verify information (e.g., ensure accuracy of billing information, negotiated terms, etc.) and complete invoice data entry.	Finance	Management	Supervisor Customer Service and/or Billing and/or Collections
		FIN.10.001.M10	Credit & Collections - Team Leader (Para Professionals) (M1)	Credit & Collections work is focused on administering, designing, and ensuring compliance with credit and collections processes including: Credit •Researching credit history (e.g., collect personal/business data for analysis, run credit reports, etc.) •Applying acceptable credit lines and payment terms to new customer and/or supplier accounts Collections •Collection and maintenance of customer accounts (e.g., track account status, report on outstanding balances, prioritize collection activity) •Follow up overdue accounts (e.g., initiate demand letters, outbound phone calls to delinquent accounts, external debt collection, etc.)	Finance	Management	Supervisor Customer Service and/or Billing and/or Collections
10	Senior Procurement Agent	SCN.03.001.P20	Procurement - Experienced Professional (P2)	Accountable for obtaining goods/services required by the organization including: •Indirect Operations (e.g., Office Supplies, Computers, Travel, Maintenance, Machine Parts, etc.) •Direct Operations (e.g., Raw Materials and Services for Manufacturing, Production or Construction; Products for Retail, etc.) Procurement processes include: •Product/Service Sourcing •Supplier Selection •Pricing/Terms Negotiation •Order Processing •Contract Administration •Supplier Performance Management •May include Strategic Sourcing. □ Specialization Match Note: Para-Professional incumbents administer the transactions associated with obtaining goods and services and do not negotiate pricing or terms.	Supply Chain	Professional	
11	Warehouse Attendant	SCN.05.029.S30	Warehouse Shipping & Receiving - Senior Para-Professional (S3)	Warehouse Shipping & Receiving includes: •Receiving/inspecting goods and verifying items against the shipment record •Gathering, verifying, and packing items for shipment according to specifications and the applicable transportation method •Recording received and shipped items	Supply Chain	Para-Professional	Stockkeeper
12	IT Service Desk Technician	ITC.10.001.P10	General IT User Support - Entry Professional (P1)	Responsible for providing day-to-day technical support to employees for a range of hardware and software related systems. Responds to and diagnoses problems through discussion with users, which includes trouble shooting, fault rectification and problem escalation. Provides effective and timely resolution of users' problems, queries or complaints. Assists in hardware and software evaluation and recommends upgrades or improvements to IT infrastructure.	IT, Telecom & Internet	Professional	Systems / Program Administrator or Applications / Systems Support Professional

BENCHMARK MATCHES

Client Name POSITION #	Client Name TITLE	MBD Code	MBD Position title	Description MBD	Job Family	Career Stream	Mearie Code
13	GIS/CAD Technician	ENS.08.001.P10	Geographic Information Systems (GIS) - Entry Professional (P1)	Develops and maintains geospatial databases. Uses GIS to perform spatial analysis, database development, extraction and manipulation. Converts data received from internal and external sources to make them usable in the GIS. Maintains metadata and documentation, performs topology checks and other data quality checks to identify and correct errors or omissions in data	Engineering & Science	Professional	Technical Draftsperson
14	Customer Contact Agent	CSV.02.001.S20	General Customer Service - Experienced Para-Professional (S2)	General Customer Service includes post-sale technical and/or non-technical customer service and support across multiple sub-families for business and/or end-consumer customers including: Remote Customer Service: Providing customer service and support via phone, online chat, or text including: •Call center-based customer support in response to a high volume of low complexity inquiries •Customer issues analysis and resolution (typically performed in an office environment) in response to a lower volume of higher complexity inquiries Distribution Center Customer Service: Performed in a distribution center, product returns/repair center, or field walk-in customer service facility including: •Acting as liaison between customers, production and distribution departments related to specific customer orders •Providing technical and non-technical customer support in a walk-in service center Incumbents matching to this specialization are not Billing & Invoicing work is focused on designing and ensuring compliance with billing and invoicing processes including: •Information verification (e.g., ensure accuracy of billing information, negotiated terms and compliance with current legislation) •Monitoring customer accounts (e.g., ensure payments made on time, report on overdue accounts, etc.) •Resolving billing discrepancies (e.g., investigate and resolve billing & invoicing errors, recommend process improvements to avoid future errors, etc.) •May include collections activities Specialization Match Note: Para-Professional incumbents verify information (e.g., ensure accuracy of billing information, negotiated terms, etc.) and complete invoice data entry.	Customer Service & Contact Center Operations	Para-Professional	Blend of Customer Service Rep. and Customer Service Clerk
15	Billing Service Associate	FIN.09.005.S20	Billing & Invoicing - Experienced Para-Professional (S2)		Finance	Para-Professional	Billing Clerk/ Cust Accts Rep



Mercer (Canada) Limited



PRODUCTIVITY AND CONTINUOUS IMPROVEMENT INITIATIVES

1. INTRODUCTION

Numerous aspects of the Renewed Regulatory Framework (“RRF”) underscore the OEB’s firm expectations for continuous improvement and productivity on the part of rate-regulated utilities. For example, in its description of the second core category of performance outcomes under the RRF, Operational Effectiveness, the OEB articulates its vision that “continuous improvement in productivity and cost performance is achieved; and utilities deliver on system reliability and quality objectives.”¹ Similarly, the *Handbook for Utility Rate Applications* reinforces the understanding that “a key objective of incentive regulation is to drive productivity improvements within the utilities.”² Furthermore, the various rate-setting methods that are made available under the RRF apply a productivity factor to electricity distributors which is derived from industry productivity trends determined by the OEB. These productivity factors are entrenched in the rate adjustment mechanisms governing utility proposals and reflect the OEB’s expectation that standard business practice for distributors will involve the achievement of incremental productivity gains.

The information contained in this Schedule is intended to facilitate the OEB’s assessment of the strength of Hydro Ottawa’s productivity and continuous improvement initiatives, both past and future.

The summary set forth below is both retrospective and prospective in nature – i.e. surveying productivity and continuous improvement accomplishments from the 2016-2020 rate period, as well as identifying those that are planned for 2021-2025.

The scope of this Schedule covers both operations, maintenance and administration (“OM&A”) expenditures as well as capital expenditures, and is anchored in Hydro Ottawa’s understanding that the goal of productivity and continuous improvement initiatives is to achieve savings,

¹ Ontario Energy Board, *Report of the Board - Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* (October 18, 2012), page 2.

² Ontario Energy Board, *Handbook for Utility Rate Applications* (October 13, 2016), page 27.



1 efficiencies, and reductions, especially – but not exclusively – in relation to costs. Wherever
2 possible, Hydro Ottawa has sought to quantify the benefits associated with the productivity or
3 continuous improvement measure in question. While this has not been achievable in each
4 instance, the utility has nevertheless been able to factor these initiatives in the aggregate into its
5 proposed Custom Incentive Rate-Setting (“Custom IR”) approach described in detail in Exhibit
6 1-1-10: Alignment with the Renewed Regulatory Framework.

7
8 For purposes of formulating a holistic understanding of productivity and continuous
9 improvement at Hydro Ottawa, in both historical and forward-looking contexts, this Schedule
10 should be read in conjunction with the following pieces of evidence included in this Application:

- 11
12 • Attachments 1-1-10(A), 1-1-10(B), and 1-1-10(C): 2016, 2017, and 2018 Annual
13 Summaries: Achieving Ontario Energy Board Renewed Regulatory Framework
14 Performance Outcomes (respectively) – these Attachments consist of annual summaries
15 of initiatives and outcomes from Hydro Ottawa’s 2016-2020 rate plan which align with
16 the performance outcome categories enshrined in the RRF. The bulk of the information
17 included in these summaries is comprised of productivity and continuous
18 improvement-related matters, and is therefore germane to the focus of this Schedule.
19 Indeed, the content in the retrospective synopsis below of the utility’s key productivity
20 achievements from the 2016-2020 period draws heavily from these Attachments.

21
22 In addition, Exhibit 1-1-10: Alignment with the Renewed Regulatory Framework includes
23 a comprehensive overview of the Custom Price Escalation Factor through which Hydro
24 Ottawa is proposing to embed productivity gains into the annual rate adjustment
25 mechanism for its 2021-2025 rate plan.

- 26
27 • Exhibit 1-1-11: Proposed Annual Reporting - 2021-2025 – this Exhibit provides details on
28 the framework for performance measurement and reporting that Hydro Ottawa is
29 proposing for its next Custom IR rate term. A critical component of this framework is a



1 Custom Performance Scorecard that is comprised of 26 measures which will track the
2 utility's performance across key RRF outcome categories.

- 3
- 4 • Exhibit 2-4-3: Distribution System Plan – Section 4 of Hydro Ottawa's Distribution
5 System Plan ("DSP") addresses performance measurement for continuous
6 improvement. In addition, Attachment 2-4-3(E): Material Investments catalogues the
7 numerous project and program proposals that meet the materiality threshold specified in
8 OEB filing requirements. Productivity serves as a key driver for many of these proposals.
9
 - 10 • Exhibit 4-1-2: Summary of Corporate Divisional Functions – this Exhibit describes the
11 primary functions and activities of each Division within Hydro Ottawa. A concise
12 narrative on the productivity agenda for each Division over the course of 2021-2025 is
13 likewise included.
14

15 What's more, appended to this Schedule is the utility's *Digital Strategy*. This document identifies
16 priorities and goals for leveraging information and operational technology in support of core
17 business objectives over the coming five-year rate period. One of the principal themes
18 anchoring the strategy is increasing productivity through greater automation of processes and
19 platforms. Additional information on the Digital Strategy is provided in section 3.3.1 below. The
20 document in its entirety can be found in Attachment 1-1-13(B).
21

22 As a final point of introduction, it merits observation that Hydro Ottawa has adopted numerous
23 controls to provide the OEB, customers, and other stakeholders with robust assurance that
24 productivity, cost control, and continuous improvement objectives have been firmly integrated
25 into the utility's business planning process, and the resultant capital and operational plans, for
26 the 2021-2025 rate period. These include, but are not limited to, the following:
27

- 28 • Internal Guidelines for 2021-2025 Priorities and Budgets – in preparing their plans and
29 budgets for the five-year rate term, each Division within the utility was mandated to
30 demonstrate productivity savings in a quantitative and/or qualitative fashion and to



1 identify initiatives dedicated to continuous improvement. Please see Attachment
2 1-1-9(A): Corporate Memorandum - 2020-2025 Priorities and Budget Guidelines for
3 details.

- 4
5 ● Custom IR Framework – the Custom Price Escalation Factor utilized in this Application
6 will embed productivity savings for customers by capping any increases to operational
7 funding. The productivity escalator that has been applied to OM&A expenditure levels for
8 2022-2025 is 2.51%. As a result, OM&A spending was reduced by approximately \$13.1
9 million over the term of the Custom IR rate plan. (For more details on projected OM&A
10 expenditures for the upcoming five-year rate term, please see Exhibit 4-1-1: Operations,
11 Maintenance and Administration Summary).
- 12
13 ● Performance Management Framework – Hydro Ottawa will continue to administer a
14 framework that ensures accountability in the monitoring and reporting of corporate
15 productivity against a defined set of targets and metrics. Instrumental in this effort will be
16 the sustained use of a customized Corporate Productivity Scorecard, wherein the utility
17 has established relevant key performance indicators (“KPIs”) that are monitored for the
18 purpose of measuring continuous improvement in areas that are of strategic concern. A
19 copy of the Corporate Productivity Scorecard is included in as Attachment 1-1-13(A).

20 21 **2. KEY PRODUCTIVITY IMPROVEMENTS – 2016-2020**

22 Over the course of its 2016-2020 Custom IR rate term, Hydro Ottawa increased its operational
23 efficiency and productivity in a host of ways. What follows below is an abridged showcase of the
24 most consequential achievements, in terms of the scale of savings, efficiencies, and cost
25 reductions yielded, as well as the uniqueness of the initiative(s).

26
27 At the outset, it merits observation that Hydro Ottawa achieved the following outcomes and their
28 attendant benefits all while maintaining a static number of permanent full-time employees over
29 the course of 2016-2020.



2.1. CUSTOMER SERVICE

Hydro Ottawa's core strategic objective is to deliver value across the customer experience by providing reliable, responsive, and innovative services at competitive rates. In an industry now driven by advancing technology, growing customer expectations, and increasing competition, achieving this objective is critical to the utility's future success.

Productivity in relation to customer service is therefore focused on identifying and implementing process improvements, automation, and incrementally offering new self-serve features for customers. These initiatives are designed to enhance customer service, to respond to identified customer preferences, and to increase Hydro Ottawa's operational efficiency and effectiveness.

For Hydro Ottawa, offering customers the ability to self-serve has reduced call volumes and Customer Contact Centre costs and will continue to deliver cost savings in numerous ways for the utility and customers alike. These savings are detailed in the examples that follow.

2.1.1. Online Billing Enhancements

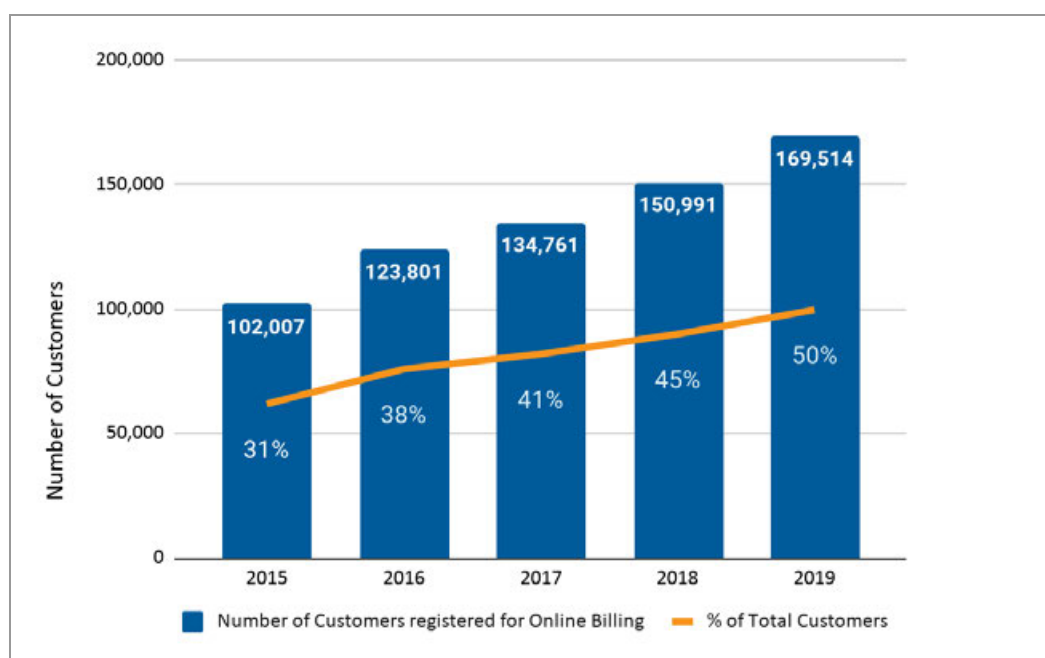
Online billing provides customers with email notification that their bill is ready and allows them to view and manage their bills online. Higher levels of online billing penetration are very beneficial to productivity and operational effectiveness – the more customers enroll, the more Hydro Ottawa's costs decrease in terms of printing and postage (and the more customers benefit with the ease of self-serve).

As of December 31, 2019, 169,514 customers were enrolled in online billing. This represents almost 50% of all customers, making Hydro Ottawa an industry leader in this area. Currently, OM&A annualized savings associated with the online billing program stand at more than \$1.9M (i.e. 169,514 multiplied by annual savings of \$11.24 per customer in 2019). This level of enrollment represents a significant increase from 102,007 customers (31.5%) at the end of 2015. Hydro Ottawa projects a 63% enrollment in online billing by 2025.



Online billing also yields ancillary benefits from the perspective of corporate citizenship, which is another key strategic objective for the utility. Since 2015, Hydro Ottawa has partnered with the Children's Hospital of Eastern Ontario ("CHEO") on an annual "Go Paperless" campaign to encourage customers to adopt online billing and support a critical community cause. Between 2015 and 2018, this strategic partnership has raised more than \$400K for the CHEO Foundation and garnered industry recognition.³ What's more, this initiative supports Hydro Ottawa's roadmap to environmental sustainability through the "greening" of its customer service practices by offering more online services.

Figure 1 – Customer Accounts with Online Billing



2.1.2. MyAccount

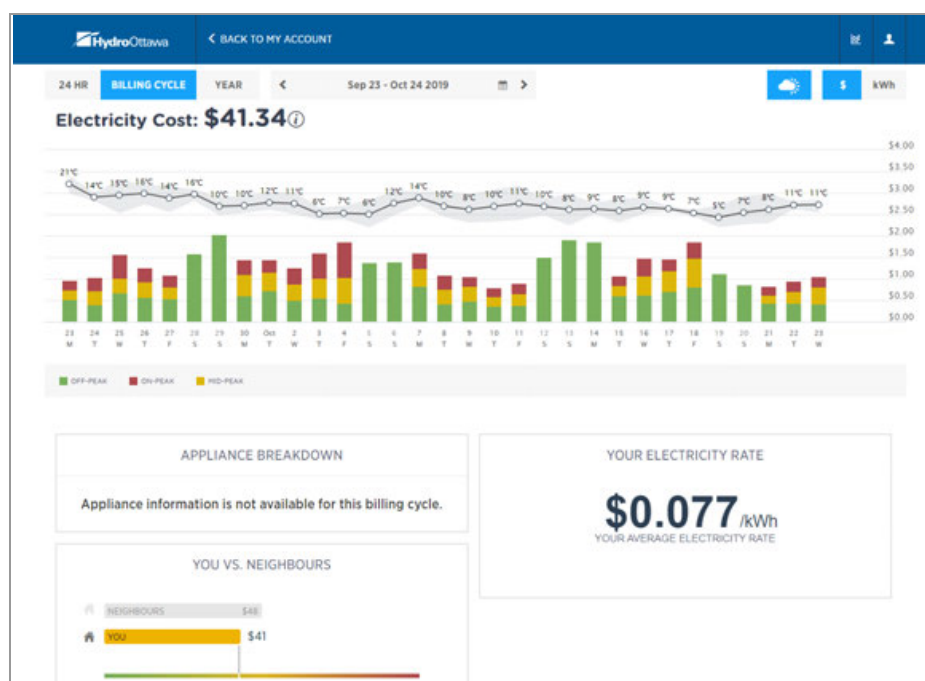
MyAccount is a web-based customer service portal, which offers a wide range of convenient, flexible self-service options and customer preferences management. These include the ability to view electricity consumption data and usage patterns, compare bills based on various

³ This \$400K donation is not rate-recoverable. Please see Exhibit 4-2-6: Charitable and Political Donations for more information on the accounting treatment of the utility's charitable donations.



parameters (e.g. consumption, rates, bill dates, weather), establish and manage customer profile/account information, and utilize the Web Chat feature allowing for real-time online interactions with customer contact agents. Customer Service representatives encourage customers to sign-up for the MyAccount service and assist customers with registration.

Figure 2 – MyAccount's Presentation of Customer Information



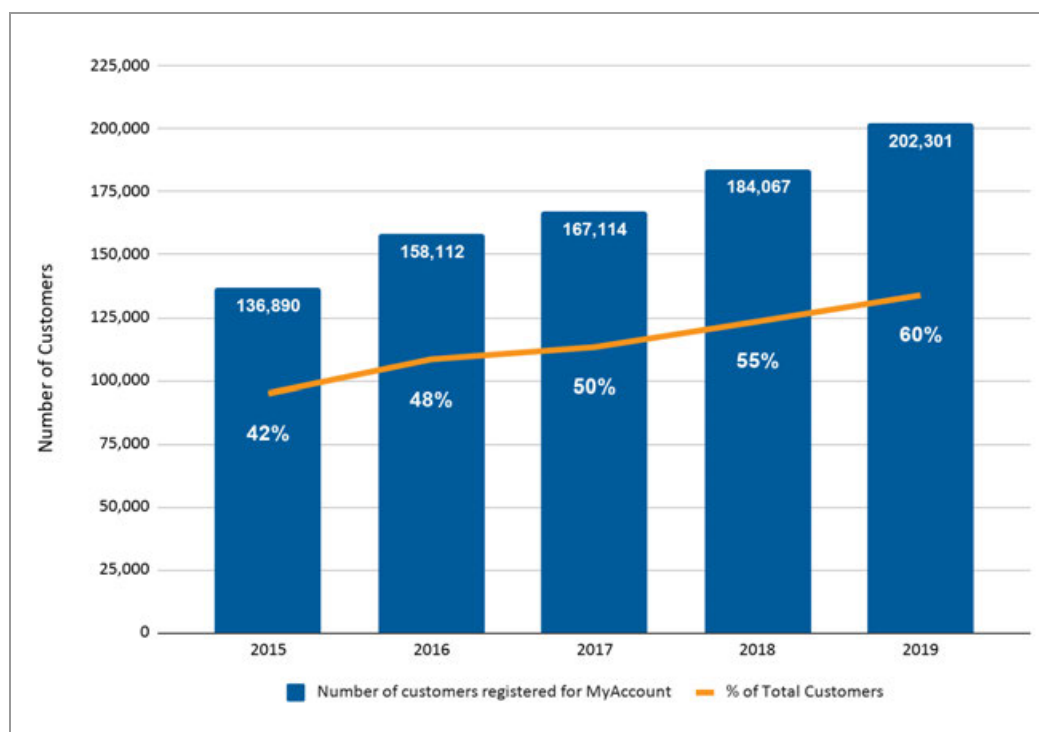
A new feature introduced in 2017 was a social login capability. This update allows increased customer choice and convenience as customers can now sign-in to their online MyAccount using email, Facebook, or Google. The new login process serves as the gateway enabling Hydro Ottawa to offer a number of new and improved service offerings online.

In 2018, the level of effort required of customers to create an online account was significantly reduced, when Hydro Ottawa eliminated the need for a customer to have a physical bill in hand. Today, a customer only requires a valid email address to complete a registration within moments, which includes online billing enrollment as an option. The timeliness of the rollout was



vital in supporting Hydro Ottawa’s 2018 “Go Paperless” campaign and its Move-In/Move-Out (start/stop service) redesign.

Figure 3 – Number of Customers Registered with MyAccount



The MyAccount portal has proven to be a win-win, for the purposes of both customer experience and organizational productivity. For their part, customers value the ease, convenience, and electricity management insights they gain from this online tool. More than 202,000 customers (59% of Hydro Ottawa’s overall customer base) were registered for this service as of December 31, 2019.

2.1.3. Customer Contact Centre Enhancements

In step with its commitment to improving the customer experience and achieving operational efficiencies, Hydro Ottawa migrated to a new Customer Contact Centre service provider in 2017. Hydro Ottawa had contracted contact centre services from the same vendor for over 10 years. Accordingly, due diligence and best practice called for going to the market to ensure that



1 the utility and its customers were securing the greatest value for money and were able to
2 access the latest service offerings.

3
4 Under the arrangement with the new service provider, Hydro Ottawa and its customers are
5 benefiting through improved customer service, lower costs, and operational efficiencies. These
6 include more timely responses to customer inquiries, the availability of additional agents during
7 emergency events, more options for self-serve features and omni-channel communications, and
8 elimination of long distance charges for customer calls. In addition, hours of operation for the
9 contact centre were expanded to include 9:00 am to 3:00 pm on Saturdays, making Hydro
10 Ottawa one of the first local distribution companies ("LDCs") in Ontario to offer contact centre
11 service to customers on Saturdays.

12
13 Hydro Ottawa's Interactive Voice Response ("IVR") system measures its performance and
14 customer satisfaction by collecting and reporting on customer abandonment, transfer, wait, and
15 hold times. The utility analyzes these metrics to identify trends and opportunities for
16 improvement.

17
18 To date, the system has significantly improved customer service overall (as attested to, in part,
19 by the results from annual customer satisfaction surveys – please see Exhibit 1-2-1: Customer
20 Engagement Overview for more information). More contact centre agents are available because
21 they are not required to handle as many routine inquiries. As a result, other customer inquiries
22 are answered faster and more efficiently, even during periods of high call volumes. Agents are
23 also more readily available to handle complex customer issues.

24
25 With more customers using the new IVR system and "Voice ID" service, the number of calls into
26 Hydro Ottawa's Customer Contact Centre has decreased. As of December 31, 2019, more than
27 1,900 customers have adopted Voice ID to access their account information, translating into
28 more than \$16K in annual OM&A savings.



1 Finally, migration of the Customer Contact Centre contributed significantly to the substantial
2 reduction in OM&A costs achieved by Hydro Ottawa in 2017. The utility estimates that this
3 initiative yielded approximately \$400K in OM&A savings in that year, and will produce more than
4 \$300K in annual savings in the years ahead, depending on call volumes.

6 **2.1.4. Hydro Ottawa Mobile Application**

7 In 2017, Hydro Ottawa introduced a mobile app that allows customers to track their electricity
8 usage and costs, access their billing information, learn energy conservation tips, and find out
9 about current power outages. It is the first app in North America that offers customers all of
10 these features in a single, intuitive, and bilingual tool. Developed for both the Android and Apple
11 platforms, the app is fully integrated with the utility's online and email channels, providing a
12 seamless, cohesive customer experience. Customers can also securely login to the app from
13 their social media accounts (Facebook and Google Plus), without the need to remember a
14 password.

15
16 Hydro Ottawa launched the app as part of a local social benchmarking program funded through
17 the Conservation First Framework ("CFF").

18
19 Key features of the app include the following:

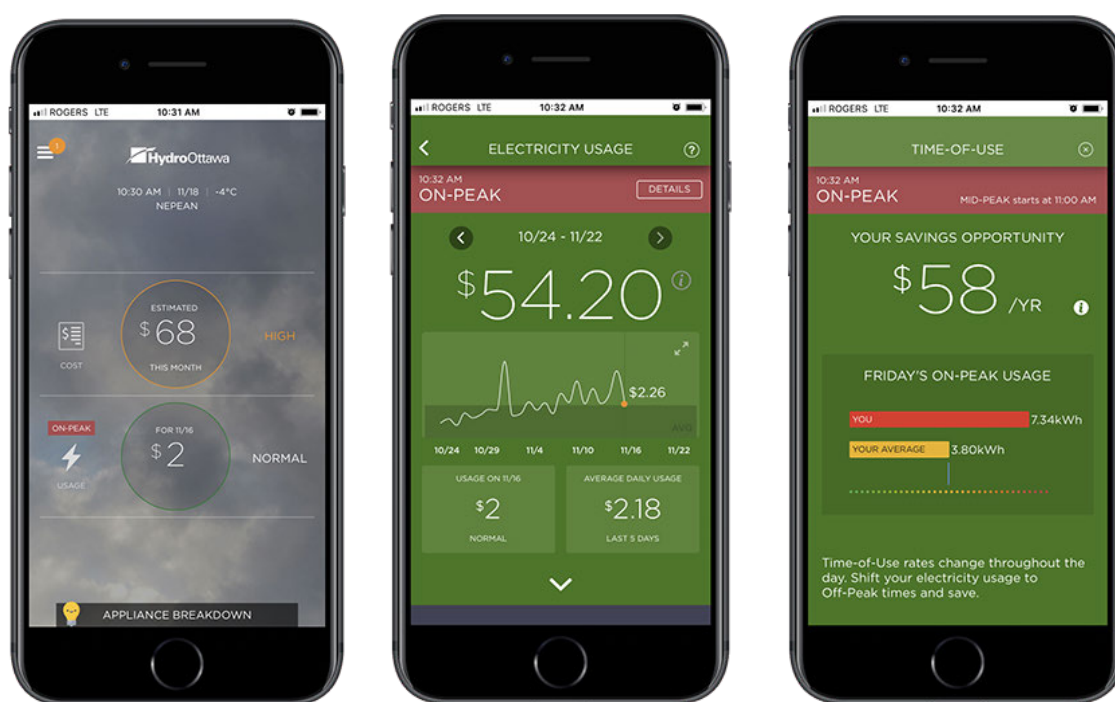
- 20
21 ● Access to data – breakdown of customer electricity usage and costs (overall and
22 disaggregated for individual appliances), as well as trends in usage from bill-to-bill;
- 23 ● Useful alerts – customer receipt of notifications about usage along with insights to help
24 reduce consumption;
- 25 ● Similar home comparison – ability for customers to view consumption relative to similar
26 homes in their neighbourhood;
- 27 ● Cost projections – avoiding bill surprises with a daily cost projection for electricity
28 charges;
- 29 ● Account information – account balance and up to two years of billing history; and
- 30 ● Outage map – access to latest information on power outages.



In addition, the app's patented disaggregation analytics enable customers to track the power output and cost of up to 12 individual home appliances, without the added expense of any hardware, such as sensors. This helps customers to identify their appliances using the most energy and to evaluate their appliance usage over time to see how it changes based on the season, weather, and their behaviour.

As of December 31, 2019, more than 35,000 customers have downloaded the app. Nearly 1,100 additional customers sign up each month, reporting that they find the app to be intuitive and helpful.

Figure 4 – Hydro Ottawa Mobile App



2.1.5. Service Desk Manager

A central application to manage the entire lifecycle of a customer's request for service – intake, design, and execution – is integral to fulfilling the operational needs of the Service Desk. This application is utilized every day and is a fundamental part of the activities and workflows for not



1 only the Service Desk team, but also Work Schedulers, Layout Technicians, Field Technicians,
2 Distribution System Designers, Area Distribution Supervisors, Inspectors, and Geographic
3 Information System ("GIS") Technicians.

4
5 Hydro Ottawa's legacy Service Desk management tool required an upgrade. Accordingly, it has
6 recently been replaced as part of the initial transition to the new Customer Relationship
7 Management system (see section 3.1.1 below for more details on this latter initiative).

8
9 Productivity benefits expected to accrue from this migration include the following:

- 10
11 • Revamping website service request forms to simplify and streamline the customer
12 experience;
- 13 • Enabling authentication for both contractors and customers, eliminating the need to
14 manually key-in basic customer information;
- 15 • Integrating Google address autocomplete to cross reference with Hydro Ottawa's GIS
16 system, so as to eliminate manual address entry and improve data quality;
- 17 • Implementing workflow with customer communication at key stages of a job's lifecycle,
18 including receipt of payment and readiness for appointment booking;
- 19 • Migrating service layout quotations from JD Edwards into Salesforce, facilitating a 360
20 degree view of the customer's interactions with Hydro Ottawa and creating a foundation
21 for onboarding additional in-take processes across the organization, such as vault
22 maintenance and forestry services;
- 23 • Retiring a legacy system and mitigating the support risk of maintaining an inflexible and
24 aging tool;
- 25 • Leveraging rich case management and skills routing in Salesforce to ensure the right
26 people are engaged at the right time;
- 27 • Allowing the Service Desk team to manage requests entirely within Salesforce for
28 improved visibility and cycle time through automation;
- 29 • Substantially reducing manual effort and improving data accuracy when processing jobs
30 through integration with key systems;



- Providing an out-of-the-box mobile application to manage requests and to respond to requests outside of office hours;
- Allowing the Service Desk to take on higher value work focused on improving the customer experience;
- Implementing a “Voice of the Customer” (“VOC”) automated survey at the close of a job;
- Enhancing reporting capabilities with Service Level Agreements (“SLAs”) and Key Performance Indicators (“KPI”) embedded into processes for easy tracking and measuring; and
- Accelerating the ability to enable customer/partner self-service capability.

The implementation of this new system will result in annual cost savings of approximately \$110K across the Service Desk and Layouts functions. Prior to implementation, Service Desk had operated at a 20% resource deficit. Any additional capacity realized from savings will be redirected to higher value work. This includes proactively reaching out to customers with regards to payment follow-up, outbound job scheduling, and customer satisfaction.

Moreover, as the new Service Desk management application matures, Hydro Ottawa plans to further leverage it by making it the central intake system for other service requests, including forestry, customer vault maintenance, and telecom make-ready requests (among others).

2.1.6. Move-In/Move-Out Requests

Certain aspects of the resident demographic in Ottawa (e.g. high student population and national seat of government) mean that Hydro Ottawa typically processes tens of thousands of Move-In/Move-Out (“MIMO”) requests from customers on an annual basis. Accordingly, the utility regularly searches for opportunities to improve and simplify the MIMO process.

Recent steps that Hydro Ottawa has undertaken in this regard include encouraging customers to submit MIMO requests through the MyAccount online portal. This has had the benefit of enabling customers to submit a request efficiently and at their own convenience, reducing the amount of information a customer must enter, eliminating the need for Customer Service



1 representatives to manage paper requests, increasing the number of customers with a valid
2 MyAccount (which is critical as Hydro Ottawa looks to expand self-service functionality), and
3 boosting enrollment in online billing. What's more, the addition of an address validation feature –
4 which ensures that the address selected by a customer actually exists within Hydro Ottawa's
5 system – has helped achieve further improvements, by minimizing the need for call backs to
6 verify information provided by customers.⁴

7
8 These enhancements, combined with the processing of approximately 50% of MIMO requests
9 by Hydro Ottawa's external Customer Contact Centre, will allow the utility to reduce the account
10 set-up charge for customers during the 2021-2025 rate period. (See Exhibit 3-2-1: Other
11 Revenue Summary for details).

12
13 Another noteworthy reform occurred in late 2015, when Hydro Ottawa implemented its Landlord
14 Reversion ("LLR") program that enables property owners and management companies to
15 manage the electrical service for their rental units more effectively. By signing an agreement to
16 participate, property owners and managers authorize Hydro Ottawa to automatically transfer
17 responsibility for a rental unit's electricity service to them when a tenant moves out. This
18 ensures that the electricity remains in service at the property and that a new tenant does not
19 have to request reconnection and pay the associated fees. Under this program, the account
20 set-up fees are also waived for the owners and property managers.

21
22 The LLR program has led to a reduction in the number of complaints from property owners and
23 managers. Moreover, the potential for a new tenant moving into a property that has
24 disconnected service has been removed, resulting in a better experience for new customers.

25 26 **2.1.7. Outage Alerts**

27 Hydro Ottawa's outage alerts program is web-based and provides emails or text messages to
28 the utility's employees when outages occur. Information regarding the outages are delivered in a

⁴ This latter change also represents one of the latest steps in moving towards a fully automated process in which customer address information that is housed within Hydro Ottawa's Customer Information System ("CIS") will be validated with the GIS system.



1 consistent and expeditious manner with the necessary details to facilitate internal
2 communication efforts. Local media, City Councillors, and Key Account clients are also
3 subscribed to the email service. The re-sharing of this information through stakeholder channels
4 provides customers with an alternate source of outage information, reducing the need for direct
5 contact with Customer Service representatives.

6 7 **2.1.8. Real-Time Outage Response Communications**

8 In light of the increased frequency and severity of extreme weather events during the 2016-2020
9 period, Hydro Ottawa has sought to continuously improve the tools available in its outage
10 communications toolbox. The introduction of several new features in recent years is worth
11 noting.⁵

12 13 **Real-Time Restoration Footage**

14 One new tool has been the use of real-time footage of crews restoring power following a
15 significant weather event. Utilizing a live-streaming video platform, Periscope, Hydro Ottawa is
16 able to share footage from a crew's location to its 36,000 followers on Twitter. This service is
17 proving to be increasingly effective in communicating the utility's responsiveness during outage
18 events and, in turn, is becoming increasingly popular with customers.

⁵ Hydro Ottawa has recently earned several awards for outage communications best practices and innovation from national and international industry associations, including Chartwell, CSWeek, the Edison Electric Institute, and the Electricity Distributors Association.



Figure 5 – Screenshot of Real-Time, Live-Streamed Drone Footage of Power Restoration



Twitter Bot

Leveraging Twitter has also been instrumental in another major outage communications initiative – creation and deployment of an automated Twitter Bot.

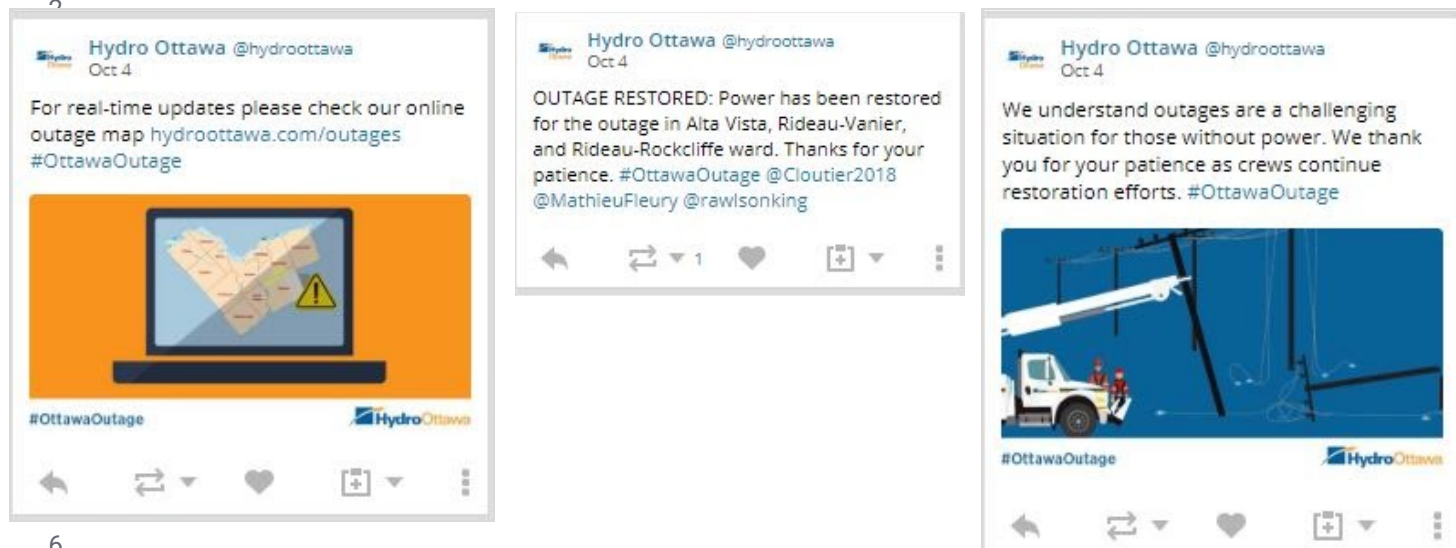
Previously, in order to provide the latest power outage information on a 24/7 basis, members of Hydro Ottawa's Customer Service, Communications, and Public Affairs teams would monitor outage events on an on-call, rotational basis after regular business hours. These employees received a stipend for handling this added responsibility. When the number of outages escalated due to storms or other emergency situations, the utility's Crisis Communications team was convened to manage communications.

To eliminate this stipend, alleviate the extra workload, and speed up the communications of vital outage information after hours, Hydro Ottawa developed a Twitter Bot in partnership with Hootsuite, a third-party vendor specializing in a social media management platform that provides a dashboard of social media activities and their interactions among different platforms.⁶ A Hootsuite Twitter Bot is an automated program that tweets and interacts with Twitter users to keep them up to date on the latest news and developments, around the clock.

⁶ <https://hootsuite.com>.



Figure 6 – Sample Tweets from Hootsuite Twitter Bot



This Hootsuite Twitter Bot, which resides within Hydro Ottawa’s Hootsuite dashboard, pulls data from an Application Programming Interface that was built internally and interfaces directly with the utility’s Outage Management System (“OMS”). Based on a threshold of 500+ customers, the Bot automatically posts tweets throughout an outage event, using an inventory of messages for different use cases or events. These include messages that acknowledge the occurrence of widespread outages, links to the latest outage details on Hydro Ottawa’s outage map, mobile app, and IVR, as well as power restoration messages when events are closed. The solution includes # (hashtag) references and @ (at) mentions to City Councilor Twitter accounts, so that the outage automatically appears in their respective Twitter feeds. As an added feature, the inventory of messaging also includes tips for safety, conservation, and self-serve options.

Tweets from the Bot are sent out within five to 10 minutes of an event reported in the OMS. This Bot is not used during regular business hours, when Hydro Ottawa’s Twitter followers would likely prefer and expect to interact with Hydro Ottawa employees. There is also a manual “kill” switch that shuts down the Bot in favour of human intervention.

The \$25K one-time cost of integrating this system into the utility’s Hootsuite dashboard will be offset within two years thanks to the elimination of the on-call stipend for employees. These



former stipends for after-hours service were budgeted at \$250 a week, or \$13K a year. More importantly, Hydro Ottawa's Hootsuite Twitter Bot enables the utility to remain the trusted voice of authority on power outages in the community on a 24/7 basis, from the outset of an event through to restoration.

2.1.9. Power Outage Reporting

There are three ways for customers to report an outage to Hydro Ottawa: customers can call the utility's outage line, report online, or report through the mobile app.

With respect to phone calls to the outage line, Hydro Ottawa has an intelligent IVR application that provides customers with an efficient and effective way to report an outage and/or to obtain information about an existing outage. Customers can easily access outage information without speaking to a Customer Service representative (although agents are available for power outage inquiries 24/7). This ability to solicit first-hand insight into an outage incident allows Hydro Ottawa to streamline its power outage business process and to leverage the diagnostic capabilities of its OMS.

New self-serve IVR enhancements introduced in 2017 deliver a more streamlined customer experience. Customers now hear a consistent "voice" across Hydro Ottawa's system and are able to speak to a system which uses a natural language format.

This upgraded outage communications IVR solution also offers a number of efficiency gains. For example, this service has reduced the average outage call duration by up to 90% (from three minutes per call to 30 seconds for most calls). These enhancements have also reduced the number of blocked calls (i.e. busy signal) to 0.45% and reduced the number of customers who experienced a dropped call to less than 0.01%.

In addition, the number of phone calls that the system can handle simultaneously has almost doubled, with near real-time logging of outages through the IVR rather than the previous file transfer process. This translates into faster processing of outage reports and more expedited



1 power restoration times. Further, the new system allows for faster daily customer telephone
2 number updates rather than the weekly updates of the past.

3
4 Moreover, additional productivity gains were made possible in January 2019, when Hydro
5 Ottawa moved from a manual outage message recording process to an automated one using
6 text-to-speech technology. Manual recordings were billed at a handle time rate of \$0.86 per
7 minute at an average of almost 4.5 minutes per message. Automated text-to-speech messages
8 are now billed at a flat rate of \$2.50 per message. Cost savings are projected to average
9 approximately \$1.24 per recorded announcement. From an operational efficiency standpoint,
10 automated outage communication messages are broadcasted to the customer through the
11 utility's IVR system in under two minutes of the internal outage notification. In the past, an agent
12 was required to read and record the outage notification and manually upload the recording to
13 the IVR system within four minutes.

14
15 Since implementing text-to-speech automated messages, the customer outage experience has
16 improved. Previously, due to manual effort, both upload time and recording quality did not
17 always meet standard messaging requirements. Human effort opened up the risk for
18 inconsistency and room for error through mispronounced street names and time stamps, speed
19 of the recorded reading, and distracting background noise. With the new automated process,
20 customers can now call the Power Outage Information and Reporting line and be greeted with
21 clear and timely outage information. The text-to-speech engine has proven to be an adaptive
22 program that produces quick, cohesive, and easy-to-understand messaging in both English and
23 French, to meet customers' outage communication needs.

24
25 In late 2018, online and mobile application outage reporting were added to the list of available
26 channels for customer convenience. Customers can now report a power outage online through
27 MyAccount or through the Hydro Ottawa mobile app in real-time. This aligns with Hydro
28 Ottawa's objective to provide choice and convenience to customers, while offering the added
29 benefit of further optimizing the means through which the utility receives outage notifications
30 from customers. As of December 31, 2019, 3,928 reports had been received online, and 1,066



1 were received through the mobile app. In addition, 371 included specific details related to the
2 source of the problem (e.g. “noise,” “flash,” “branches,” “equipment,” etc.)

3 4 **2.1.10. Power Outage Map**

5 Hydro Ottawa’s website, hydroottawa.com, includes an automated power outage map that
6 provides details of confirmed and unconfirmed outages that impact more than 10 customers,
7 aggregated for privacy.⁷ This map is also available on the utility’s mobile application. Details
8 include the area affected, number of customers affected, estimated time of restoration (“ETR”),
9 and status of crews. This feature enhances the timeliness of outage reports and updates on the
10 progress of the restoration process, thereby adding value to the customer experience. What’s
11 more, the automated nature of the map eliminates the need for employees to perform manual
12 updates and thus frees-up employees to focus on higher complexity tasks in support of
13 restoration.

14
15 As a result of the tornadoes that occurred in September 2018, Hydro Ottawa further enhanced
16 its outage map functionality. A vulnerability was uncovered when the website was subject to
17 extremely high volumes of traffic.⁸ The utility worked with the OMS vendor to transition the
18 hosting of the outage map to the Microsoft Azure Cloud platform, which is better equipped to
19 handle sustained high-traffic volumes. In addition, Hydro Ottawa introduced new features that
20 were not previously supported, such as an address search that will zoom to the address entered
21 and pin the location, a current location identifier, and visuals that distinguish between planned
22 and unplanned outages.

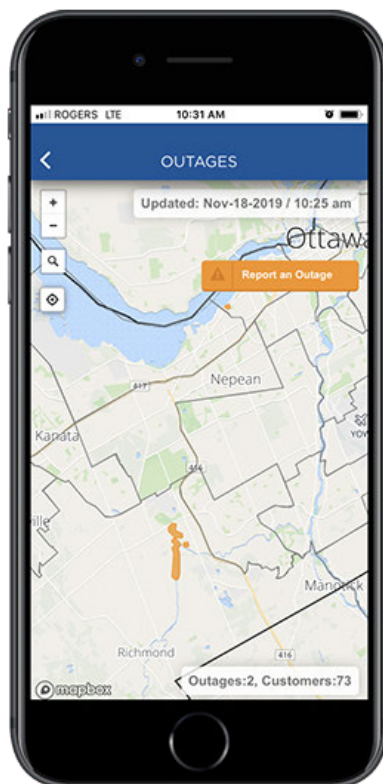
23
24 In 2019, hydroottawa.com was moved to a new platform. This will allow Hydro Ottawa to
25 investigate further outage map enhancements and a long-term outage map solution.

⁷ The outage information displayed on the map is aggregated, in order to safeguard customer privacy.

⁸ To put the post-tornado online traffic in context, it should be noted that Hydro Ottawa’s website experienced the equivalent of an average year’s worth of site traffic in the 24-hour period following the touching down of the tornadoes.



Figure 7 – Hydro Ottawa’s Power Outage Map on Mobile



2.1.11. Payment Options

Hydro Ottawa offers many different options to allow customers to make simple, on-time payments. For example, Hydro Ottawa’s IVR enables customers to make a credit card payment over the phone, at their convenience. On hydroottawa.com, customers can also directly link to a credit card payment service.

In early 2018, several enhancements were introduced to further improve the customer experience. These included the following:

- New IVR prompts with a natural language format;
- The ability to pay Service Invoices and Customer Layout Invoices, in addition to electricity bills;
- A redesign of the payment portal to make the portal mobile-friendly; and



- The introduction of American Express, in addition to Mastercard and Visa, for credit card payments.

These services support the utility's focus on providing 24/7 accessible services that are driven by the customer and provide them with choice and control. In 2019, \$11.2M dollars in credit card payments were received through the IVR and online. At present, more than 94% of customers pay their bill using some form of electronic funds transfer, including 27% of customers enrolled in the convenience of an Automated Payment Plan.

The efficiency gains of these enhancements have been particularly discernible with respect to payment of Service Invoices and Customer Layout Invoices. Prior to the expansion of credit card payment capability for these and other transactions on the operational side of the business, the processing of these invoices was time-consuming and costly. Along with the costs of processing cheques, each main work location had a payment lock box which required emptying twice per day. Arrangements needed to be made to have the payments securely delivered to Hydro Ottawa's head office in order to begin processing (which, among other things, included sorting, verifying, and sending to a clearinghouse based in Toronto). This process could take upwards of two to three days before the utility could advise customers that payment had been received and the customer's requested work could move forward. In contrast, Hydro Ottawa now has the capability to view the status of a customer's payment in real-time. This has improved the speed and accuracy of applying payments to Service Invoices and Customer Layout Invoices (including for urgent requests), and has likewise reduced wait times for customers wanting to book appointments.

In addition, Hydro Ottawa completed the implementation of a customer self-serve Automated Payment Plan management tool. Built within MyAccount, this new tool is fully mobile-friendly and addresses previous technical challenges experienced when customers were looking to register or make changes to their Auto Pay and/or Equal Monthly Payment Plans. Available 24/7, the new solution is interactive and provides a smoother, integrated customer experience. Along with the customer convenience, Hydro Ottawa will benefit from 50% less manual effort



1 and estimated operational cost savings of up to \$40K per year. This is the result of being able to
2 retire the services of a third-party vendor that managed the registration forms as well as an
3 administration tool to retrieve all submitted requests.

4
5 Going forward, Hydro Ottawa will continue to explore and evaluate other payment options as
6 technology advances and new channels emerge.

8 **2.1.12. Bill Print Provider Transition**

9 Following a competitive Request for Proposals process, Hydro Ottawa transitioned to a new
10 provider in 2018 for the provision of bill printing and distribution services. This includes printed
11 mail and online billing and communications, as well as inventory management, reporting, and
12 tracking.

13
14 This transition has yielded several operational efficiencies. For example, the need for
15 pre-printed letterhead for the Customer Care & Billing System ("CC&B") standard letters was
16 eliminated. Going forward, all 13 customer letter types, ranging in subject matter from Arrears
17 Payment Agreements to Ontario Electricity Support Program ("OESP") Renewal, are formatted
18 on black and white corporate letterhead and then printed and distributed on an as-needed basis.
19 In tandem with this transition, Hydro Ottawa reviewed and updated all of these standard
20 customer letters to ensure that the letters reflect current business processes, customer
21 communications best practices, and OEB requirements.

22
23 With regards to corporate stationery, Hydro Ottawa's four collection notices were also reviewed
24 and updated. These now have a consistent "look and feel" that is better aligned with the utility's
25 brand guidelines. These notices, along with other corporate stationery, are housed in an online
26 store, thereby improving print quality and control, and contributing to reduced OM&A.

27
28 Finally, the new bill print provider is able to supply Hydro Ottawa with custom reports that help
29 the utility manage its inventory for pre-printed bill stock and envelopes, reducing the risk of



1 waste when these forms require changes. Other reports streamline the Canada Post invoice
2 reconciliation process for bill and letter production.

3 4 **2.1.13. Outbound Calling for 48-Hour Disconnection Warnings**

5 Hydro Ottawa implemented an automated outbound calling system to replace its previous
6 hand-delivery of 48-hour disconnection warnings. As part of the new approach, the utility no
7 longer dispatches a truck to the service address for residential and small commercial customers
8 who are within 48 hours of service disconnection.

9
10 With this solution, all 48-hour disconnection warnings are considered 100% delivered, so long
11 as there is a working customer telephone number.

12
13 This new automated process involves Hydro Ottawa's CC&B system generating a contact note
14 with the corresponding time and date stamp of the call, along with the telephone number dialed
15 and the balance outstanding. All calls are delivered in the customer's language of choice.⁹

16
17 Through this new approach, Hydro Ottawa became one of the first utilities in Ontario to fully
18 integrate an automated outbound calling system into its collections processes. From a cost
19 savings perspective, this solution has helped to achieve significant savings. Utilizing the
20 autodialer costs \$0.25 per call, in contrast to the \$80 associated with the labour and truck roll
21 required to hand-deliver a notice. This functionality, along with business process changes and
22 the elimination of paper-based notices, will achieve savings of \$432K annually. In addition, the
23 use of this tool has enabled Hydro Ottawa to discontinue a contract with an external service
24 provider that had been retained to support delivery of 48-hour disconnection warnings and
25 service reconnections. Expected savings associated with discontinuation of this contractual
26 arrangement are approximately \$300K per year. The movement away from paper-based notices
27 also helps reduce the utility's environmental footprint.

⁹ Hydro Ottawa wishes to emphasize that, during the disconnection moratorium period in which LDCs are prohibited from disconnecting residential customers for reason of non-payment, automated calls to customers continue. However, calls are utilized strictly for purposes of extending payment reminders which help customers manage their arrears.



1 As a result of this automation, Hydro Ottawa has observed a 50% payment rate within a few
2 days of the call being received by the customer.

3 4 **2.1.14. Digital Assistant and Smart Speaker Devices**

5 The next “big thing” in customer service is the emergence of digital assistants and smart
6 speakers, such as Amazon’s Alexa and Google Home. With increasing competition and lower
7 prices, the number of Canadians with smart speakers in their homes is growing exponentially. In
8 fact, research suggests that the adoption rates for smart speakers are already outpacing those
9 for smartphones and tablets.

10
11 While many customers initially invested in smart speakers to listen to music, they also use a
12 smart speaker’s voice-activated digital assistants to ask about the weather, news, and traffic,
13 manage schedules, make phone calls, and control other electronic devices within the home. As
14 a result, many companies are creating “skills” to communicate with their customers through this
15 convenient and easy-to-use channel.

16
17 In August 2018, Hydro Ottawa introduced its smart speaker skill, for both the Amazon Alexa and
18 Google Home smart speaker platforms. In doing so, it became the first utility in Canada to
19 launch a smart speaker skill for both platforms.

20
21 Integrated with the utility’s CC&B and OMS systems, Hydro Ottawa’s smart speaker skill
22 answers the most common questions asked by customers (e.g. current electricity rates and
23 Time-of-Use period; bill balance; date of last bill payment; due date for next payment; current
24 outages; seasonal conservation tips; and contact information and hours of operation for Hydro
25 Ottawa).

26
27 For purposes of supporting continuous improvement at the utility, the smart speaker skill is
28 advantageous in several ways. The skill system collects metrics on its performance, such as
29 customer retention, poorly handled messages, customer pathways, and most importantly,
30 queries posed by customers that the skill was unable to answer in an anonymized manner. In



1 addition, it collects usage analytics which are utilized to ensure that the most requested
2 information is also available on other Hydro Ottawa customer communications channels, such
3 as its website and the mobile app. These data inputs offer Hydro Ottawa insights into customer
4 needs, preferences, and expectations, and will thus enable the utility to continue evolving its
5 smart speaker skill and other service offerings in order to best serve customers' interests.

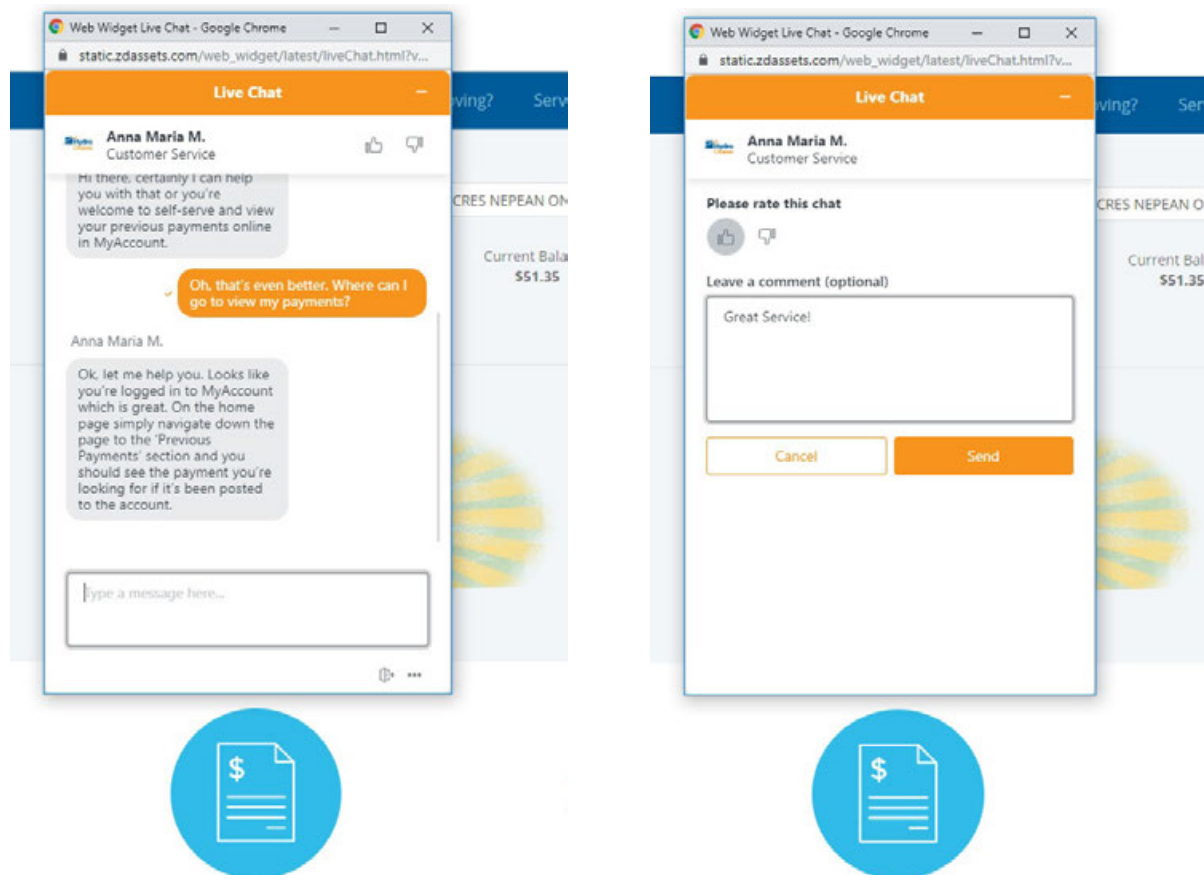
6
7 As of December 31, 2019, more than 2,800 customers have accessed Hydro Ottawa's smart
8 speaker skill, with an average of 230 customers using the skill every month.

9 10 **2.1.15. Web Chat**

11 To provide customers with another communications channel and a convenient way to do
12 business with the utility, Hydro Ottawa introduced Web Chat in 2019. Web Chat allows
13 customers registered for MyAccount to connect one-on-one, in real-time, on desktop or mobile,
14 with a Customer Service representative. The feature also gives customers the option of
15 downloading a transcript of the chat for their reference and providing feedback through a short
16 survey.



Figure 8 – Screenshot of Web Chat Feature



2.1.16. Customer Information System Enhancement

Oracle CC&B is the core system at Hydro Ottawa which provides billing of electricity revenue. CC&B is large, complex, and highly-integrated across the utility, with linkages to metering infrastructure, corporate web and mobile applications, and provincial systems like the Independent Electricity System Operator's ("IESO") Meter Data Management Repository. As the utility's essential CIS system, this application is adaptable to accommodate Hydro Ottawa's evolving customer service strategy.

By the end of the utility's 2016-2020 Custom IR term, Hydro Ottawa will have concluded a series of enhancements to CC&B, with the goal of continuing to enhance the services that are provided to customers and ensuring compliance with the system vendor's maintenance



1 contract. In 2017, for example, CC&B upgrades included completion of system migration to a
2 cloud-based platform, integration of direct deposit functionality, and implementation of an
3 auto-dialer solution to replace hand-delivery of 48-hour disconnection warnings (see section
4 2.1.13 above).

5
6 An upgrade of CC&B to version 2.7 will likewise be completed in 2020. Once implemented and
7 stabilized, the new base functionality will be leveraged to provide more opportunity for future
8 enhancements that will improve organizational effectiveness, support the utility's customer
9 service strategy, and help maintain regulatory compliance.

10
11 This major enhancement of the CIS system will achieve the following benefits:

- 12
13 • Lower operating costs through reduced need for customization due to age of current
14 system;
- 15 • Provide overall operational savings of approximately \$1M, as a result of a new
16 contractual agreement;
- 17 • Support regulatory changes and maintain compliance with respect to rate changes, new
18 customer service rules, IESO market renewal, Ontario's net metering program, and new
19 customer rate classes;
- 20 • Establish or strengthen points of interface with other customer-facing systems such as
21 CRM, MyAccount, IVR/telephony, mobile applications, and 24/7 self-serve capabilities;
- 22 • Strengthen foundation for all customer information presentment tools that include the
23 Hydro Ottawa app, MyAccount, and Mobile Workforce Management;
- 24 • Accommodate surrounding systems' upgrades and/or changes;
- 25 • Ensure cyber-security safeguards are in place;
- 26 • Deliver on customer expectations for service quality and responsiveness, providing
27 customers with greater choice, control, convenience, and communication options; and
- 28 • Keep pace with changes in technology to stay at the forefront of evolving customer
29 experience expectations.



1 In addition to enriching customer knowledge and enhancing 24/7 self-serve capabilities, these
2 enhancements will assist in streamlining and automating existing business processes.
3 Moreover, they will provide Hydro Ottawa with improved analytics to glean more meaningful
4 insights into customer needs, which in turn, can be incorporated into business strategies.

6 **2.1.17. Duplicate Invoices**

7 Thanks to the availability of electronic bills and MyAccount, duplicate bills are now disseminated
8 by email rather than mail, eliminating the need for printing and postage. In addition, customers
9 are able to avoid charges for duplicate invoices altogether by logging into MyAccount and
10 retrieving a bill copy on a self-serve basis. At present, while Hydro Ottawa continues to charge
11 customers for the provision of duplicate invoices, this charge is set to be reduced during the
12 next rate period, largely on account of the aforementioned productivity improvements. Please
13 see Exhibit 8-7-1: Specific Service Charges for more information.

15 **2.2. DISTRIBUTION OPERATIONS, ENGINEERING & ASSET MANAGEMENT**

16 **2.2.1. Mobile Workforce Management**

17 Mobile Workforce Management ("MWM") went live in December 2015. MWM is an automated
18 scheduling and dispatch software designed to optimize the scheduling and routing of work and
19 crews by matching the right work with the right skillset and tools/equipment, in order to increase
20 productivity and enhance customer service. It also continually optimizes those schedules and
21 routes throughout the day, as new work arrives or field activities are cancelled.

22
23 Prior to the adoption of MWM, field staff were required to manually schedule their day, plan
24 routes each morning, and access information about each specific job prior to completing the
25 task. This was occurring despite the fact that Hydro Ottawa had an electronic tool at its disposal
26 for dispatching field work electronically (i.e. the Intergraph Outage Management System).
27 Furthermore, any new issues or priority work that was received throughout the day would
28 require a manual reshuffling of schedules and more re-routing. For the Collections group, in
1 particular, this manual effort resulted in Hydro Ottawa relying heavily on contractors in order to
2 meet the high-volume demand related to customer disconnections.



3
4 In light of these and other inefficiencies associated with the prior solution that was in place, the
5 decision was made to switch to MWM. Overall, the transition has been a good success. For
6 example, during the first year of use (2016), the Collections group completed 146% more field
7 activities with internal resources than it was able to do in 2015. As a result of this increased
8 productivity, the utility was able to let the contract lapse with the external service provider that
9 had previously been retained to provide support for field collections activities. In addition, the
10 Metering group was able to complete 4% more field activities but achieved this outcome using
11 6,200 fewer labour hours.

12
13 In addition to improving productivity, there have been enhancements to the customer
14 experience. Prior to MWM implementation, service truck appointments were booked in three
15 time slots each morning (8:30 a.m., 9:30 a.m., and 10:30 a.m.). MWM permits Hydro Ottawa to
16 offer more choice in appointment windows for customers, since it takes more factors into
17 account (e.g. typical driving time, work duration, and location of jobs). In the past few years,
18 Hydro Ottawa has been meeting over 90% of its service truck appointments, with arrival
19 windows as short as 30 minutes.

[illegible]

On any given day, Hydro Ottawa plans multiple outages to complete its maintenance and capital projects, as well as vegetation management. For customers, this can be very impactful. Hydro Ottawa's commitment is to provide customers with at least 48 hours notice of the outage, so that they can plan accordingly. Historically, the utility often used Power Line Technicians to hand-deliver planned outage notices at the premises of affected customers. Over time, the use of highly-skilled employee resources for this purpose proved to be time-consuming and sub-optimal from a cost-effectiveness perspective.

The solution allows Hydro Ottawa to utilize an existing platform to make outbound calls to all phone numbers associated with a customer account in order to inform them of the planned



1 outage. Pole and transformer nomenclature is used to extract a list of impacted customers from
2 the utility's GIS system. A software solution called Touch Logic enables the uploading of the list
3 of customers and phone numbers, along with the date, time, and duration of the planned
4 outages. Hydro Ottawa records different messages for service desk and forestry work, along
5 with cancellation notifications in the event that a project is impacted by weather or other
6 circumstances. Once a campaign is completed, the system generates a complete record of all
7 calls made.

8
9 The benefits of this initiative include the following:

- 10
11 • Timely dissemination of planned outage notifications (and cancellations, where
12 appropriate);
- 13 • Ability to disseminate notifications on an expedited basis, in the event of such
14 occurrences as emergency tree removals;
- 15 • Elimination of the need to coordinate the printing of hard copy notices and to manually fill
16 out door knocker cards;
- 17 • Redirection of skilled resources to higher-priority capital and maintenance work;
- 18 • Optimization of existing technology and platforms, as opposed to the introduction of
19 another solution or system into the utility's IT architecture; and
- 20 • Support for corporate-wide migration to a paperless environment.

21
22 In September 2018, this solution was able to demonstrate its value in a unique and momentous
23 way. On September 21, severe weather – including the touchdown of multiple tornadoes in
24 Ottawa – resulted in widespread outages to more than 174,000 customers (approximately 50%
25 of the total customer base). This solution enabled Hydro Ottawa to rapidly notify 50,000
26 customers about a planned work outage related to post-tornado restoration. A communication of
27 this magnitude would not have been possible without the outbound calling solution.



Figure 10 – Damage from 2018 Tornado Event



In 2018 alone, this automated outbound calling solution resulted in approximately \$100K in avoided costs. Overall, this initiative has achieved several key outcomes, including reduced operating costs and greater efficiency through leveraging existing technology.

Going forward, Hydro Ottawa is extending this service to include text and email options, in step with the utility's efforts to facilitate communications in the customer's channel of choice.

2.2.3. ISO 55000 Certification

ISO 55000 is an international standard for Asset Management Systems.¹⁰ Over the last few years, a signature continuous improvement initiative of Hydro Ottawa's asset planning group has been the journey towards achieving accreditation under the standard. In 2016, Hydro Ottawa contracted an external party to assess the utility's asset management practices against the requirements of ISO 55000. The exercise resulted in a gap analysis report and development of a roadmap which would enable Hydro Ottawa to improve its practices and move towards compliance with the standard. Based on the results, a working group was established with the

¹⁰ <https://www.iso.org/standard/55088.html>.



1 mandate of maturing the utility's asset management practices to become ISO 55000 compliant.
2 More recently, a subsequent gap analysis was commissioned to evaluate progress against the
3 goal of certification. A copy of this latter report has been appended to this Application as
4 Attachment 2-4-3(J): ISO 55000 Gap Analysis.

5
6 Ultimately, the efficiency gains expected to emerge from this initiative and certification with ISO
7 55000 consist of enhanced system reliability, expedited restoration, improved public and
8 employee safety, reduced asset lifecycle costs, and resource optimization.

9 10 **2.2.4. Distribution System Climate Risk and Vulnerability Assessment**

11 As a matter of practice, Hydro Ottawa routinely examines opportunities and threats to its
12 distribution grid to ensure assets are able to operate effectively and deliver value throughout
13 their lifecycle. In order to drive continuous improvement in its existing asset management
14 system, Hydro Ottawa initiated a project in 2018 to perform a distribution system climate risk
15 and vulnerability assessment and, based upon the results of this assessment, develop a
16 Climate Change Adaptation Plan. The utility launched a competitive procurement process to
17 select an external service provider to prepare the following deliverables: (i) an overview of how
18 climate change impacts are likely to affect Hydro Ottawa's distribution system; (ii) processes by
19 which the utility can continue efforts to better understand its risks and take proactive steps to
20 manage them, and enhance the resilience of its distribution system to climate change; and (iii)
21 an Adaptation Plan, following a recognized protocol for climate impact assessment, to improve
22 the resilience of Hydro Ottawa's system.

23
24 Copies of these deliverables are included in this Application as Attachment 2-4-3(H):
25 Distribution System Climate Risk and Vulnerability Assessment and Attachment 2-4-3(I): Hydro
26 Ottawa Climate Change Adaptation Plan. The utility's 2021-2025 Distribution System Plan
27 speaks to how the key findings and recommendations from these reports will be incorporated
28 into Hydro Ottawa's capital plans over the next five years. Please see Exhibit 2-4-3 for
29 additional information in this regard.



2.2.5. Remote Disconnect

For several years, Hydro Ottawa has been installing remote disconnect/reconnect meters, with the aim of reducing costs and gaining efficiencies in the disconnection process. Using advanced metering infrastructure (“AMI”) technology, Hydro Ottawa is able to remotely disconnect and reconnect meters. Every meter connected to the AMI network can be accessed through the internet using secure log-in credentials. Remote disconnect/reconnect meters are installed in hard-to-access locations and premises that have high Move-In/Move-Out trends.

This network allows Hydro Ottawa to connect directly to a meter, or hop through the network to a collector meter, to select single or multiple premises scheduled for disconnection. Remote disconnect and reconnect technology allows the utility to restore electricity service more expeditiously for its customers.

Customer service and safety is paramount. To ensure the safety of customers when reconnecting service, a phone call is placed to the customer, who must positively respond to a short list of questions. The Customer Service representative remains on the phone until the customer confirms that the power is back on.

As of December 31, 2019, this technology has been installed in approximately 38,000 premises in Hydro Ottawa’s service territory (representing 11% of all premises served by the utility). The use of remote disconnect/connect meters has helped contribute to the cost savings referenced in section 2.1.13 above, by eliminating the need for a trip to a customer’s premise to physically disconnect or reconnect the service. Among other things, these savings will have the practical effect of allowing Hydro Ottawa to maintain its current charges during the 2021-2025 rate period for reconnection during regular business hours and reduce its charges for after-hours reconnection.



2.2.6. Gatekeeper/Collector Meter Consolidation

“Gatekeepers,” also commonly known as Collector meters, are an integral component of the utility’s AMI network. These devices are strategically deployed throughout Hydro Ottawa’s service territory to ensure adequate coverage to read all non-Gatekeeper meters.

Hydro Ottawa’s original plan for deploying smart meters in 2008 called for approximately 350 Gatekeepers. However, by January 2016, 587 Gatekeepers were in use, primarily on account of growth in areas with poor Local Area Network coverage. The utility subsequently initiated a Gatekeeper Consolidation Project, in which each neighbourhood in the service territory was analyzed. The analysis examined the number of meters deployed compared to Gatekeeper capacities and the resulting redundancy. Neighbourhood by neighbourhood, the utility removed Gatekeepers at a strategic pace to ensure network health remained constant. After 18 months of review, Hydro Ottawa had removed 155 Gatekeepers without any negative impacts to its network. Meter reading percentages remained constant and Hydro Ottawa saved approximately \$10K per month in communication charges.

Table 1 – Indicative Savings Resulting from Gatekeeper Consolidation

	Jan 2016	Jun 2017	Variance
Total # Gatekeepers	587	432	(155)
Total Communication Cost (monthly)	\$34,024	\$23,288	\$(10,736)

2.2.7. Cable Chamber Inspections

Hydro Ottawa inspects cable chambers on a five-year cycle. The inspections have typically been completed by contractor resources. In 2018, the inspections were completed by employees in the Underground Group. The internal resources were able to complete the inspection program for approximately 50% of the cost of external resources, resulting in a savings of approximately \$100K. Further, in many instances, the team was able to complete the inspection and any minor maintenance while on-site, eliminating the need for an additional truck roll as in previous years.



Figure 11 – Hydro Ottawa Crew Preparing for Chamber Inspection



2.3. INFORMATION TECHNOLOGY & OPERATIONAL TECHNOLOGY

2.3.1. Enterprise Resource Planning Project

Numerous functional areas within Hydro Ottawa rely upon the enterprise resource planning (“ERP”) system to achieve their operational mandates. These include finance, accounting, inventory and supply chain management, work order management, and human resources.

Originally deployed in 2003, over time it was determined that a more agile, flexible, and integrated ERP environment was required, in order to meet the evolving needs of the business and to mitigate the complexities associated with managing ongoing system modifications and customizations. The underlying objective of the ERP replacement project was therefore to shift away from time-consuming, manual, and paper-based processes which required multiple employees to execute, and adopt a digital solution with self-service capability that would simplify business practices and put more and better information into the hands of employees. In many ways, the implementation of an enhanced ERP system was not simply a technology initiative, but also an important opportunity for business transformation.



1 The upgraded ERP system consists of two integrated software solutions – Workday for human
2 capital management and JD Edwards for all other core ERP functions (e.g. finance, accounting,
3 and supply chain). Hydro Ottawa has been recognized for its successful implementation of
4 Workday through the receipt of several awards, including Most Innovative Use of Human
5 Resources Technology at the Canadian HR Awards and the Innovation in Human Resources
6 Practices from Electricity Human Resources Canada.

7
8 For a comprehensive summary of the project scope and benefits, please see Attachment
9 1-1-10(C): 2018 Annual Summary - Achieving Ontario Energy Board Renewed Regulatory
10 Framework Performance Outcomes.

11 12 **2.3.2. SCADA System Upgrade**

13 Supervisory Control and Data Acquisition (“SCADA”) systems are critical to the reliable
14 operation of a local distribution network, as they equip system operators with real-time access to
15 system status and control, and play an essential role in the monitoring and controlling of
16 distribution stations and equipment.

17
18 September 2018 marked the completion of a project launched in 2015 to upgrade this core
19 asset. The successful achievement of this milestone was preceded by several years’ worth of
20 project planning, training, testing, configuration, and evaluation of data conversion by a
21 dedicated internal team working in concert with the vendor. Hydro Ottawa’s revitalized SCADA
22 capability is set to yield numerous benefits with respect to situational awareness, system
23 control, and system restoration. Within just a few weeks of the final cut-over, the new system
24 had the opportunity to showcase its strengths, following the tornadoes that touched down in the
25 Ottawa-Gatineau region on September 21, 2018. The SCADA system performed exceptionally
26 well in providing system operators with visibility into the condition of Hydro Ottawa’s grid and
27 outages affecting customers.



2.3.3. Cybersecurity Program

During the 2016-2020 period, Hydro Ottawa made considerable strides in strengthening the protection of its information and operational systems against cybersecurity risks, and in enhancing its overall cybersecurity posture.

For example, in 2016 the utility began implementing core components of the Cyber Security Framework developed by the U.S. National Institute of Standards and Technology ("NIST"). This had the effect of making Hydro Ottawa one of the early adopters of the NIST Framework among utilities in Ontario. This, in turn, placed the utility in a favourable vantage point when the OEB ultimately adopted the NIST Framework in 2018 as the foundation for a made-in-Ontario regulatory regime for assessing and reporting utilities' cyber security capabilities.

Several other major cyber-related initiatives have involved partnerships with external experts and parties, and engagement in collaborative forums. Similar to the implementation of the NIST Framework, Hydro Ottawa has likewise been at the vanguard of early participants in IESO programs, such as the Project Lighthouse data-sharing service.¹¹ The utility has also actively contributed to the exercise planning process for the scenarios that play out in Ontario, as part of the biennial grid security exercise known as GridEx which is hosted by the North American Electric Reliability Corporation.¹² Hydro Ottawa's consistent participation in GridEx has enabled the utility to regularly test its state of readiness for responding to cyber and physical security incidents, and to continuously refine and align its business continuity, crisis management, and incident management plans. Additional activities with third-party partners involved the retention of independent experts to provide a range of cybersecurity services, such as program maturity and gap assessments, incident response, penetration testing, managed security services, auditing, and alert and detective capabilities.

Hydro Ottawa has been equally active in bolstering its internal practices and processes. Since 2016, the utility has tagged all incoming external emails to internal email accounts, so as to give

¹¹ <http://www.ieso.ca/en/Powering-Tomorrow/Data/IESO-opens-the-door-to-sector-wide-cybersecurity-offensive>.

¹² <https://www.nerc.com/pa/CI/CIPOutreach/Pages/GridEx.aspx>.



1 employees a clear indication of messages originating from external sources. Training is made
2 available to employees on an ongoing basis, along with resources such as a dedicated email
3 address for reporting incidents of email phishing. Table top exercises with the Executive
4 Management Team have also been held to raise awareness and nurture incident response
5 capabilities at the most senior levels of the organization. And in 2018, Hydro Ottawa adopted a
6 new cybersecurity policy defining a formal set of requirements which must be met by any user
7 who is granted access to corporate electronic assets.

8
9 Taken together, the foregoing initiatives have helped to ensure that the utility's cybersecurity
10 program remains at a best-in-class level within the industry and that Hydro Ottawa is effectively
11 mitigating the risks emanating from an increasingly sophisticated threat landscape.

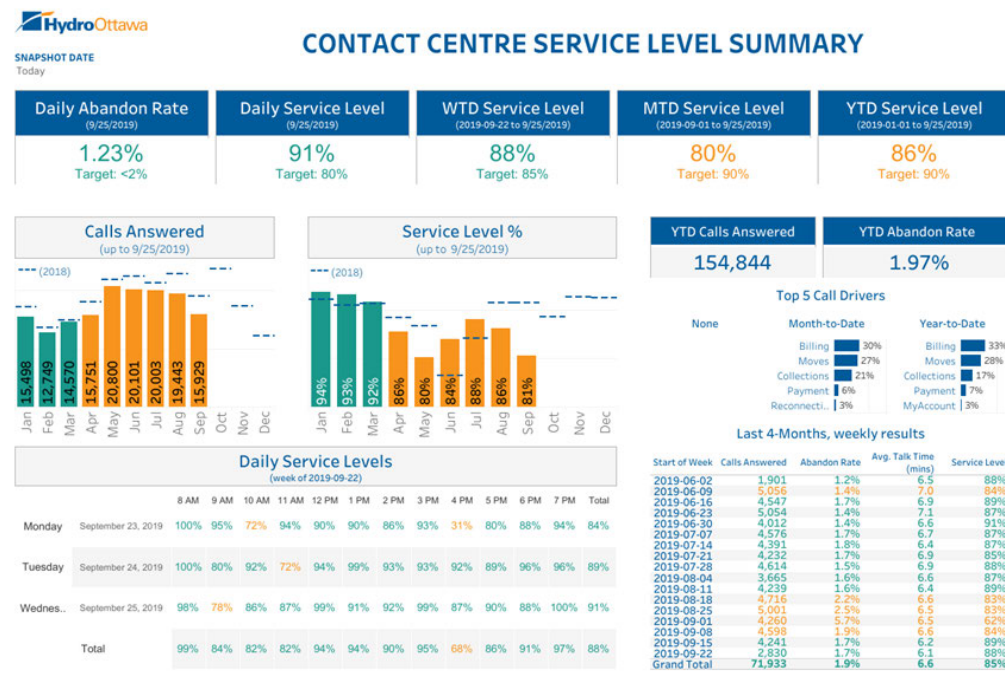
12 13 **2.3.4. Data Visualization and Analytics**

14 Hydro Ottawa introduced data visualization software in 2017. This powerful platform helps
15 simplify raw data into an easily understandable format. It can connect to almost any database
16 and the data analysis created is in the form of dashboards and worksheets.

17
18 The adoption and integration of this software into Hydro Ottawa's business intelligence workflow
19 has been an iterative process. The current dashboard connects to relevant data sources and is
20 refreshed daily. For example, following key data governance parameters and design principles,
21 the information currently available includes key performance metrics on Customer Contact
22 Centre data that include daily service levels and abandonment rates. Hydro Ottawa is planning
23 to augment the current suite of reports and interactive dashboards with the transition of existing
24 Excel reports to this data visualization software. The utility also intends to expand connectivity
25 with new applications, such as Salesforce and Google Analytics.



Figure 12 – Screenshot of Daily Contact Centre Service Level Dashboard Summary



The efficiencies achieved through this software support Hydro Ottawa's focus on continuous improvement. As data visualization is deployed, employees will be able to decrease their reliance on manually manipulating data in Excel. The reports and dashboards are housed in a central and accessible location, providing insightful and tailored data in an easily digestible format to key stakeholders, including the executive and senior management teams.

This initiative provides Hydro Ottawa with a business intelligence solution that will drive enhancements to the user experience, create operational efficiencies through report automation, and allow for business decisions to be supported through data-driven insights.

2.3.5. New Platform for Content Management System

In 2019, Hydro Ottawa completed the replacement of hydroottawa.com's legacy content management system ("CMS") with an enterprise-level, highly rated, open-source technology hosted in the cloud. Hydro Ottawa's ability to maintain an online presence under any circumstances, especially during significant weather or other impactful events, is paramount,



1 and has been a challenge in the past. The new CMS promotes greater collaboration within the
2 organization through more intuitive management tools to create and publish content. With this
3 new system in place Hydro Ottawa is able to re-direct efforts to higher-value, customer-facing
4 initiatives. Internal web development and creative resources will turn more focus to improving
5 self-serve options, expanding online account services, and supporting innovative programs.

6
7 This project provides an industry-leading technology solution, enabling Hydro Ottawa to become
8 digitally sustainable for the foreseeable future, while reducing the cost of ownership for its digital
9 environments. This new CMS will increase customer engagement online through an improved
10 user interface, ensuring the user experience translates to all user endpoints including desktop
11 computers, laptops, mobile tablets, and browser-enabled cell phones.

12 13 **2.3.6. Fleet GPS Solution Implementation**

14 In 2003, Hydro Ottawa adopted a Global Positioning System ("GPS") and telematics system for
15 fleet management. After 12 years of utilization, the system had reached its end-of-life, with
16 vendor support no longer provided. Accordingly, the utility launched a GPS Evaluation &
17 Implementation Project in 2016 to install and configure a new fleet service GPS solution.

18
19 The scope of the project encompassed the following: supply and installation of new Automatic
20 Vehicle Locator tracking devices; installation of Wi-Fi hotspot devices; integration with Hydro
21 Ottawa's existing fleet management application and internal outage map; adoption of a
22 web-enabled electronic process for logging hours of service and preparing Driver's Vehicle
23 Inspection Reporting for all bucket trucks; and ongoing technical support for these solutions.

24
25 Following final integration and training, the project was closed-out in 2018. Efficiencies that have
26 already been achieved include paperwork reduction for commercial vehicle operator's
27 registration compliance-related activities, improvements in real-time location of vehicles on
28 Hydro Ottawa's situational awareness map, and reduction of connection costs with Wi-Fi
29 hotspots in vehicles. Longer-term projected benefits include optimization of the utility's fleet with



1 real-time data on vehicle position, speed, and fuel use; reduced fuel and maintenance costs;
2 and improved driver behaviour, which in turn will increase safety and security.

3 4 **2.3.7. Information Management Strategy**

5 Over the last few years, Hydro Ottawa continued its implementation of a multi-year initiative to
6 proactively address challenges and opportunities related to long-term information management
7 ("IM") requirements and needs within the utility. Much of this initiative has been based on the
8 findings of an expert consultant's assessment of the maturity level of Hydro Ottawa's IM
9 programs and practices. Actions undertaken in response to the external findings included the
10 adoption of a formal IM vision statement, as well as the establishment of four strategic priorities
11 that have since guided the utility's IM strategy: (1) IM Governance; (2) IM Processes; (3) IM
12 Communications and Training; and (4) IM and IM-related Technology. What's more, the utility
13 has formally recognized IM as a corporate business program through consistent governance
14 and oversight, the hiring and retention of IM subject matter experts, and the development and
15 implementation of processes to monitor and audit IM performance. In 2018, Hydro Ottawa
16 adopted an official IM corporate policy, identifying the principles and directives that guide IM at
17 the utility, and establishing safeguards and parameters to the information that Hydro Ottawa
18 holds in its custody or control in the conduct of its business activity.

19
20 The benefits of this more structured and disciplined approach to IM were manifested during the
21 migration of the utility's workforce and paper records to its new facilities. A cleanup effort
22 resulted in the safe disposition of a large volume of outdated material, representing a 78%
23 disposal rate and reducing operational costs such as external storage.

24
25 The fruits of the revitalized IM strategy will likewise be on display in 2020, when Hydro Ottawa
26 adopts new online collaboration tools that will offer email, calendar, instant messaging, and a
27 structured document repository that will make files easier to locate, update, and share. The
28 Google-hosted solutions of G Suite and AODocs will facilitate productivity gains by supporting
29 the utility's "Anything, Anytime, Anywhere" philosophy of supplying tools to the workforce where
30 and when they are needed, making a wider range of collaboration features available (including



options for real-time collaboration), providing built-in capability for voice and video calls, and offering a highly scalable environment.¹³

2.4. HUMAN RESOURCES

2.4.1. Workforce Planning

Over the course of 2016-2020, Hydro Ottawa strengthened the integration of strategic workforce planning into its annual corporate planning and budgeting processes. Through its workforce modelling, Hydro Ottawa has sought to proactively identify and address any supply gaps in its workforce which risk adversely impacting organizational effectiveness. In turn, this modelling played – and continues to play – a crucial role in improving overall productivity and containing costs.

During this period, a number of strategies were successfully executed in support of maintaining a sufficient talent pipeline for the utility and stabilizing the total number of full-time permanent employees. For example, since 2016 the total number of permanent full-time equivalents (“FTEs”) has remained relatively static, with the same level forecasted into 2021. Management permanent FTEs are decreasing and non-management permanent FTEs are slightly increasing. This has been realized alongside ongoing sustainment and replenishment of the trades workforce, by using vacancies as they become available and focusing on productivity, efficiency, and effectiveness of operations. At the onset of the rate term, workforce modelling had forecasted a need for 65 trades hires. By the end of 2020, Hydro Ottawa will have met its needs through the filling of these positions. What’s more, the utility has been increasing its usage of temporary employees which provides it with more flexibility to address seasonal and other workloads, and can be more easily adjusted upwards or downwards as required.

2.4.2. New Human Resources Service Delivery Model

In conjunction with the implementation of Workday, a new digital solution for the human capital management (“HCM”) component of Hydro Ottawa’s enhanced ERP system (see section 2.3.1 above for more details), the utility rolled out a new operating and service delivery model for

¹³ <https://gsuite.google.com/>, <https://www.aodocs.com/>.



1 human resources (“HR”) in early 2018. The new, more agile HR operating and service delivery
2 model is aligned to the business, leverages the self-service capabilities of Workday, and better
3 enables HR and its stakeholders to execute on the utility’s *2016-2020 Strategic Direction*.

4
5 Tailored to address the needs of Hydro Ottawa’s continually evolving business, the rapid pace of
6 shifting employee demographics, and increasing access to technology, the new model consists
7 of the following tiered service delivery approach:

- 8
9 • **HR Technology:** Workday and other employee-focused technologies provide
10 employees and people leaders with direct access to their information and the ability to
11 transact anytime, anywhere through self-service on any device.
12
- 13 • **HR Service Centre:** serves as the first point of contact for employees and people
14 leaders for all HR enquiries, with a dedicated telephone extension and email address.
15
- 16 • **HR and Safety Partners:** the business-facing strategic HR and Safety Partners, aligned
17 to the utility’s divisions/groups, work together to provide advisory and consultative
18 services to people leaders, bringing solutions on employee and safety-related issues
19 consistent with best practices for the type of work performed. The Partners leverage the
20 HR Centres of Expertise to bring the right combination of service, support, and guidance
21 to their customer groups.
22
- 23 • **HR Centres of Expertise:** consist of HR specialists with deep technical, legislative, and
24 regulatory knowledge and insight in functional HR areas, who design and develop
25 strategies to drive leading people policies, programs, processes and tools, and provide
26 innovative solutions to customer/business needs.
27
- 28 • **HR Leadership:** senior HR leadership establishes and implements a roadmap in
29 alignment with the utility’s Strategic Direction, so as to ensure an effective and



1 constantly learning organization, with the right skill sets and organizational capacity to
2 deliver on business priorities.

3

4 The adoption of an enhanced Human Resources Service Delivery Model lends valuable
5 capacity and support to fostering a culture of innovation, continuous improvement, productivity,
6 and customer service within Hydro Ottawa.

7

8 **2.4.3. Safety Performance**

9 Safety performance planning, monitoring, and continuous improvement are undertaken through
10 a mix of proactive and responsive activities including workplace/worksites inspections, tailboard
11 conferences, jobsite coaching, pre-construction meetings, audits, and investigations of
12 incidents, injuries, and hazards/near misses. With its changing workforce demographic,
13 including increased numbers of new apprentices and younger workers in recent years, Hydro
14 Ottawa has enhanced its proactive training, coaching, and monitoring activities as part of its
15 effort to more proactively manage safety risks through pre-construction planning support,
16 independent review of work practices, and timely jobsite coaching, where required.

17

18 Hydro Ottawa is automating the manual processes and workflows associated with these and
19 other Occupational Health, Safety, and Environmental ("OHSE") activities in a cloud-based
20 OHSE software solution, and eliminating the paper forms and paper-based recording in the field
21 related to these activities. Once fully implemented in 2020, along with the corresponding
22 enhanced reporting functionality and data analytics, Hydro Ottawa anticipates being able to
23 more efficiently and effectively report on the findings and follow-up actions resulting from these
24 activities and to make more informative and timely decisions with respect to additional OHSE
25 training, communications, and programming needs.

26

27 **2.4.4. Labour Efficiencies**

28 The International Brotherhood of Electrical Workers ("IBEW"), Local 636 represents Hydro
29 Ottawa's unionized employees. In 2017, Hydro Ottawa and the IBEW, Local 636 reached a
30 renewed four-year collective agreement that resulted in several labour efficiencies. These



1 included the expansion of normal hours of operation, reduction in hours of rest time when
2 employees work overnight, and a simplified process for the reassignment of employees to a
3 different work location for training purposes. In addition, the negotiated wage increases are on
4 average 22% lower than the increases from the previous four-year collective agreement.
5

6 **2.4.5. Environmental Sustainability**

7 In step with its strategic objective of Corporate Citizenship, Hydro Ottawa has undertaken
8 numerous actions during the 2016-2020 rate term to continuously improve its environmental
9 performance and reduce its environmental impact. For example, Hydro Ottawa consistently
10 achieved a non-hazardous waste diversion rate above 90%. The utility has also sought to
11 transition away from the use of fossil fuel-powered equipment and tools by field crews in favour
12 of rechargeable battery-powered units. In addition, new technology solutions were leveraged to
13 optimize the efficiency and performance of the utility's vehicle fleet, and to reduce the need to
14 dispatch crews to perform such tasks as disconnection and reconnection of customers.
15 Technology was also a major consideration in the design and construction of new administrative
16 and operations facilities. As a result, the facilities consume significantly less energy and water
17 than buildings designed according to standard codes (40% and 55%, respectively), employ
18 centralized waste collection systems in lieu of waste management at the office/desk level, and
19 are equipped with web-based tools to facilitate virtual meetings and reduce the need for
20 employee travel. (See section 2.5.1 below for more detail on these facilities).
21

22 One of the most prominent sustainability initiatives undertaken during this period was
23 participation as a charter member in Carbon 613. Launched in 2016, the Carbon 613 network is
24 a made-in-Ottawa, target-based sustainability program that supports local businesses in setting
25 and achieving sustainability goals, while enhancing their competitive advantage and stimulating
26 the low-carbon economy. The program is one of eight such programs across Ontario. Members
27 of Carbon 613 commit to reducing their greenhouse gas ("GHG") emissions by setting a
28 baseline and GHG-reduction target, taking action to achieve that target, tracking and reporting
29 annual emissions, and publicly disclosing emissions data.



1 In addition, as of the end of 2019, Hydro Ottawa had submitted its application for designation as
2 a Canadian Electricity Association (“CEA”) Sustainable Electricity Company¹⁴. The twin pillars
3 of this designation are adherence to the ISO 14001 Environmental Management standard and
4 ISO 26000 Social Responsibility guidelines. In addition, companies must declare their
5 commitment to sustainable development, establish a governance framework for social
6 responsibility, secure verification from a third party that their organization complies with the
7 designation criteria, and report regularly and transparently on their performance. Hydro Ottawa
8 anticipates a successful outcome on its application sometime in 2020.

9
10 In light of its sustained focus on excellence in environmental stewardship, Hydro Ottawa has
11 consistently been recognized as one of Canada’s Greenest Employers (2011-2016, 2018, and
12 2019).

13 14 **2.5. MISCELLANEOUS**

15 **2.5.1. Facilities Renewal Program**

16 With the approval secured in its 2016-2020 Custom IR application, Hydro Ottawa embarked
17 upon a Facilities Renewal Program. Under the program, two parcels of land were purchased,
18 upon which Hydro Ottawa constructed two regional campuses. The sites are ideally situated in
19 commercial and light-industrial areas that will increase emergency responsiveness, given their
20 proximity to major highways and interchanges. The East Campus is home to the utility’s Main
21 Offices, East Operations Centre, and cable storage facility. The South Campus houses the
22 South Operations Centre, Metering, Transformer Shop, and Warehousing. The Facilities
23 Renewal Program has also involved the sale of certain existing facilities.

24
25 This program has served and will continue to serve as a key modernization and operational
26 efficiency initiative. It encompasses consolidation of administrative functions, relocation from
27 obsolete, end-of-life facilities, modernization of the work environment, and provision for future
28 growth. Performance outcomes will include the following: improved productivity; enhanced
29 service through more strategically-located and better-equipped facilities; greater workplace

¹⁴ <https://electricity.ca/deliver/sustainability/become-sustainable-electricity-company/>.



1 sustainability, innovation, and flexibility; and augmentation of the focus on the customer across
2 the business.

3
4 For more information on this program and its benefits, please see Attachment 2-1-1(A): New
5 Administrative Office and Operations Facilities.

6 7 **2.5.2. Electric Vehicle Initiatives**

8 In step with the utility's commitment to innovation, sustainability, and customer value, and in
9 response to robust public policy and consumer demand signals, Hydro Ottawa has undertaken
10 several projects in recent years to promote the use of electric vehicles ("EVs") and to enhance
11 the utility's understanding of the impacts of EVs on the grid.

12
13 Foremost among these initiatives was the launch of a residential EV charging pilot in 2018, in
14 partnership with FLO, Canada's largest EV charging network provider. This program has
15 granted Hydro Ottawa valuable insights into the behavioural trends of EV users, especially as
16 they relate to EV charging for each month and season.

17
18 Similarly, Hydro Ottawa also collaborated with Natural Resources Canada on multiple studies
19 over the duration of the Custom IR rate term. These studies examined the impact of direct
20 current fast charging EV chargers on the local distribution network in Ottawa, with effects
21 analyzed all the way down to individual transformers. Although the findings are specific to the
22 unique circumstances of Ottawa, the studies will yield important learnings that can be applied
23 across Ontario and Canada.

24
25 Key take-aways from these projects have helped to inform Hydro Ottawa's decision to increase
26 the standard size of distribution transformers that are installed in residential areas, so as to
27 provide higher capacity for future EV penetration (i.e. from 50 kW connecting a maximum of 10
28 customers to 100 kW connecting a maximum of 12 customers). In addition, the utility has
29 adjusted its demand forecast to reflect the expected penetration of EVs in its service territory.



1 For more information on the two aforementioned initiatives and their outcomes, please see
2 Exhibit 2-4-3: Distribution System Plan.

3
4 Other recent activities undertaken by the utility to better understand the grid impacts of
5 increased EV penetration, as well as the needs and preferences of EV users in its service
6 territory, include partnering with Ottawa-based educational institutions to survey local EV
7 owners regarding EV usage and public charging infrastructure access.

8 9 **3. PLANNED PRODUCTIVITY INITIATIVES – 2021-2025**

10 Whether through harnessing the potential of new technologies and solutions to better serve
11 customers, elevating standards of business performance and excellence, or rationalizing and
12 re-purposing resources, Hydro Ottawa is set to continue strengthening its culture of continuous
13 improvement over the course of its next five-year rate plan. This section outlines a range of
14 productivity initiatives that are planned for execution during that period.

15
16 Of note, it is anticipated that additional productivity initiatives will be conceived, proposed, and
17 implemented during the upcoming five-year period beyond those that are enumerated below.
18 This is consistent with the utility's experience from its 2016-2020 rate term, insofar as numerous
19 initiatives were launched during that term which were not identified in the corresponding Custom
20 IR application. What's more, this confident expectation on Hydro Ottawa's part is firmly
21 anchored in an ongoing cycle and rhythm of continuous improvement at the utility, which
22 accounts for the need to plan for and respond to new circumstances that arise in the business
23 and operating environments, shifts in customer preferences, unforeseen and unexpected public
24 policy developments, and evolutions in the technological systems underpinning frontline and
25 back-office functions.

26 27 **3.1. CUSTOMER SERVICE**

28 **3.1.1. Customer Relationship Management**

29 In step with its chief corporate strategic objective to place the customer at the centre of
30 everything it does, Hydro Ottawa is embarking upon a service automation journey utilizing a



1 digital platform in CRM to enable a 360-degree view of customer activity across the
2 organization. This initiative involves the deployment and utilization of Salesforce, recognized as
3 an industry leading solution for connecting sales, service, and marketing activities on a unified
4 “mobile first” cloud platform.

5
6 The purpose of this initiative is to provide a single, end-to-end picture of the customer's journey
7 aggregated from across various channels, systems, and data silos. By providing a unified view
8 of all customer touchpoints, Hydro Ottawa will gain greater customer insight to deliver more
9 personalized and engaging customer experiences, improve customer intelligence, and achieve
10 corporate performance objectives. This strategic approach will enable the utility to
11 synchronously manage across the traditional customer-interfacing organizational boundaries –
12 namely, customer service, sales, marketing, field service, and technical and operational support.

13
14 Productivity gains that are expected to accrue from this initiative include the following:

- 15
- 16 • Leveraging Salesforce as a central hub to record customer communication preferences,
17 so as to improve personalization and customer choice;
 - 18 • Launching a foundational platform upon which to integrate other customer channels,
19 touch points, and technology (including social media engagement);
 - 20 • Collapsing a number of applications into a single, unified platform, thereby reducing
21 systems, vendors, integrations, and complexity;
 - 22 • Enabling Customer Service staff to better collaborate and respond to customer activities
23 in real-time; and
 - 24 • Driving Key Account case management improvements.
- 25

26 **3.2. DISTRIBUTION OPERATIONS, ENGINEERING & ASSET MANAGEMENT**

27 **3.2.1. Workforce Adjustments through Grid Modernization and Business Process** 28 **Enhancements**

29 The Chief Electricity Distribution Officer (“CEDO”) Division within the utility, through all of its
30 various groups, is challenged daily to look for innovative ways to modernize infrastructure and



1 business processes to enable more efficient service offerings to customers. The method is often
2 a re-evaluation of work processes, skill sets, and available and future tools that can allow for a
3 different and often more streamlined way of working. Through this evaluation, areas of potential
4 overlap and adjustment can be identified. Following the recent consolidation of administrative
5 and operational facilities, this internal evaluation process revealed the presence of overlaps in
6 certain work groups that could be condensed. In addition, future system automation that will be
7 in place within the timeframe of the adjudication of this Application will allow for autonomous
8 system decision-making and less need for human interference. Through these adaptations,
9 CEDO can realize an attrition-based readjustment between 1-2% or up to seven positions.

11 **3.2.2. Crew Wrench Time Analysis and Productivity Improvements**

12 This project will analyze day-to-day activities of the utility's current Power Line Technician and
13 Power Cable Technician workforce through the use of GPS data analytics. Through this
14 initiative, Hydro Ottawa will separate these work groups into separate categories and perform
15 analysis that will focus on work centres, as well as travel and set-up times, with the aim of
16 benchmarking total time spent working (i.e. "wrench time"). In 2019, additional GPS devices
17 were added to all vehicles providing increased, detailed information analytics that were
18 previously unavailable. This additional information will allow for enhanced granularity of vehicle
19 usage and allow the utility to determine start and stop times, in addition to engagement and
20 disengagement of various vehicle functions. Through this analysis, Hydro Ottawa will identify
21 factors that are having the greatest impact on wrench time and that are potentially serving as
22 barriers to optimizing total wrench time. This analysis will enable the identification and
23 prioritization of processes, systems, and resource improvements to increase wrench time on a
24 daily basis. Hydro Ottawa's objective is to increase wrench time by 4% or approximately 15
25 minutes per day per crew. This represents more than \$520K of additional value annually for a
26 staff of 110 Power Line Technicians and Power Cable Technicians.



3.2.3. Seasonal Construction Shifts

Hydro Ottawa will explore implementing seasonal construction shifts for certain resources and crews to take advantage of the increased amount of daylight in the spring and summer months to increase crew productivity and improve customer service.

Field staff at Hydro Ottawa work an average of 40 hours per week, or 80 hours every two weeks, within the normal hours of operation of 6:00 a.m. to 6:00 p.m., Monday to Friday. The majority of staff works an eight-hour shift from 7:00 a.m. to 3:00 p.m. In lieu of this arrangement, the utility intends to pilot an approach in which heavy construction crews would work four 10-hour days per week. This will lead to a reduction in total crew travel time and the number of truck set-ups and tear-downs on large projects.

For Hydro Ottawa's service trucks, seasonal construction shifts will likewise improve customer service and choice. Service trucks are two-person crews in smaller line trucks that complete service isolations and re-energizations, service removals, and in-fill service connections. These activities are dispatched using Hydro Ottawa's Mobile Workforce Management system based on appointments booked by customers or their electricians. Working longer shifts per day will increase the capacity for appointments in a day, thereby enhancing the customer experience by providing customers access to more appointment windows within a shorter timeframe. It will also permit the crews to complete the vast majority of the service re-energizations during regular hours, as opposed to overtime costs being incurred or 24/7 crews performing the work.

Hydro Ottawa's plant inspection function would also benefit from seasonal construction shifts. Civil contractors, like the majority of the construction industry, work long days in order to be as efficient as possible. By having Plant Inspectors work four 10-hour days, capacity for inspections will increase during regular hours, permitting civil contractors to build and form longer runs of duct banks prior to concrete pours, reducing the time required to complete jobs. The majority of the inspections would also be completed during regular hours.



1 It is anticipated that implementing these measures will result in a targeted 5% reduction in
2 overtime costs for those crews working the seasonal shifts, while also enhancing the customer
3 and contractor experience.

4
5 Seasonal construction shifts will be considered on a project-by-project basis, with particular
6 consideration given to City of Ottawa by-laws. Certain arterial roads in the city have access
7 restrictions that limit lane closures and encroachments to the window of 9:00 a.m. to 3:00 p.m.
8 In these situations, an eight-hour day would be most efficient for execution.

9 10 **3.2.4. AMI Analytics & Integration Management**

11 Since the adoption of smart metering technologies in 2006, Hydro Ottawa has sought to
12 leverage AMI data as a means of driving operational efficiencies and improving the accuracy of
13 customer bills. To date, however, the utility's information technology ("IT") architecture has not
14 included any specific platform to enable the detailed AMI analytics that are required to fully
15 optimize the use of AMI data and maximize the value that can be derived from it. As Hydro
16 Ottawa migrates towards an "always-on" cellular communication back-haul of AMI data, the
17 volume of data available to the utility will vastly increase in size. In order to take full advantage
18 of this opportunity, the utility must invest in data storage, analytics, and integration solutions.

19
20 Hydro Ottawa is therefore undertaking a project to select, configure, and deploy a cloud-based
21 data analytics platform that will provide the necessary solutions (including those which possess
22 artificial intelligence and machine learning capabilities) and integrate with new and existing
23 business systems. Following project completion, the utility will enjoy greater access to AMI data
24 and the ability to optimize functionality from the existing metering population. As a result,
25 operational efficiencies and improvements will be achieved across a range of core business
26 functions – billing, collections, meter data services, field operations, asset planning, and finance.
27 Enhanced analytics will offer new insights and capabilities for purposes of early outage
28 detection, automated troubleshooting, field service dispatching, Move-In/Move-Out process,
29 distribution modelling, load forecasting, revenue forecasting, unbilled estimates, loss allocations,
30 and rate design. What's more, this initiative will help position Hydro Ottawa to better prepare for



1 and accommodate the introduction of greater complexities into the AMI and metering domains,
2 as distributed energy resources and EVs continue to proliferate.

3.2.5. AMI System Phone Line Reduction

5 This project will involve the removal of over 400 residential self-contained meters used for mesh
6 data collection (known as “gatekeepers”). These devices, which are responsible for gathering
7 and sending data to the Metering team for analysis and billing, will be replaced with 350 pole
8 mounted data collection gatekeeper nodes. The new nodal devices will offer numerous
9 advantages and benefits. For example, they will have significantly better communication reach,
10 as they will transfer the data through cellular communication rather than costly hardwired
11 connections that are prone to ground disturbances and potential failure as the asset ages. In
12 addition, these upgraded modules will contain backup power to enhance resiliency during power
13 interruptions, improve outage management capabilities and potentially utilize our fiber network.
14 They will also be serviceable by line staff.

16 Cost savings generated by this initiative include reductions in labour and fleet costs associated
17 with telephone line maintenance, as well as reduced telecom charges directly associated with
18 those lines.

3.2.6. Reduction in Fleet Assets

21 Hydro Ottawa operates a diverse fleet of 234 vehicles. The fleet consists of a combination of
22 heavy construction vehicles, light construction vehicles, cube vans, and passenger vehicles
23 such as vans, pickups, and cars.

25 Hydro Ottawa intends to leverage the Geotab GPS units in each of the vehicles to analyze the
26 utilization of all types and classes of vehicles to identify opportunities to rationalize and
27 right-size the fleet, where appropriate. The utility’s overall objective is a reduction of at least six
28 vehicles, representing approximately 2% of the fleet.



1 This initiative is particularly timely and relevant given the recent relocation of resources to Hydro
2 Ottawa's new east and south operations centres. The intention is to improve utilization of
3 specialized construction vehicles through sharing of those resources amongst work groups. The
4 initiative will also include an analysis of the usage patterns of pickups, vans, and cars to
5 determine where low-utilization vehicles can be removed from service or re-deployed to replace
6 older vehicles in the fleet that may have higher maintenance and operational costs.

8 **3.2.7. Vegetation Management Savings**

9 Hydro Ottawa anticipates annual savings of \$100K in the vegetation management program
10 through the 2021-2025 period. The storm hardening efforts that were undertaken in 2014 and
11 2015 have allowed Hydro Ottawa to maintain close control of the growth through two-year and
12 three-year trim cycles. It is now anticipated that Hydro Ottawa will be able to continue to refine
13 and reduce the trim cycles in areas showing slower than expected growth.

14
15 In addition to the expected savings, Hydro Ottawa will continue to generate revenue during the
16 upcoming five-year rate term as a result of the customer service offering that was developed in
17 2018, known as the Extended Trim Program. Through this program, when notifying customers
18 of routine tree trimming that will be conducted in their area, Hydro Ottawa offers to conduct
19 trimming of nuisance trees on customers' property at a cost-effective rate.

21 **3.2.8. Cable Locates Savings**

22 Locate requests throughout Hydro Ottawa's service territory have continued to climb
23 year-over-year, as a result of a strong local economy and the rising deployment of
24 "fiber-to-the-home" technology by telecommunications companies.¹⁵ In turn, the cost of the
25 cable locate program has continued to climb proportionally. Hydro Ottawa is therefore exploring
26 opportunities to improve the number of permit requests that are cleared or approved without the
27 need for a field locate. It is anticipated that through these process refinements, Hydro Ottawa
28 will be able to reduce the number of truck rolls by up to 10% without compromising safety.

¹⁵ FTTH, also called "fiber to the premises" ("FTTP"), is the installation and use of optical fiber from a central point directly to individual buildings – such as residences, apartment buildings, and businesses – in order to provide high-speed internet access.



1 In parallel, Hydro Ottawa will continue to increase the number of Alternate Locate Agreements
2 (“ALAs”) in place with approved excavators. The ALA outlines specific terms and conditions
3 whereby an approved excavator can dig without receiving a traditional marked field locate. ALAs
4 were implemented in May 2018, with Hydro Ottawa realizing a savings of more than \$55K
5 during that year. It is anticipated that the savings will continue to grow through expanded use of
6 the service.¹⁶

8 **3.3. INFORMATION TECHNOLOGY & OPERATIONAL TECHNOLOGY**

9 **3.3.1. Digital Strategy**

10 In order to provide structure to the identification of priorities and goals for leveraging information
11 and operational technology in support of its business objectives for the 2021-2025 period, Hydro
12 Ottawa has adopted a formal Digital Strategy. This new Digital Strategy revolves around four
13 central themes: an enhanced customer experience; evolution of the grid; increased productivity
14 through automation; and participation in energy innovation and technology.

15
16 The focus on enhanced productivity serves as a continuation of the business process
17 optimization that Hydro Ottawa has undertaken in recent years, with manual processes and
18 legacy platforms being replaced by more advanced digital solutions. This transition and
19 transformation will remain ongoing over the course of the upcoming five-year rate term. In
20 addition, the utility will seek to apply such solutions as artificial intelligence and machine
21 learning towards predicting bills, informing customers of outages, tracking a truck to a service
22 call, and performing lifecycle management for IT assets used by employees. In line with
23 emerging industry best practice, the Digital Strategy also calls for continued allocation of over
24 half of Hydro Ottawa’s IT budget to “transform” and “grow” initiatives – which are concentrated

¹⁶ A recent initiative that will be complemented by these planned actions for 2021-2025 is the extension of the validity period for locates. Whereas Hydro Ottawa had previously applied a 30-day expiration timeframe for locates, in 2019 the utility extended the validity period to 60 days. This action was a response to feedback from customers and other stakeholders, as well as to internal analysis showing that the 30-day validity period was leading to a growing volume of relocate requests. Subsequent to this change, Hydro Ottawa has observed a reduction in relocate ticket volume and associated costs.



1 on exploring new products, services, and business models – as opposed to initiatives which
2 simply involve maintaining existing business processes under a status quo approach.¹⁷

3
4 For more information, and to view a copy of the Digital Strategy, please see Attachment
5 1-1-13(B).

6 7 **3.3.2. Web and Multi-Channel Development**

8 Web and Multi-Channel Development initiatives will enhance existing technology and introduce
9 new solutions to allow Hydro Ottawa's customers to communicate and interact with the utility on
10 their channel of choice. The platforms encompassed in this project include email, telephone,
11 Web Chat, Chat Bot (software utilizing artificial intelligence that carries out interactive
12 conversations based on pre-made phrases), knowledge base, digital assistant, SMS, and social
13 media.¹⁸ This initiative is part of Hydro Ottawa's vision to move towards a more decentralized,
14 customer-centric, and technologically-advanced service, providing more value to its customers.
15 Customers expect near real-time feedback and interaction, on a 24/7 basis, using their
16 communication channel of choice. Hydro Ottawa will continue to monitor and interact with
17 customers across these multiple channels, the analytics from which will provide the utility with
18 granular insights into customer behaviour, preferences, and needs.

19 20 **3.3.3. Migration of ERP System to the Cloud**

21 An effective ERP solution is critical to the successful operation of Hydro Ottawa's ongoing
22 business operations. Having gone live in 2018, the utility's current on-premise system – JD
23 Edwards – will have reached the end of its useful life in 2023 and will thus require an upgrade
24 across technology components. Hydro Ottawa intends to migrate to a new cloud-based platform
25 to improve agility and operational efficiencies, and eliminate the need to continually upgrade its
26 ERP system every five to seven years. Expected benefits include enhanced IT resource
27 utilization to focus on higher-value activities; cost savings through leaner processes and

¹⁷ For more information on this industry best practice, and Hydro Ottawa's fulfillment thereof, please see the IT Budget Assessment Benchmark report prepared by Gartner, which is included in this Application as Attachment 1-1-12(F).

¹⁸ Gartner, an IT research and consultancy firm, estimates that 85% of online conversations will be with Chat Bots in 2020.



1 in-platform planning and reporting; increased operational effectiveness through simplified user
2 interfaces, superior performance, and standardized processes; improved 24/7 service and
3 support; and increased productivity through collaboration technologies inherent with
4 cloud-based ERP adoption.

6 **3.3.4. Field Service Management**

7 This project involves the replacement of the on-premise Mobile Workforce Management
8 ("MWM") system with a cloud-based system. Hydro Ottawa went live with the first phase of
9 MWM in 2016. Within a year of go-live, the vendor acquired a cloud-based solution from a
10 competing utility and announced that it would no longer invest in the existing MWM product and
11 would eliminate technical support at some point in the future.

12
13 With upwards of 40 crews at Hydro Ottawa utilizing this technology, there is significant risk to
14 productivity if the transition to an effective replacement solution does not occur. The utility is
15 therefore seeking an enterprise-grade field service management system which will improve the
16 level of functionality and interoperability currently available, and extend its use across the
17 organization at a reasonable total cost of ownership over the next five to 10 years.

18
19 The utility is using this initiative as an opportunity to obtain a range of ancillary benefits that
20 extend beyond the simple replacement of a solution. For example, adoption of a cloud-based
21 system will facilitate expanded use of the tool across a larger number of work groups than those
22 which were recently using MWM. Hydro Ottawa will also ensure that enhanced mobile
23 functionality and reporting and dashboard capabilities are features offered by the new solution.
24 A full review and evaluation of several products in the field service management space will be
25 completed prior to the selection of a solution for implementation.

27 **3.3.5. Distribution Management System Enhancements**

28 This Distribution Management System ("DMS") project follows on the heels of the SCADA
29 replacement project from the 2016-2020 rate period.¹⁹ Hydro Ottawa not only upgraded its

¹⁹ Please see section 2.3.2 above for details on the SCADA system upgrade.



1 SCADA system with a modern platform, but it also installed the foundational element of a DMS
2 system, which is an electronic map within the platform that is fully integrated with the GIS
3 system.

4
5 This project will seek to build upon the success of the SCADA upgrade by incorporating
6 additional functional modules into the DMS software platform that will utilize the map and
7 SCADA telemetry to develop analysis products and automation functions. This initiative is
8 primarily targeted at operational efficiency within the system control room and improving Hydro
9 Ottawa's performance in the management of its distribution assets, both during normal
10 day-to-day operations as well as during outage events.

11
12 The DMS system is anticipated to help reduce overall system losses, and in turn, reduce Hydro
13 Ottawa's overall revenue requirement. What's more, with automation tools at their fingertips,
14 System Operators will be able to focus greater attention on safety-related critical decisions and
15 spend significantly less time on minor or routine activities.

16 17 **3.3.6. Outage Management System Replacement**

18 Hydro Ottawa's current Outage Management System ("OMS") platform has been in use for over
19 10 years and is in need of a significant upgrade. While the existing system is functional, there
20 are several gaps that need to be addressed in order to modernize the utility's response and
21 reporting mechanisms.

22
23 In conjunction with the enhancements described in section 3.3.5 above, OMS functionality will
24 be integrated into the same platform as the SCADA and DMS systems. This will have the
25 practical effect of reducing the number of tools that a System Operator must manage on an
26 ongoing basis, generating higher quality of information for control room employees to supply to
27 field crews and management, and improving the overall response to outages. In turn, in the
28 event of an outage, this will help translate into both the duration and number of customers
29 affected being minimized.



3.3.7. Self-Healing Grid

Notwithstanding the significant progress that Hydro Ottawa has made in successfully deploying and utilizing grid modernization technologies, the current distribution system still has limited continuous monitoring and outage visibility capabilities. Without devices providing real-time, actionable intelligence, the utility will not be able to optimally leverage future grid automation technology.

Accordingly, Hydro Ottawa is proposing to install sensors and remotely-operated devices on its network. These devices will increase system-wide outage visibility, and enable sectionalizing and fault finding. Strategic locations for device installation will be identified via an annual system-wide review of operations and performance.

From a productivity perspective, the major gains will be minimizing the frequency of dispatching crews to perform line patrols to pinpoint the source of outages, enhancing the ability of system operators to locate outages in real-time from the control room, and expediting the identification of outages requiring manual switching. Other benefits will include reduced outage durations, improvement in reliability performance, reduced contact with failed equipment for crews in the field, provision of more accurate estimated times of restoration to customers, and the ability to notify customers of high-risk areas to avoid while crews are engaged in restoration activity.

3.3.8. IT Lifecycle Management & Ongoing Enhancements

A critical determinant of productivity in any modern workplace, especially in the electric utility industry, is the availability of high-quality IT assets, services, and support. Accordingly, in order to ensure reliable, robust support for core business functions and operations, Hydro Ottawa administers programs dedicated to the lifecycle monitoring and management of IT infrastructure assets.

The IT Asset Lifecycle Management Program ensures equipment that is reaching end-of-life or usefulness are identified and replaced on an established schedule. This prevents unscheduled outages, which adversely impact business operations and productivity, by proactively



scheduling systems and equipment for replacement. Ongoing Enhancements involves the upgrading or replacement of aging equipment as well as the introduction of new technologies that are leveraged to increase the efficiency and effectiveness of IT operations.

Through this disciplined, systematic approach to ensuring access to IT infrastructure assets and systems, Hydro Ottawa is able to support the 24/7 operational requirements demanded by business units across the organization and thereby provide a firm foundation for efficiency and productivity in the workplace.

3.4. HUMAN RESOURCES

3.4.1. Workforce Planning

Looking ahead to 2021-2025, key priorities for workforce planning will be sustaining rather than replenishing the utility's trades workforce, replacing mid-level experienced front-line supervisors/managers, and responding to the changing skill sets required in light of the technological innovations and digital transformation in the electricity sector. To ensure a prudent approach to training and hiring, and with an eye towards limiting overall headcount increases within the organization, Hydro Ottawa will engage in workforce planning based upon the following principles:

- Increase overall productivity to ensure greater availability of productive time, while also establishing initiatives to gain efficiencies that increase the quality of the time worked;
- Hire apprentices and fill other positions by using vacancies as they become available, including the redistribution of vacancies from support functions to the trades;
- Where available in the labour market, attract and hire journeypersons to fill vacancies, with the aim of reducing the overall required training investment in apprenticeships and leverage qualified resources with a shorter lead time to achieve maximum productivity;
- Balance hiring with the appropriate use of overtime to supplement labour gaps, and continue to leverage contracted services where cost-effective and available to meet demand; and



- Increase the efficiency of work through innovative practices and the introduction of new technologies and automation.

3.4.2. Leveraging Technology for Business Process Automation & Training

In step with its Strategic Direction and Digital Strategy, Hydro Ottawa will continue to embrace existing and new technological solutions to streamline business processes for the delivery of HR services. This will entail leveraging its current HCM system to continue to automate what have in the past been time-consuming, manual, and paper-based processes; expanding the system's self-service capabilities; and integrating and introducing other HR technologies (such as the cloud-based OHSE software solution discussed in section 2.4.3 above). This will position the utility to make more effective and timely people and safety-related decisions through access to powerful data and analytics, including predictive analytics.

Similarly, Hydro Ottawa is set to substantially enhance the administration and delivery of employee training through eLearning over the next few years. eLearning has proven to be a successful and popular means of conducting training, as it can be tailored to the unique scheduling needs of specific groups of employees, and thereby optimize work time and productivity. For example, inclement weather days can be leveraged for purposes of delivering fast-deploy refresher training modules for trades, while employees in management, administrative, and clerical roles can complete eLearning at a time and workstation of their choosing (consistent with the utility's "Anything, Anytime, Anywhere" philosophy of supplying tools to the workforce). With the shift to an online library of eLearning courses and integration with the utility's HCM system, Hydro Ottawa is well-equipped to enhance the delivery of legislated, business, and leadership skills training through eLearning, and thus more effectively and efficiently fulfill the training needs of employees.

4. CONCLUSION

Responsibly controlling costs and focusing on cost-effective delivery of outcomes that matter to customers remain core priorities for Hydro Ottawa. Amidst the unique confluence of demands, pressures, and constraints on operations, the utility is placing increased emphasis on



1 incorporating productivity and continuous improvement gains, so as to offset increasing
2 expenditures and boost organizational capacity. Hydro Ottawa is therefore committed to
3 ensuring that productivity and continuous improvement serve as hallmarks of its 2021-2025 rate
4 plan.

CORPORATE PRODUCTIVITY SCORECARD

Labour Utilization	Measures	Description	2014	2015	2016	2017 A	2018	2019 Target	Q2 Target	Q2 Actual	Assessment	Notes
	Productive Time	% of Billable Hours / Total Regular Hours	71%	74%	74%	73%	72%	≥ 74%	74%	73%	X	Below target and prior year due to the office relocation; over 3,000 hours reported on office move administrative WO
	Labour Allocation to CAPEX	% of Labour Time on Capital Activities / Total Productive Time	60%	61%	62%	60%	58%	≥ 60%	60%	57%	X	Below target and prior year due to more WFO instead of capital work (i.e. flood mitigation for Portage)
	Average Sick Days per FTE (annualized)	Total Sick Days / Total Employees	5.9	6.3	5.9	6	7.1	≤ 6.0	6.8	7.3	▲	Exceeded target, however improvement from Q1 of 8.2 and prior year of 7.6. The improvement is explained by a number of long tenured employees who retired.
	e-Learning Training per employee (annualized)	Number of hours of e-learning / Total Employees	N/A	N/A	N/A	1	1.8	≥ 2.0	2	2.2	●	Achieved target. Increase in Q2 due to the summer student on-boarding

	Measures	Description	2014	2015	2016	2017 A	2018	2019 Target	Q2 Target	Q2 Actual	Assessment	Notes
OM&A	Bad Debt as a % of Total Electricity Revenue	Bad Debt / Total Electricity Revenue	0.18%	0.01%	0.13%	0.20%	0.13%	≤ 0.12%	≤ 0.12%	0.04%	●	Below target and improvement in Q2 due to the OEB disconnection ban period ended. Less Finalled accounts in 2019
	Technology Infrastructure Cost per Employee	(External IT support costs + computer hardware & software depn) / # of FTE	\$21.5 K	\$23.3 K	\$24.4 K	\$22.8 K	\$26.5 K	≤ \$24.9K	≤ \$24.3K	\$26.3K	▲	Exceeded target and slightly below prior year. Total costs below budget, but headcount also lower, therefore higher costs per employee
Profitability Metrics	EBITDA as a % Revenue *	EBITDA \$ / Total Revenue - Hydro Ottawa Limited	44%	46%	52%	53%	54%	≥ 54%	52%	51%	✗	Below target and prior year. Lower EBITDA due to lower distribution revenue and large increase in leak remediation costs
	Inventory Turnover Ratio and Value	Cost of Materials Used / Average Inventory	1.83	1.73	2.27	1.93	1.55	≥ 2.00	≥ 1.94	1.51	✗	Below target and prior year due to the move and associated warehouse shut-downs.



Digital Strategy

—
2021-2025

Marketing
Analysis
Ideas
Success
Management

Jan Feb Mar Apr May Jun

INTRODUCTION

This Digital Strategy identifies Hydro Ottawa's priorities and goals for leveraging information and operational technology in support of its business objectives over the 2021-2025 period.

This strategy builds upon the accomplishments achieved as part of the successful execution of the 2016-2020 Digital Strategy and is consistent with the key areas of focus outlined in the 2016-2020 Strategic Direction. The new Digital Strategy revolves around four central themes: an enhanced customer experience; evolution of the grid; increased productivity through automation; and participation in energy innovation and technology. These themes are anchored in the recognition that the electricity service model is in the midst of significant transformation and the role of electric utilities will be transformed along with it.

Against the backdrop of ongoing technological disruption across the sector, Hydro Ottawa will maintain a firm focus on our core mission and mandate over the next five years: to create value for our shareholders, our customers and our community through excellence in the delivery of electricity and related services.

STRATEGIC CONTEXT

Choosing and deploying the right technologies is a crucial aspect of business success for modern utilities. At Hydro Ottawa, our technology decisions are based on two basic considerations: enhancing service to our customers, and creating efficiencies that will increase our competitiveness and improving functionality to be more agile and resilient in the face of industry disruption. Over the course of the next five years, these twin imperatives will continue to drive Hydro Ottawa's decisions in adopting innovative technologies that solve business problems and enhance customer value.

However, looking ahead to the 2021-2025 horizon, Hydro Ottawa's decision-making with regards to preferred technological solutions will take place in a landscape that looks very different from the present five year window governing the company's activities and priorities. The business environment of 2021-2025 will be one in which rapid evolution and growing complexity will increasingly define the operational and information technology systems that underpin utilities' performance.

The business systems and processes supporting frontline operations and back-office functions will accelerate their migration towards digital, mobile-friendly, and cloud-based solutions. Core operational technology (OT) systems will harmonize with enterprise information technology (IT) systems, to the point where they may overlap inextricably. Automation will become the new normal, with artificial intelligence and robotics

becoming more readily available and the internet of things (IoT) embedded into the transactions and routines of everyday life.

While utilities navigate this shifting terrain, they will simultaneously be compelled to mitigate the risk of technologies becoming obsolete – whether as a result of thirdparty providers discontinuing maintenance services for legacy solutions or existing tools having reached the end of their useful lives.

Meanwhile, the maturing implementation of smart grid equipment and devices, alongside the proliferation of distributed energy resources (DERs), will foster a more dynamic ecosystem of transactions, participants, and flows of energy, information, and communications. And as the "Smart City" movement gathers momentum, stakeholder expectations will heighten for utilities to enable the connectivity which harnesses the power of data and technology to enhance the quality of life for communities.

This emerging landscape will be challenging for utilities that fail to adapt. But it also presents a market for new products and services and unprecedented opportunities to enhance customer value and service. To realize these opportunities, utilities will need to make significant changes in the way they do business. In particular, they will need to increase their focus on meeting customer needs, and creating a more effortless and engaging customer experience.

This emerging landscape will be challenging for utilities that fail to adapt.



Utilities will need to expand customer value by providing a broader range of products and services, in keeping with the growing range of energy options available to customers. And they will need to consider strategic partnerships that complement and supplement their core strengths.

Fortunately, as it prepares to enter a new five-year chapter of activity and growth, Hydro Ottawa is starting from a position of strength in terms of readiness for the challenges and opportunities ahead. During the 2016-2020 period, Hydro Ottawa achieved significant progress in delivering upon several interrelated strategies that will serve as a springboard for the implementation of this new Digital Strategy.

First and foremost was the predecessor version of this strategy, which focused on improving the customer experience, supporting new products and services, and promoting operational excellence. Signature accomplishments included an investment of over \$30 million in IT/OT projects, a shift from a focus on operations to a posture of innovation, substantial deployment of cloud-based solutions, and maturation of the company's cybersecurity and information management (IM) programs.

In addition, the last five years witnessed important milestones in Hydro Ottawa's Customer Experience Strategy, which is aimed at achieving five strategic imperatives: developing a customer centric culture, knowing our customers, improving customer touchpoints, providing leading services and products, and enhancing our technologies and processes.

Finally, through its Smart Energy Strategy, the company was able to better structure its efforts to enhance grid reliability and resilience, transition our customers to a net zero carbon future, and leverage our infrastructure and people to improve customer services.

A key piece of this strategy was a Grid Transformation Plan that set out a prudent and measured approach to Smart

Grid development, building on the advanced metering, grid intelligence and self-healing technologies already deployed by the company.

The success of the last five years provides a robust foundation for achieving the goals set forth in this refreshed strategy for the 2021-2025 period. An important bridge between the company's present and future plans will be our enduring aim to be the trusted energy advisor for our customers – large and small – and our community.

Through the priorities and proposals laid out in this Digital Strategy, Hydro Ottawa will continue the digital transformation of our business to offer service to our customers anytime and anywhere, in a more engaging and effortless manner. We will improve our use of data to offer personalized service and improve customer-facing operations. And we will work to align culture, business structure, processes and technology in the service of the customer.

We believe Hydro Ottawa's experience and core capabilities, and its position as a City-owned utility, make it uniquely suited to this role. As the energy needs and options of our customers and our community evolve, and as signature projects and developments proceed, Hydro Ottawa will play a leading role in helping our City to transition to a smart energy future.

As our business changes to adapt to the needs of our customers and market, the target business model will evolve into a structure with unique business needs and a different culture. As we seek to digitally change the experience for our customers, so




too will it be important to change the experience for our employees. Improving productivity, enhancing efficiency and agility, and improving collaboration will therefore likewise serve as key areas of focus going forward.

STRATEGIC PLANNING INPUTS

This Digital Strategy has been informed by a number of planning and regulatory processes as well as IT planning sub-committees and programs within the organization. The following serve as critical inputs into the Digital Strategy:

- | | |
|--|---|
| <u>1.</u> Hydro Ottawa Strategic Direction | <u>7.</u> Cybersecurity Program |
| <u>2.</u> Customer Experience Strategy & Roadmap | <u>8.</u> Business Continuity Program |
| <u>3.</u> Smart Energy Strategy & Roadmap | <u>9.</u> Workforce & Talent Management Program |
| <u>4.</u> Meter to Cash Steering Committee | <u>10.</u> Rate Application Program |
| <u>5.</u> ERP Steering Committee | <u>11.</u> IT Planning and Programs |
| <u>6.</u> Information Management Program | <u>12.</u> Meetings with Envari |

In addition to the aforementioned inputs, Hydro Ottawa's Digital Strategy is influenced by the current IT and technology landscape. The Digital Strategy will follow certain principles to ensure best practice and ease of deployment to market.

-  Buy vs. Build - The company will seek out solutions that best fit our business needs and that are readily available (COTS – Commercial off the Shelf Software). Only in rare exceptions will the company build any applications needed.
-  Cloud vs. On Premise - In all purchase decisions, cloud options will be considered first and foremost so as to simplify internal infrastructure and avail of the more turnkey options offered by cloud solutions.
-  Configure vs. Customize - Wherever possible, Hydro Ottawa will adopt best practice and alter our business processes to conform to best practice (ie. configure) as opposed to customizing new technologies to conform to non-standard practices.

Technology decisions will continue to be supported by a business case and will need to contribute to one or more pillars of Hydro Ottawa's corporate strategy - namely, Customer Value, Financial Strength, Organizational Effectiveness and to Hydro Ottawa's strong sense of Corporate Citizenship.



KEY COMPONENTS OF THE DIGITAL STRATEGY

The 2021-2025 Digital Strategy will build on the foundation established by Hydro Ottawa's technology investments over the course of 2016-2020.

During that time frame, the company's priorities consisted of moving to a digital workplace, leveraging business process automation to increase productivity, advancing technology on the grid, and creating simple to use customer centric applications and platforms.

Based upon the success of the last five years, and with a focus on the unique challenges and opportunities on the horizon, Hydro Ottawa's 2021-2025 Digital Strategy will be centered around four themes:

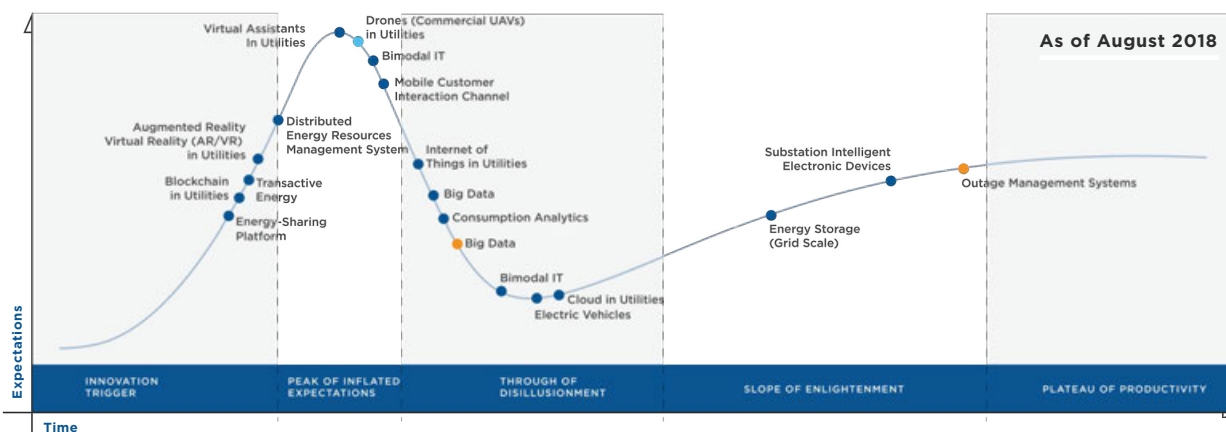
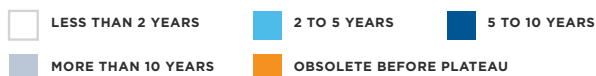
1. There will be a continued journey to build on the award winning customer-centric offerings that Hydro Ottawa has delivered to its customers. **Enhancements to the customer experience** will be consistent with expectations for simplicity, ease of convenience and cost effectiveness.
2. Hydro Ottawa will continue to support **evolution of the grid** with emerging technologies that will improve reliability, reduce outages, and better equip our control centre to deal with unpredictable severe weather events.
3. "Price" and the "Increasing cost of electricity" rank as major concerns for our customers. Accordingly, this strategy seeks continued evolution of the business systems within the company to **increase productivity and automation**, and to yield significant cost savings as a result.
4. The company will continue to pursue opportunities to participate in best-in-class **energy innovation projects**. This will include investments in pilots around Distributed

energy resources (DERS) as well as other "behind the meter" technologies.

In order to execute on these four pillars of the strategy, a strong foundation in the form of a **modern technology infrastructure** and a **secure environment** will be very important. The digital strategy will also require robust IT processes in the area of Change and Quality management. **Operational excellence** will be paramount to the success of the digital strategy providing for a continued shift from operations to innovation.

The 2021-2025 Digital Strategy will be highly influenced by the evolution of technology and customer expectations. A number of **emerging technologies** today will be mature technologies tomorrow. Likewise, a number of relevant technologies today will plateau, be unsupported or need to be retired during the upcoming five-year period. Hydro Ottawa will therefore track and implement a number of technologies as outlined in the "Utility Technology Hype Cycle" below.

YEARS TO MAINSTREAM ADOPTION:



1. ENHANCING THE CUSTOMER EXPERIENCE

The customer experience platform will continue to be influenced by market leaders largely in the technology industry. Customers are becoming accustomed to these evolving experiences and will expect no different from their utilities. Over the last few years, Hydro Ottawa has made huge strides in being an award winning industry leader in the area of customer experience. In particular, significant work has been accomplished on residential service offerings.

In 2018, the average customer spent less than 10 minutes on an annual basis interacting with their utility. These were largely around two areas of interest – “Billing” and “Outages”. Any new customer experience strategy will thus need to contemplate a data-driven approach to evolving the customer experience. Hydro Ottawa will embrace platforms that will employ **Artificial Intelligence and Machine Learning** to predict bills, inform customers of outages, deliver visibility into repairs in their areas, track a truck to a service call, order services and obtain quotes online.

Hydro Ottawa’s website, outage maps and social media platforms are key assets to communicate outages today. These will be made more resilient in the face of large outages. In addition, personalized notification in the form of text messages and emails will be used where possible. A move to a cloud Content Management System will enable further personalization of websites, creation of micro sites as well as efficiencies in content management.

Investments will be made in the customer service back office. It is anticipated that the Telephony and interactive voice recognition (IVR) system will be moved to a **Cloud IVR system**. This will ensure scalability during widespread outages. Continuous changes to the regulatory landscape will require enhancements to our **customer information and billing systems**. The advent of **Robotics** will enable the automation and augmentation of the customer experience through the use of Bots such as Chatbots, Bots that will process customer moves and Bots which could assist with the billing process.

Hydro Ottawa’s billing eco-system is a part of a larger **advanced metering infrastructure (AMI)** strategy that Hydro Ottawa is currently reviewing. Hydro Ottawa is 100% smart metered. However as an early adopter of smart meter technology our meters are ageing. A refreshed strategy will contemplate upgrades of back office metering, load profile and aggregation systems.

Hydro Ottawa will also continue its journey to building a state-of-the-art **customer relationship management (CRM) system** that will incorporate a 360-degree view of the customer. This system will enable service capabilities for its call center and field crews, in addition to enabling self-service for our customers over the long term.

Hydro Ottawa will embrace platforms that will employ artificial intelligence and machine learning to improve the customer experience, predict bills, manage outages and enhance customer service.

2. EVOLUTION OF THE GRID

Hydro Ottawa has invested significantly in creating a "Smart Grid." The company has developed a Smart Energy strategy that encompasses a number of initiatives that are set for continued development over the coming years. In 2018, Hydro Ottawa formed a Smart Energy Steering Committee with a crossfunctional leadership group in order to build a vision and roadmap for future investments in smart solutions. The vision is to be a "leading partner in a smart energy future delivering 100% reliable and innovative service solutions." This Smart Energy strategy combines the company's aspirations to evolve its grid whilst being a leader in energy services.

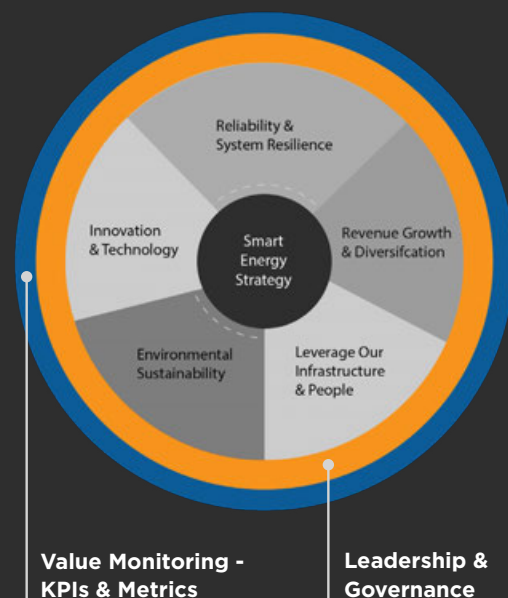
The strategic outcomes include:

- **100% Reliable Service** - Develop enhanced grid reliability, and service offerings to enable provision of 100% reliable electrical service guarantee.
- **Customer Energy Solutions** - Position Hydro Ottawa as the provider of proactive and innovative energy solutions that are driven by our customers' needs, preferences, and objectives.

The Smart Energy strategy leverages technology to align with both current and future markets, positioning Hydro Ottawa to be best in class. Moving closer to 100% reliability is a key goal through automation of the grid. The strategy also focuses on environmental sustainability by transitioning our customers to a net zero future. Hydro Ottawa also aspires to diversify and grow revenues by being a trusted energy advisor to our customers. The goal is to do this by leveraging our knowledge, infrastructure and people.

A number of key initiatives will be undertaken to achieve these goals. Continued investments will be made on Hydro Ottawa's telecommunications network. Deployment of a **Field Area Network (FAN)** will augment the fibre optic network to connect the grid across offices, substations and customers.

A new **Mobile Workforce Management** platform will optimize dispatch for both planned and unplanned work. A **Self- Healing Grid** will require deploying tools to enable fault isolation and restoration with or without operator intervention.



The Digital Strategy will contemplate making significant improvements to **Outage Intelligence**. This will be achieved by building system and tools which are automatically able to locate system damage and identify a root cause of the outage on the distribution system. This will be coupled with **Outage Analytics** that will enable us to better leverage our data.

Hydro Ottawa was an early adopter of Smart Meters. As a result a majority of meters deployed are first generation and do not have 'Last Gasp'. 'Last Gasp' enables the meter to communicate with the system room and inform the system controllers that there is an outage. Given the exorbitant costs to replace all meters in its territory, Hydro Ottawa will review and implement other AMI and communication solutions to bridge the gap presented by the current meters. These include a number of projects including replacing the **AMI head end**, **Upgrade meters to fibre/ cell communications to ensure more real time communication**, **Upgrade OMS**, and finally **selective replacement of meters**.

In addition an initiative will be kicked off to review and select a **Data analytics platform** to better understand meter, outage and load data.

3. INCREASING PRODUCTIVITY THROUGH AUTOMATION

Price and electricity costs remain the largest concern for our customers. The 2021-2025 Digital Strategy will strive to reduce these costs or keep them flat, by improving productivity through automation.

The journey to business process optimization commenced in the 2016-2020 timeframe with the introduction of new platforms for various divisions within the business. However there is still an opportunity to optimize processes that are manual in nature. This Digital Strategy will contemplate new platforms across the organization to replace legacy ones. A significant investment will be made in an **enterprise resource planning (ERP) solution** with the possibility of moving to the cloud. This could entail moving to a multi-system architecture to accommodate requirements for an **asset management and planning system**. A business process review will also examine creating efficiencies in workflows and **project management** for our design teams. A multi-system architecture will require a robust **System Integration Platform** and possibly **Robotic Process Automation (RPA)** to complement the inter-system functionalities.

Efforts will also be made to better manage IT service and to maintain IT equipment and assets. A new **IT Service Management** tool will auto discover assets, assist with lifecycle management and support cybersecurity whilst improving productivity for our employees.

Data is a key asset to the company. Currently a large amount of time is spent on curating data rather than analyzing data. The last Digital strategy has built a foundation of systems to capture data that can be used for customer insights, energy management, outage intelligence, load forecasting, asset management and financial management of the company. A multi-year data strategy is contemplated for purposes of identifying business requirements and a platform needed to serve both the internal and external needs of the company. This will culminate in the adoption of **data-warehouses, data lakes,** and **analytical platforms** to serve the various domains.

A number of existing systems will require continued maintenance, upgrades, feature enhancements due to regulatory, business and government mandated requirements. Our Billing, Metering, Finance, HR, Safety, Facility and Security systems will require continued "care and feeding" which will require ongoing investments and innovations.






Data is a key asset to the company. Currently a large amount of time is spent on curating data vs. analyzing data.

4. PARTICIPATION IN ENERGY INNOVATION & TECHNOLOGY

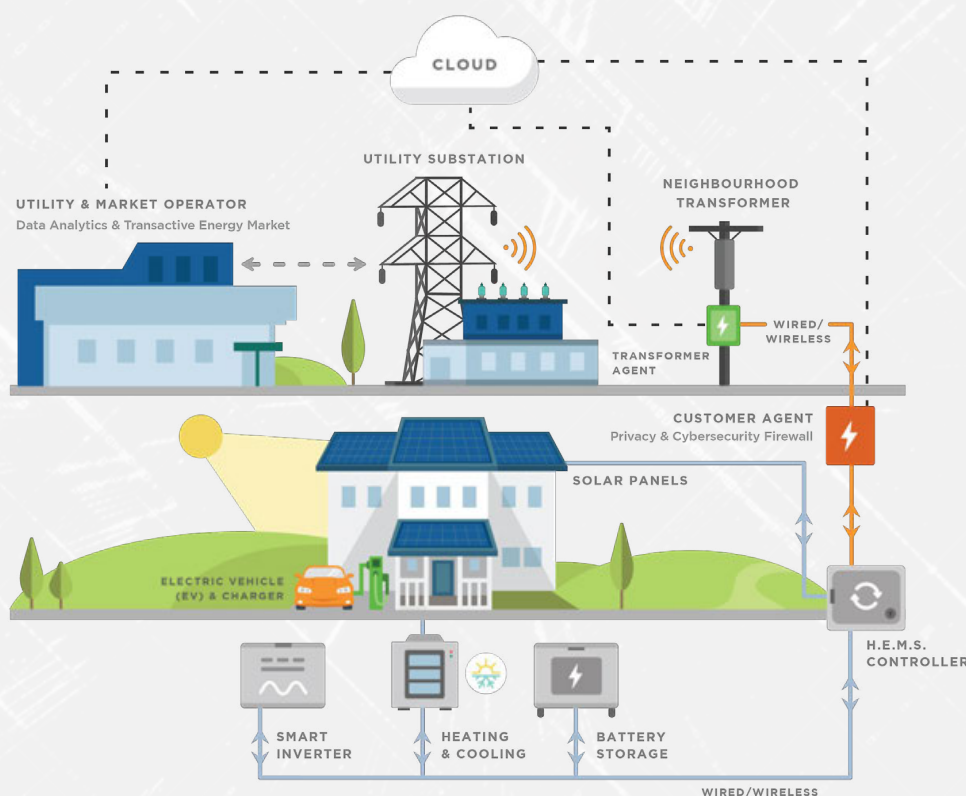
As discussed earlier, the energy landscape is changing rapidly. The advancement of solar and storage, coupled with the increased adoption of electric vehicles (EVs) will create unique challenges for utilities in the future. Utilities will struggle to manage their assets and to remain relevant in the advent of distributed electricity models where it will be possible for customers to generate, manage, share, and trade in electricity. Although this is currently economically unfeasible for most customers due to lengthy buyback periods, it is expected that large firms could bring more cost-effective solutions to the general customer population in the next 5-7 years.

The role of the utility in the future will be shaped by these technology advancements, coupled with evolutions in regulatory frameworks. It will be important for Hydro Ottawa to be able to partake in research and development, including energy pilots, in order to create an eco-system of partners and solutions to prepare for such developments in the future.

Some of the key areas to address are:

-  Installation and management of solar and storage
-  Interoperability between behind the meter technologies and the grid
-  Transactional processing of energy including translating them into bills
-  Management of micro grids
-  Management of EV infrastructure

Hydro Ottawa has had strong relationships with Industry, Academia, and Government and is in a unique position to facilitate the research, development and innovation around these areas. Over the past five years, Hydro Ottawa has participated or led several innovation projects supported by the Ontario Ministry of Energy Smart Grid Fund and Natural Resource Canada (NRCan) in pursuit of new technology and new ways of doing business. The company continues to partner with many of these organizations in applying for grants and pursuing an innovation mandate.



Utilities and their customers are facing challenges that an evolving grid and utility business model can relieve. For the grid to become democratic, resilient and cost effective, it needs to evolve from the traditional centralized system to one supplemented by decentralization. This means the distribution utility becomes a distribution system operator (DSO) utilizing a transactive network that overlays the entire grid, whereby demand response with market signals encourages prosumers' to produce energy, perhaps trade between themselves and, most importantly help cost effectively shore up the grid. Hydro Ottawa created a project called "The GREAT-DR" (The Grid Edge Active Transactional-Demand Response) in order to establish a platform and strategic template for such an evolution to occur.

The GREAT-DR version 1.0 is the first step in the development of an end-to-end smart energy network platform that benefits the prosumer, distributor, transmitter, product manufacturers, generators and market operator. The GREAT-DR seeks to optimize management of energy sources and loads while taking into account customer preferences and needs. It promotes effective grid management, resiliency and prosumerism. The beneficial outcomes are many: absorption of more electrified

loads and sources (including transportation, storage, and generation); reduction in greenhouse gas emissions and the facilitation of net-zero carbon communities; amelioration of grid resiliency and flexibility; optimization of grid asset use for more value; democratization of the grid to encourage prosumers; standardization for interoperability with the grid; and a multi-benefit largely decentralized non-wires solution.

Hydro Ottawa's recently launched MiGen Transactive Grid initiative builds on the success of the GREAT-DR 1.0 and expands the scope of efforts in data collection. The three areas of focus under MiGen will be the following; to refine the architecture and implementation while increasing the adoption of customers to simulate larger loads; incorporate additional loads and equipment, such as EV charging infrastructure; and build a market place infrastructure and advanced analytics using Artificial Intelligence and a Transactive Energy loyalty program for customer benefit. The GREAT-DR started with partial funding from the Ontario Smart Grid Fund and the LDC Tomorrow Fund, along with support from collaborating academia and industry partners. New partners have joined the MiGen Transactive Grid team to grow the platform capability with the help of funding from NRCan.

INFRASTRUCTURE & SECURITY

A digital strategy needs to be built on a foundation that is secure.

As the electricity distributor to the nation's capital, Hydro Ottawa is aware of the importance of cybersecurity. The regulator has also called for mandatory certification of a utilities cybersecurity posture on an annual basis. Hydro Ottawa will continue to work on advancing its cybersecurity program. Areas of focus will include Employee Awareness, Supply Chain, Governance, Data Management and a defence in depth strategy. In addition the cybersecurity team will augment services with an eco-system of partners to ensure technical, legal and communication support during an incident.

Data is a key asset to the company. The security and privacy of customer and employee data are important to the company. Hydro Ottawa will continue to review its practices on how it collects, retains, disposes and manages its data. The information management program and the privacy program will define, manage and implement policies, procedures and platforms necessary to securely manage data.

Climate change has meant an increase in the number of extreme weather conditions. This poses a threat to physical infrastructure such as data centers and system control rooms that control the grid. Currently both Hydro Ottawa's primary and secondary data centers are in Ottawa. Hydro Ottawa will pursue a strategy of geo redundancy to meet its business continuity requirements. A secondary data center will be created outside Ottawa using a hosted data center model. Consideration will also be given to increase the use of Infrastructure as a (IaaS) in the cloud.

SUPPORTING NEW BUSINESSES

In its pursuit of excellence and best in class status, the company's digital program will open up opportunities to provide services to other utilities. Billing, customer experience, and cybersecurity are a few of the services that Hydro Ottawa plans to offer its peers in the sector. It is expected that these services will assist smaller utilities in procuring best in class platforms at a fraction of the cost.

IT WORKFORCE PLANNING AND TALENT MANAGEMENT

As Hydro Ottawa's Digital Strategy evolves so too will the corresponding "People" strategy. Newer technologies and platforms will call for an evolution of skillsets. The Chief Information and Technology Officer (CITO) Division's "people" strategy will focus on keeping headcount flat with an emphasis on working within the headcount envelope that exists today. All new technology projects will continue to include business cases that will contemplate a support model post implementation. Due consideration will be given to new technologies so that they do not increase headcount for the organization as a whole, but instead either reduce headcount or transfer them to areas of higher value. In addition an eco-system of partners will be engaged to support the ongoing technology needs of the organization. This will ensure that Hydro Ottawa has a variable cost model that supports the organization during technology transformations and major projects.

In order to achieve the business outcomes needed the IT and OT teams will need to continually evolve in terms of their skillsets, processes, and engagement. Technologies such as the Cloud, Artificial Intelligence, Blockchain, DERS, IoT and Robotics will create platforms that will require different skills- for example, Cloud Specialists, Business Analysts, Data Scientists, Integration Engineers.

There will also be a continued reliance on stakeholders from other divisions to ensure that they partake in requirements gathering, testing and QA. This could mean employees from other divisions work being assigned to IT project work for periods of time.

The future support model will contemplate transformation of skillsets through training, attrition and in some cases

eliminating existing positions in exchange for new ones. Over the next 5 years approximately 27% of employees will retire. Retirements will be looked at as an opportunity to introduce new talent and skills to the company. In addition efforts will be made to build a pipeline of talent by continuing to hire co-op students in areas where there is the highest skill demand such as cloud, data analytics, cybersecurity and system integration, IoT and grid engineering.

The CITO Division will be a key partner with other business stakeholders in addressing the business, market and regulatory changes through the use of technology.

As the electricity distributor to the nation's capital, Hydro Ottawa is aware of the importance of cybersecurity.

Newer technologies and platforms will call for an evolution of skill sets.

FINANCIAL MANAGEMENT

Hydro Ottawa has undertaken significant investments in technology over the last few years to improve customer experience and employee productivity. Many of these systems have been implemented in the cloud versus on-premise. While their deployment helps to reduce capital expenditures, cloud systems have led to an increase in operating costs.

Cloud systems require commitments to operating costs vs reduction in capital. This is a departure from the financial compensation model where utilities typically get a regulated return on capital. Escalating operating costs continue to be a challenge in a regulated model.





Hydro Ottawa contracted the services of Gartner to conduct an IT Benchmarking study and to assess its overall information technology spend in comparison to a similar peer group of electrical utilities. The results of the benchmarking study show that Hydro Ottawa has optimized its costs and has streamlined IT operations. This is evidenced by the IT budget as a percentage of revenue and operating expense metrics both being below the 25th percentile relative to the peer group average. In 2018, HOL allocated over half of the IT budget to “Transform” and “Grow” initiatives which is in alignment with the industry shift that Gartner has identified based on their research and a survey of 106 utility CIOs. This is in sharp contrast to the peer group average where over two-thirds of the budget are allocated to “Run” initiatives.

In spite of current spending levels being lower than the peer group, Hydro Ottawa is concerned about escalating operational costs. Hence all contracts for software and services will continue to be re-negotiated to ensure financial efficiencies. Cloud systems will be deployed to ensure quicker go to market efficiencies and all large projects will need business cases that clearly articulate the financial and non-financial value propositions.

CONCLUSION

The 2021-2025 timeframe will be a period of technology transformation and enhancement for Hydro Ottawa and its customers. The focus will continue to be the enhancement of customer experiences, improvement in Grid reliability, increase in productivity and participation in innovation.

DIGITAL ROADMAP

BUSINESS OBJECTIVES	FINANCIAL STRENGTH	ORGANIZATIONAL EFFECTIVENESS	CUSTOMER VALUE	CORPORATE CITIZENSHIP		
						
IT/OT STRATEGIC ACTION	Monetize Technology Assets And Resources Reduce And Optimize Costs	Improve Processes To Optimize Business Effectiveness Leverage Data To Improve Productivity	Improve Customer Experience And Outage Management Strengthen Grid And Improve Reliability	Support Regulatory Compliance Participate In Innovation		
ROADMAP	2020	2021	2022	2023	2024	2025
ORGANIZATIONAL EFFECTIVENESS	Mobile Workforce Management		Cloud ERP			
	Occupational Health, Safety and Environment		Asset Management & Planning			
	AODOCs, GSuite, IM Program					
	Robotic Process Automation (RPA)					
	IT Service Management					
	Data Strategy - Data Warehousing & Analytics Platform					
	Backup Data Center					
	Cybersecurity					
CUSTOMER VALUE	A1 & Machine Learning					
	Content Management Platform					
	Cloud IVR					
	AMI Strategy & Enhancements To Billing System					
	CRM System					
	DMS Enhancements (Reliability)					
CORPORATE CITIZENSHIP	Green IT					

Metrics

- Number of processes digitized
- Number of compliance issues
- Customer satisfaction score
- SAIDA & SAIF
- Productivity reports
- Number of cyber events

Risks

- Talent shortages
- Operating vs. capital
- Cybersecurity
- Change management and culture

CUSTOMER ENGAGEMENT OVERVIEW

1. INTRODUCTION

The main drivers of transformation in energy and related matters are cost, technology, and public policy. These three drivers of change are combining in ways that position customers to be much more active participants in the power system and the power market. Electricity consumers are poised to become the most influential actors in a new energy landscape – a dramatic break from the passive role consumers have traditionally played in electricity markets. This transformation to a more customer-driven and customer-centric model of electricity will present opportunities for energy providers that are able to anticipate and meet the changing needs and expectations of customers for energy-related services.

Customer centrality represents the single most important change in the fundamentals of the utility business. It has been the key driver of Hydro Ottawa's business strategy over the past several years, and will continue to be the focus over the next five years. The customer value Hydro Ottawa provides "up to and beyond the meter" will drive its financial strength and business growth, its operational efficiency and effectiveness, and its contributions to the well-being of its community.

This new reality underscores the criticality of customer engagement by considering customer impacts in the decision-making process.

The key groups within Hydro Ottawa that are responsible for customer outreach include Customer Service, Communications and Public Affairs, and Distribution Engineering and Asset Management. The core customer engagement activities of these groups, and the benefits thereof, are summarized in detail below.

2. ONGOING CUSTOMER ENGAGEMENT

2.1. DISTRIBUTION ENGINEERING AND ASSET MANAGEMENT

2.1.1. System Planning Activities

With respect to distribution operations and management of the physical system, Hydro Ottawa strives to understand the customer's priorities, ranging from reliability and servicing needs, to meeting expectations during construction activities. As discussed in section 2.2.1 below, the annual customer satisfaction survey provides customer feedback and insight regarding reliability, duration of outages and willingness to spend more for increased service levels. The related survey measures and results are outlined in sections 3.1.10 and 3.2.4 of Exhibit 2-4-3: Distribution System Plan. The insights gained from customer feedback have informed the development of Hydro Ottawa's system planning and servicing activities.

2.1.2. Major Project Customer Consultations

Hydro Ottawa regularly consults customers with regards to major projects designed to improve infrastructure and service to customers and their community. These consultations include project-specific open houses, which are typically conducted for large, complex cable replacement, pole replacement, voltage conversion, and substation build/rebuild projects. Hydro Ottawa conducted 38 such public open houses between 2016 and 2019. Utility attendance at these events typically include the project manager, planning engineers, a design supervisor, additional technical support as required, and conservation and demand management and communications support.

During these open houses, customers are provided information on the following:

- Project timeline;
- Scope of work;
- Expected outcomes;
- Equipment and processes involved;
- Site restoration plans; and

- Expectations of the customer if some work is required on their part to allow Hydro Ottawa employees safe and unobstructed access to infrastructure located within the utility's easements and/or on the City of Ottawa's road Right-of-Way ("ROW").

Figure 1 – Hydro Ottawa Crew Member at Work



These open houses provide a venue for customers to ask questions and share their feedback one-on-one with the Hydro Ottawa employees directly involved in the project. By engaging customers early on in the process in an informal and personalized setting, customers have the opportunity to positively influence the project. In many instances, these dialogues have led to design and scheduling improvements.

Specific examples of positive customer interactions, and the subsequent incorporation of customer feedback, include the following:

- **Glen Cairn Cable Replacement Project** – During the open house session, several customers expressed concern with the proposed location of equipment. The design team took these comments under advisement and evaluated additional design options. By analyzing the various options and re-thinking ways to accommodate affected

1 customers in the area, a modified design was created using less impactful equipment
2 locations.

3

4 • **Woodroffe Substation Pre-Cast Walls Replacement** – As part of a larger project to
5 replace switchgear equipment and construct new protection and control structures at a
6 major substation, it was determined that precast walls forming the perimeter of the
7 substation required demolition and replacement. Hydro Ottawa worked collaboratively
8 with senior personnel at the elementary school located directly adjacent to the
9 substation, with respect to establishing a mutually agreeable timeline for project
10 completion. In order to avoid disruption to normal school operations and to mitigate
11 concerns associated with student drop-off/pick-up in close proximity to a worksite with an
12 exposed substation, Hydro Ottawa undertook an accelerated work schedule and
13 successfully completed construction prior to the beginning of the school year. In addition,
14 the utility partnered with school staff and students on painting a mural on the
15 school-facing side of the newly completed wall.

16

17 • **Elgin Street Renewal** – a significant municipal infrastructure renewal effort in which
18 Hydro Ottawa played a key support role was an integrated road, sewer, water, and utility
19 project for a major north-south artery in downtown Ottawa. Initial working group
20 meetings for the Elgin Street Renewal project were hosted by the City of Ottawa
21 beginning in Q4 2017, enabling all key stakeholders – especially the Elgin Street
22 business association – the opportunity to ask questions and suggest recommendations
23 to Hydro Ottawa's proposed designs for relocation and underground burial of its
24 distribution infrastructure.

25

26 Continuing into 2018, Hydro Ottawa and the City held public drop-in sessions to receive
27 input from members of the public on the proposed work. This gave Hydro Ottawa the
28 opportunity to engage numerous business owners and residents on a face-to-face basis,
29 which helped foster a strong working relationship with the local community. Based on the
30 needs and preferences communicated by stakeholders, Hydro Ottawa relocated

1 padmounted transformer equipment away from originally proposed locations and
2 coordinated with City officials and local business improvement area associations to
3 ensure power is available to their future deployment of public WiFi in the area. The utility
4 also worked with a local museum to identify decorative options for the padmount
5 equipment set to be installed at its facility, located at the southern tip of the project area.
6 The museum ultimately opted for a decorative blind, to obscure the padmount devices
7 while maintaining the required operational clearances.

8
9 The beginning of construction was not scheduled until Q4 2018, so as to avoid disruption
10 of local commerce and events during seasons of peak activity. In addition, to the
11 maximum extent possible, Hydro Ottawa and its contractors arranged work times around
12 business hours over the course of the year, in order to avoid impeding access for
13 patrons to local businesses. What's more, Hydro Ottawa erected temporary trench
14 crossing bridges (all of which were compliant with the *Accessibility for Ontarians with*
15 *Disabilities Act*) that allowed for uninterrupted pedestrian access to local businesses.

16
17 Alongside the City of Ottawa, the utility distributed customer notification letters to almost
18 10,000 customers in the area, sharing critical information related to traffic management,
19 road closures, and pending construction. Hydro Ottawa also created a specific page on
20 its website dedicated to the project.

21
22 Feedback from stakeholders, especially the local business association, on Hydro
23 Ottawa's engagement efforts was quite positive overall.

- 24
25 • **Power South Nepean Project** – This project consists of two distinct components: (1)
26 the Cambrian Municipal Transformer Station ("MTS") set to be constructed by Hydro
27 Ottawa; and (2) upgrades to existing transmission facilities, as well as construction of a
28 segment of new transmission line, by Hydro One Networks Inc. ("HONI").¹ As a result of

¹ The original project name for Cambrian MTS was South Nepean MTS.

customer consultation, a number of actions were taken by Hydro Ottawa and HONI in response, including the following:

- Relocation of transmission towers (where possible) to other locations for landowners;
- Maintaining existing easement widths by changing the transmission tower type to accommodate existing easements;
- Keeping new easements within areas that are prohibited for aggregate extraction (within 30 metres adjacent to a road allowance) to limit the impact of the transmission line to quarry/aggregate owners;
- Conducting additional species at risk studies over and above what was required;
- Accommodating local business owners' peak season to avoid conflicts with the construction schedule; and
- Scheduling the purchase and sale of the substation property to allow landowners to complete their crop harvest.

In addition to the above, it is important to emphasize the reciprocal nature of Hydro Ottawa's positive interactions with customers. For example, many customers allow Hydro Ottawa to utilize their properties for better access to distribution infrastructure and equipment, seeing as a common practice of the utility is to re-landscape the area after the planned work project is complete.

Further, customer inquiries and escalations related to major infrastructure projects have been reduced. The aforementioned engagement initiatives reinforce how Hydro Ottawa views effective community outreach as essential to earning and retaining customers' confidence and trust, and in turn, to enabling the utility's success.

For a listing of planned work open houses that Hydro Ottawa hosted over the course of 2016-2019, please see Tables 1, 2, 3, and 4 below.

1

Table 1 – 2019 Planned Work Open Houses

Project	Date	Location	Description
Richmond	October 16	6095 Perth Street	Pole replacement
Stittsville	October 15	10 Warner-Colpitts Lane	Pole replacement
Centretown West	October 8	180 Percy Street	Pole replacement
Nepean	October 7	165 Woodroffe Avenue	Pole replacement
Casselman	October 3	758 Brebeuf Street	Pole replacement
Pinecrest	October 2	2250 Torquay Avenue	Pole replacement
Westboro	September 30	407 Hilson Avenue	Pole replacement
Centretown	September 23	180 Percy Street	Pole replacement
Britannia Bay	September 18	2599 Regina Street	Pole replacement
Orleans	September 17	7859 Decarie Drive	Cable replacement
Glen Cairn	September 11	190 Morrena Road	Cable replacement
South Keys	September 10	3320 Paul Anka Drive	Cable replacement
Kanata	September 9	100 Charlie Rogers Place	Cable replacement
Orleans	April 30	7859 Decarie Drive	Cable replacement

2

1

Table 2 – 2018 Planned Work Open Houses

Project	Date	Location	Description
Orleans	November 20	1585 Tenth Line Road	Cable replacement
Fringewood	November 14	14 Fringewood Drive	Pole replacement
Power South Nepean	November 14	15 Steeple Hill Crescent	Based on feedback from the August 2018 open house, Hydro Ottawa presented its preferred site option for the Municipal Transformer Station and route for Hydro One's transmission line.
Trend Village	November 13	2681 Innes Road	Cable replacement
Laurentian View	November 12	345 Ravenhill Avenue	Pole replacement
Barrhaven	October 10	100 Malvern Drive	Transformer replacement
Blackburn Hamlet	September 20	2681 Innes Road	Cable replacement
Elmvale Acres	September 19	1895 Russell Road	Pole replacement
Britannia Bay	September 18	574 Broadview Avenue	Pole replacement
Power South Nepean	August 28	15 Steeple Hill Crescent	Public input on potential sites for the new Municipal Transformer Station and Hydro One's transmission line route.
Power South Nepean	May 2018	Newsletter Mail-Out	In an effort to keep residents in the South Nepean area as informed as possible about the project's progress, Hydro Ottawa and Hydro One developed a bilingual newsletter that was mailed to local residents and businesses in the study area.

2

Table 3 – 2017 Planned Work Open Houses

Project	Date	Location	Description
Power South Nepean	November 23	3500 Cambrian Road	Project introduction and overview of a proposal to construct a new Municipal Transformer Station in South Nepean and a rebuild to an existing Hydro One transmission line.
Power South Nepean	November 22	2784 Cedarview Road	Project introduction and overview of a proposal to construct a new Municipal Transformer Station in South Nepean and a rebuild to an existing Hydro One transmission line.
Bells Corners	November 9	3770 Old Richmond Road	Cable replacement
Beacon Hill	November 2	2381 Ogilvie Road	Cable replacement
Elmvale Acres	October 25	1895 Russell Road	Pole replacement
Blackburn Hamlet	October 18	199 Glen Park Drive	Voltage conversion
Glen Cairn	October 11	100 Charlie Rogers Place	Voltage conversion
Pinecrest	October 4	2250 Torquay Avenue	Pole replacement

Table 4 – 2016 Planned Work Open Houses

Project	Date	Location	Description
Stittsville	November 16	10 Warner-Colpitts	New underground duct structure and manholes
Beacon Hill	November 3	4355 Halmont Drive	Cable replacement
Richmond	October 26	6095 Perth Street	Pole replacement
Glen Cairn	October 20	100 Charlie Rogers Place	Cable replacement
Elmvale Acres	October 12	2185 Arch Street	Pole replacement

2.1.3. Participation with Electrical Contractors Association

Hydro Ottawa actively engages with the Electrical Contractors Association (“ECA”) of Ottawa to ensure timely and effective communication and collaboration are maintained between the utility and the thousands of electrical contractors who work in the City of Ottawa and the Village of Cassleman. Hydro Ottawa ensures all ECA inquiries are responded to in a timely manner. In

1 addition, new information is routinely and expeditiously shared. As an example, matters of
2 mutual interest, such as revisions to Hydro Ottawa's Conditions of Service ("COS"), are
3 summarized and shared to ensure related standards, requirements, and processes are clearly
4 understood.

6 **2.1.4. Consultations with Contractors and Developers**

7 Hydro Ottawa's interaction with contractors and developers has a direct impact on customer
8 service delivery outcomes, costs, and satisfaction levels. Customer research and insights,
9 including the utility's customer persona research that segmented customers into categories, has
10 revealed that these stakeholders are looking for the following from Hydro Ottawa:

- 12 ● Effective project communications, including technical specifications;
- 13 ● Project costs, including price guarantees, and other related expenses;
- 14 ● Availability of Hydro Ottawa crews, including after hours;
- 15 ● Ability to support peak demands for service (specifically, engineering and field
16 inspectors);
- 17 ● Information on unplanned changes to work plans;
- 18 ● Improved scheduling and strategies to decrease lag times;
- 19 ● Simplification of easement registration process; and
- 20 ● More information online.

21
22 To help guide business planning and customer centricity, in late 2017 and early 2018 Hydro
23 Ottawa's Distribution Design team visited 14 local electrical contractors who work closely with
24 the utility on commercial services. The outreach focused on Hydro Ottawa's COS, processes,
25 standards, and specifications. The goal was to initiate a conversation and solicit feedback on
26 their customer experience with Hydro Ottawa in order to align expectations and strengthen
27 these relationships. This effort was well received by all contractors and the outcome has been a
28 smoother project intake process.

1 Customer outreach has also been expanded to local architects. In 2017, Hydro Ottawa's
2 Distribution Design team was asked to attend a meeting of local architects to inform the group of
3 required building clearances from overhead power lines to manage public and worker safety.
4 Meter-base location considerations for new home design were also reviewed.

5
6 Hydro Ottawa is an active member of the Greater Ottawa Home Builders' Association
7 ("GOHBA"), the voice of the building, land development, and professional renovation industry.
8 Monthly meeting attendance provides Hydro Ottawa with the opportunity to update the GOHBA
9 on changes to the utility's COS, processes, technical standards, and specifications. Through
10 these meetings, Hydro Ottawa solicits feedback, provides guidance, and addresses
11 opportunities for improvement.

12
13 Since 2016, Hydro Ottawa has been hosting a Developer Forum open to all residential
14 developers. This Forum serves as another channel to keep lines of communication open with
15 these customers and keep them apprised of changes in personnel, policy, costing models, and
16 service level agreements.

17 18 **2.1.5. City of Ottawa**

19 Communications with the City of Ottawa, the sole shareholder of the utility's parent company
20 (Hydro Ottawa Holding Inc.) and one of the utility's largest Key Account customers, is a regular
21 business activity. Interactions include the following:

- 22
23 • 2016 to present – Hydro Ottawa engages with the City of Ottawa's ROW Management
24 on a quarterly basis. This forms the platform to discuss current and future year capital
25 programs, municipal consent guidelines and circulation status, and road cut permits for
26 new local, collector, and arterial roads. Outcomes include improved communications, the
27 sharing of lessons learned and opportunities for improvement, relationship building, and
28 the enhanced coordination and planning of work that facilitates issue avoidance.

- 1 • 2016 to present – Hydro Ottawa participates in the Utility Coordinating Committee
2 ("UCC") monthly meetings in which any issues or concerns are tabled with both the City
3 and other utilities.
- 4 • 2017 – Hydro Ottawa's Distribution Design team presented to City of Ottawa employees,
5 along with their consultants and road contractors, on plant relocation considerations.
6 Topics covered included the project intake, design, technical considerations, deposits,
7 and scheduling requirements.
- 8 • 2017 – Hydro Ottawa worked closely with the City of Ottawa to coordinate project work
9 around the "Canada 150" sesquicentennial celebrations and to minimize traffic impacts
10 on arterial roads. This collaboration resulted in the avoidance of any disruption to the
11 organization of public events, while ensuring smooth delivery of Hydro Ottawa's capital
12 program projects.
- 13 • 2017 to present – Hydro Ottawa meets annually with the City of Ottawa Building
14 Department. These meetings provide an avenue to discuss changes in the Ontario
15 Building Code that impact new residential subdivision servicing, issues with overhead
16 clearances between buildings and overhead power lines, and exploration of
17 opportunities for improvement. These interactions have strengthened Hydro Ottawa's
18 relationship with the Building Department and supported the smooth implementation of
19 changes to electric vehicle ("EV") servicing requirements on new homes.
- 20 • 2019 to present – Hydro Ottawa began meeting with the City of Ottawa Planning Group
21 on an annual basis. The purpose of these meetings is to review new site plan circulation
22 and receive updates on City of Ottawa standards and planning requirements. These
23 meetings have resulted in the exploration of opportunities for improvement and the
24 strengthening of the working relationship between Hydro Ottawa and City planners.
25 Going forward, Hydro Ottawa will continue to inform the City of its standards and
26 requirements, providing a better understanding of its distribution system.

28 **2.1.6. Conditions of Service Stakeholder Outreach**

29 Hydro Ottawa revises its COS every two years. Version updates are facilitated by the Conditions
30 of Service Working Group ("COSWG"), an internal, cross-functional team with representation

1 from the corporate Divisions that deliver and/or are impacted by the services described in the
2 utility's COS. COSWG representation includes Distribution Operations, Customer Service,
3 Finance, Legal, Regulatory Affairs, Communications, and Public Affairs. In addition to updating
4 COS content, and in keeping with Hydro Ottawa's strategic priorities, the COSWG continually
5 strives to make the COS more customer-centric, making it easier for customers to do business
6 with Hydro Ottawa. This includes examining new service options and offers for customers. The
7 utility recognizes the important role of the COS with respect to delivering services and meeting
8 customer expectations.

9
10 The COSWG gathers feedback and compiles edits on an ongoing basis as a regular business
11 activity, as opposed to the previous practice of reviewing and revising content as part of a
12 special project every few years. These changes are informed by customer feedback received by
13 employees through channels that include telephone, website, email, and in the field.

14
15 Prior to the filing of a revised COS, Hydro Ottawa solicits customer comments online through its
16 website and social media channels. All customers receive notification of this review period
17 through an on-bill message. In addition, contractors, City of Ottawa contacts, and Key Accounts
18 are notified of the review period by letter. A hard copy of the proposed COS is also available for
19 customer review.

20
21 Hydro Ottawa's most current COS, Version 7, came into effect on April 1, 2019 at the end of the
22 public consultation period. Version 7 replaced the previous version released on April 1, 2017.
23 Hydro Ottawa intends to publish Version 8 in 2021.

24 25 **2.1.7. Long-Term Load Transfers**

26 Hydro Ottawa was party (along with HONI) to the first joint application submitted by a pair of
27 local distribution companies ("LDCs") to the OEB to eliminate long-term load transfer ("LTLT")
28 arrangements. In a LTLT, one LDC is called the geographic distributor and the other is the
29 physical distributor. While a "load transfer customer" is located in the licensed service area of
30 the geographic distributor, this customer is connected to the physical distributor's system. As

1 such, the physical distributor delivers electricity to these customers, but the customers pay their
2 electricity bill to the geographic distributor.

3
4 In accordance with amendments to the *Distribution System Code* from 2015, a June 21, 2017
5 deadline was established for the elimination of all LTLTs in the province. In April 2016, Hydro
6 Ottawa and HONI filed an application to transfer 309 HONI customers to Hydro Ottawa, and to
7 transfer 44 Hydro Ottawa customers to HONI.

8
9 The utility worked collaboratively with HONI to coordinate proactive communications to
10 customers and to make the transition as seamless as possible. Communications included a
11 series of three letters that covered pre-transfer, application approval, and confirmation of
12 transfer status. Hydro Ottawa also developed a Welcome Brochure that provided customers
13 with an introduction to the utility's services and important information.

14 15 **2.2. CUSTOMER SERVICE**

16 Hydro Ottawa continuously surveys its customers to measure customer service satisfaction
17 levels, and to benchmark its performance against Ontario and Canadian utilities. Several
18 platforms are used to collect and report on the satisfaction level of the customer experience.

19
20 Customer Care handles written inquiries and telephone calls pertaining to inquiries about
21 payment options, electricity consumption, collections, and a range of other topics. Hydro
22 Ottawa's performance in responding to account-related issues is tracked by the OEB.
23 Management and resolution of escalations from stakeholders, including the OEB, are also
24 handled by this team. In 2018, 186 escalations and inquiries were received with 95%
25 successfully resolved within 10 business days.

26
27 Customer Experience manages research and work that provide insights to customers' views on
28 current services, processes and communications, and identify opportunities for continuous
29 improvement. Customer escalations requiring more complex or lengthy analysis are also
30 handled by this team.

2.2.1. Annual Electric Utility Customer Satisfaction Survey

For over a decade, Hydro Ottawa has engaged a third party to conduct annual customer satisfaction surveys. The annual survey is conducted by telephone and engages more than 600 customers (85% residential and 15% small commercial). Based on the size of the customer sample, results can be considered accurate plus or minus 4%, 19 times out of 20. The survey questions cover a wide variety of relevant topics, including overall satisfaction with Hydro Ottawa, reliability, customer service, power outages, billing, cost of electricity, and corporate image. As of 2017, 250 large commercial customers are also surveyed on an annual basis to gain insight into this segment.

Survey results provide Hydro Ottawa with an understanding of customers' expectations and behaviour that guide decisions and approach. This insight is incorporated into Hydro Ottawa's planning process, and ultimately forms the basis of plans which address customer needs and service offerings. A final report is produced which confirms customer satisfaction levels and also identifies areas for improvement. Customer satisfaction surveys also help to identify the most effective means of communication with customers. As an example, Hydro Ottawa decided not to extend its Customer Contact Centre offering to 24 hours as survey results indicated that customers were not looking for that level of service and that their preference is to engage with the utility online.

Most recently, for the second consecutive year, Hydro Ottawa experienced an appreciable uptick in overall customer satisfaction – from 90% in 2017 to 93% in 2018. Multiple macro-level ratings placed Hydro Ottawa in the top quartile amongst its peers: Credibility & Trust Index of 85%, Customer Experience Performance Rating of 87%, Customer Centric Engagement Index of 84%, and an overall grade of "A" on the survey's report card (while the Ontario-wide averages were 80%, 83%, 80%, and "B+", respectively).

According to the survey results, Hydro Ottawa scored above the provincial benchmark in numerous core responsibility categories, such as the following (Hydro Ottawa's score is listed first, followed by the Ontario average):

- 1 • Provides consistent reliable power (93% vs. 90%)
- 2 • Quickly handles outages and restores power (91% vs. 86%)
- 3 • Electricity safety is a top priority (91% vs. 86%)
- 4 • Delivers on its service commitments (88% vs. 86%)

5

6 The survey likewise drew attention to areas requiring more proactive communication and

7 attention from Hydro Ottawa. Nevertheless, in these categories as well, the utility's scores still

8 exceeded the Ontario benchmark (similar to the list above, Hydro Ottawa's score is listed first,

9 followed by the provincial average):

- 10
- 11 • Adapts well to changes in customer expectations (75% vs. 72%)
 - 12 • Operates a cost-effective electricity distribution system (76% vs. 71%)
 - 13 • Provides good value for money (75% vs. 71%)
 - 14 • Cost of electricity is reasonable when compared to other utilities (65% vs. 61%)
 - 15 • Provides information to help customers reduce their costs (82% vs. 78%)

16

17 And in specific categories related to customer service satisfaction, Hydro Ottawa once again

18 ranked above the provincial benchmark, in all but one metric:

- 19
- 20 • Deals professionally with customers' problems (88% vs. 82%)
 - 21 • Is "easy to do business with" (85% vs. 82%)
 - 22 • Customer-focused and treats customers as if they're valued (83% vs. 79%)
 - 23 • The time it took to contact someone (73% vs. 64%)
 - 24 • The time it took someone to deal with your problem (70% vs. 65%)
 - 25 • The helpfulness of the staff who dealt with you (65% vs. 64%)
 - 26 • The knowledge of the staff who dealt with you (62% vs. 64%)
 - 27 • The level of courtesy of the staff who dealt with you (74% vs. 70%)
 - 28 • The quality of information provided by the staff who dealt with you (65% vs. 61%)
 - 29 • The 24/7 availability of call-centre staff Monday to Friday (82% vs. 76%)

Results of the most recent large customer survey, conducted in 2018, established Hydro Ottawa's satisfaction score at 93%, two points higher than 2017 (91%) and 10 points higher than 2016 (83%). The success of Hydro Ottawa's Key Account management strategy for supporting large customers was reflected in a satisfaction score of 94%. What has not changed for these customers over the years are the two major concerns of cost impact and reliability. However, effective communications – especially during emergency situations – is becoming more important than in previous years. Responses received from large customers ranked the following as top priority initiatives for the next five years:

- Maintaining and upgrading equipment
- Reducing response time to outages
- Investing more in the electricity grid to reduce outages
- Providing expertise to commercial customers regarding changes in energy technology
- Educating the public as it relates to electricity safety

Consistent with findings from the Fall 2017 Large Commercial Customer Survey, the Fall 2018 survey indicated that energy storage remains an area of strong interest on the part of many customers in this segment.

Survey results illustrate that Hydro Ottawa remains an influential brand utility that delivers safe, reliable electricity to homes and businesses, and is credible, trusted, and cares about its customers, safety, corporate citizenship, and the environment.

Copies of the surveys conducted by Hydro Ottawa and its third-party vendor in 2018 for residential, small commercial, and large commercial customers are appended to this Schedule as Attachment 1-2-1(C) and Attachment 1-2-1(D).

2.2.2. National Electricity Customer Satisfaction Survey

The Canadian Electricity Association's ("CEA") 2018 Annual National Electricity Customer Satisfaction Survey was conducted between October 4 and 29, 2018 among 7,192 Canadian

adults (18 years or older). A targeted oversample provided a total of 464 interviews with respondents who report receiving their electricity bill from Hydro Ottawa. Tracking results are drawn from the previous 2017 CEA National Survey.²

Of note, Hydro Ottawa had the highest Customer Satisfaction Index amongst utilities in Ontario and the second highest nation-wide. Hydro Ottawa scored well with results indicating the following:

- A majority of customers are satisfied with the reliability of Hydro Ottawa's service and Hydro Ottawa runs ahead of all national averages (75%).
- Of those who have experienced a planned outage, most (76%) reported proactive communication from Hydro Ottawa, and most of them (86%) were satisfied with the communication they received.
- Hydro Ottawa runs ahead of the provincial average on billing and payment measures.
- Hydro Ottawa outperforms Ontario-wide net satisfaction on website and outage notifications.
- Most customers (52%) feel customer experience with Hydro Ottawa is on par with other service providers and 35% think it is better.
- A majority of customers are likely to seek out information or already have from Hydro Ottawa, ranking above the national average.
- Two in three (65%) support infrastructure investment, on par with the national average.
- A majority of customers would support an increase to the price of electricity investments, which is higher than the Ontario and national averages.
- Hydro Ottawa customers are marginally ahead of the provincial average on feeling that they are getting good value for what they pay for electricity.

² For additional information on the CEA survey and Hydro Ottawa's results, please see Attachment 1-2-1(E): 2018 National Electricity Customer Satisfaction Report.

2.2.3. Transactional Surveys

Hydro Ottawa has embarked on a Voice of the Customer (“VOC”) initiative that utilizes three channels to facilitate opportunities to enhance customers’ experience when they contact Customer Service.

2.2.3.1. Telephone Inquiries Feedback

For two days each month, each customer that telephones Hydro Ottawa is contacted through an outbound phone survey and prompted to rate their experience with Hydro Ottawa’s customer service. As of January 2019, this initiative has evolved to send surveys on a weekly basis to all customers who phoned Hydro Ottawa the week prior.

Of the four survey questions, the customer is first asked if the agent was able to assist with the reason for their call, in order to capture first call resolution efficiency. The subsequent three questions request a rating of one through five, with five being the highest level of satisfaction regarding the phone call interaction. These questions ask the customer to rate the agent according to level of courtesy, knowledgeability, and overall satisfaction.

This survey enables Hydro Ottawa to collect customer feedback that is relevant to the initial phone interaction. The weekly customer call list is filtered so that customers who have made multiple inquiries are only surveyed once. As of the end of 2019, a total of 32,024 surveys have been sent with a response rate of 9.78%.

2.2.3.2. Email and Web Chat Feedback

Hydro Ottawa’s customer satisfaction ratings are also measured across email and Web Chat platforms. Customers can now indicate their satisfaction relating to their most recent interaction through an email exchange or a Web Chat conversation. As of the end of 2019, customer feedback on email interactions has translated into a response rate of 16.5%. Beginning in May 2019, feedback has been collected as a last step immediately after a Web Chat has ended. The customer is prompted to select a satisfaction rating (thumb’s up for “good” or thumb’s down for

1 “bad”), as well as the option to provide additional feedback in an open comment field. The rate
2 of customer response to requests has been 20%.

3
4 From the survey results, the customer satisfaction level for each platform is as follows:

- 5
6
 - Phone: 87% (January - December 31, 2019)
 - Email: 89% (March - December 31, 2019)
 - Web Chat: 95% (May - December 31, 2019)

7
8
9

10 Feedback through these channels has helped to identify areas of opportunity and has resulted
11 in the implementation of such improvements as empathy workshops for all agents and an
12 increase in coaching opportunities for individual agents.

13
14 **2.2.3.3. MyAccount and Voice ID**

15 VOC has also been used to identify opportunities to enhance and promote self-serve options
16 through MyAccount and the Voice ID initiative. Process improvements have been implemented
17 that include the enhancement of Hydro Ottawa’s online Move-In/Move-Out form, the
18 simplification of pre-authorized payment plan forms and online registration, and updates to
19 MyAccount to improve visibility to critical information, such as the full 20-digit account number
20 for easy payment processing, previously only located on the bill.

21
22 Improvements which are currently underway as a result of the VOC initiative include enhancing
23 online billing notification and confirmation emails, updating correspondence displays on
24 MyAccount, converting PDF forms into fillable online forms, and adding account status and
25 alerts to MyAccount. Hydro Ottawa is also exploring additional survey options such as email and
26 SMS to help decrease costs, increase response rates, and collect valuable insight from
27 customers.

28
29 Through analysis and monitoring of these results, Hydro Ottawa is able to focus on the identified
30 areas, seeking ways to improve and enhance the customer experience when they contact

1 Customer Service. The VOC enables Hydro Ottawa to adapt processes and procedures in a
2 timely manner in response to changing customer needs and expectations.

3 4 **2.2.4. Bill Redesign**

5 In response to customer feedback, Hydro Ottawa initiated a project in November 2015 to
6 improve the format and design of customer bills, with the goal of developing a bill that would
7 better fulfill customers' expectations for clarity and personalized communications.

8
9 The second phase of the project, completed in 2016, was an online customer survey that was
10 prefaced by external and internal stakeholder research. Based on these preliminary findings,
11 Hydro Ottawa surveyed customers using a customized, online tool through which respondents
12 were able to "design" their ideal bill. This approach enabled Hydro Ottawa to identify (i) what
13 information customers deemed to be most important, and (ii) how customers prefer to view this
14 content on their bill. The original goal targeted for the number of completed surveys was 400.
15 Ultimately, almost 3,000 surveys were submitted, with approximately 850 including substantive
16 feedback for consideration.

17
18 Survey results clearly identified customer preference for "amount due" and "due date" as the
19 most important elements on a bill. With regards to on-bill messaging, rate change information
20 ranked first followed by conservation messaging. In terms of format, the general consensus was
21 a need to keep the number of pages to a minimum, and simple is best.

22
23 This initiative was put on hold in early 2017 in order to prioritize the implementation of
24 requirements associated with the Ontario Fair Hydro Plan ("FHP"). Thereafter, this project was
25 again delayed, following the receipt of notification from the Ministry of Energy in June 2017 that
26 the Ministry would be launching a Redesign Action Plan ("RAP") to simplify the regulatory
27 framework governing bill presentment for electricity invoices.

28
29 In order to ensure successful implementation of the modified bill presentment framework
30 (including requirements for a "dynamic message" on customer invoices to indicate savings

1 achieved as a result of the FHP), Hydro Ottawa deferred the execution of its bill redesign project
2 until a new bill print provider had been selected through a competitive procurement process in
3 2018. In 2019, Hydro Ottawa focused on implementing bill presentment changes mandated by
4 the Ministry of Energy, Northern Development and Mines ("ENDM"), foremost of which were the
5 changes associated with the Ontario Electricity Rebate.

6
7 Regardless of the delays, the results of the survey proved informative and provided insight into
8 areas that are important to the utility's customers.

9 10 **2.2.5. Language Preference Campaign**

11 Providing service to customers in their language of choice (English or French) is an important
12 element in Hydro Ottawa's strategic goal to put the customer at the centre of its business. This
13 opportunity is predicated by the need to ensure that all customer accounts have a language
14 preference on file.

15
16 In 2018, Hydro Ottawa launched a Language Preference campaign that encouraged customers
17 to log-in to MyAccount to confirm their language preference and, for added measure, to provide
18 up-to-date contact information that included a primary telephone number and an email address.

19
20 Based on customer information on file, Hydro Ottawa disseminates information, whenever
21 possible, based on language preference. Currently all e-communications are delivered in
22 English or French, offering customers a more personalized experience with the added benefit to
23 Hydro Ottawa of operational savings.

24 25 **2.2.6. Low-Income Customer Support**

26 Between 2016 and 2019, Hydro Ottawa customers collectively received \$27.8M in financial
27 assistance through the Ontario Electricity Support Program ("OESP"), \$513K in emergency
28 relief through the Low-Income Energy Assistance Program ("LEAP"), \$1.1M through the Home

1 Assistance Program (“HAP”)³, and assistance valued at \$331K through the Affordability Fund
2 Trust.⁴

3
4 Prior to the launch of the OESP in 2016, Hydro Ottawa coordinated and hosted training for local
5 social service intake agencies and their staff. A program overview was also presented to Hydro
6 Ottawa employees, Board members, and City Councillors and their staff. Two Hydro Ottawa
7 employees also participated in the OEB’s Financial Assistance Working Group (“FAWG”)
8 implementation working group.

9
10 In 2016, Hydro Ottawa supported the roll-out of the OESP program by reaching out to
11 customers in a number of ways:

- 12
- 13 • Sending a letter to 1,300 customers who were 2015 LEAP recipients, informing them of
 - 14 the availability of OESP funding; and
 - 15 • Distributing a letter, posters, and brochures detailing the LEAP and OESP opportunities
 - 16 to 12 City of Ottawa community centres and six post-secondary institutions.
- 17

18 In 2017, Hydro Ottawa developed a financial assistance brochure for customers that covered
19 the entire range of programs available. This brochure was distributed to Ottawa Community
20 Housing, City of Ottawa community centres and Client Service Centres, social service agencies,
21 and post-secondary institutions. It was also included with a full bill cycle of collection letters in
22 early 2018 once the Disconnection Moratorium had ended. This brochure is also in hand when
23 field collections activity involves a visit to a premise. Hydro Ottawa adheres to the OESP
24 guidelines by sending timely personalized letters to OESP recipients to remind them when they
25 need to re-apply to the program to continue without interruption.

26
27 Hydro Ottawa continues to raise customer awareness of these programs through such actions
28 as the inclusion of information for low-income customers on the home page of its public website

³ HAP results represent funds dispersed between 2015 and 2017, prior to the program management being led by the IESO.

⁴ AFT results are from the program introduction in 2017 to the end of 2019.

1 and a page specific to low-income programs, on-bill and on-hold messaging, and outreach
2 through social media. During bill payment and collection interactions with customers, including
3 collection field visits, the utility makes every attempt to inform customers of available
4 low-income support programs and encourages customers to apply.

5
6 Hydro Ottawa continues to meet with local Community Health and Resource Centers to educate
7 them on financial assistance programs. It also meets with the Ontario Disability Support
8 Program and Ontario Works to discuss programs and seek better engagement with their clients.

9 10 **2.2.7. Key Accounts Program**

11 Hydro Ottawa customers are categorized as a Key Account based on their size of service,
12 financial impact, as well as their influence on the community and the electricity grid. The Key
13 Accounts team works proactively with these large business and institutional customers on
14 matters that include billing, load profile, electricity supply, rates analysis, power quality, energy
15 management, and education and awareness of provincial regulations. Historical research and
16 ongoing customer engagement inform business interactions with these customers that have a
17 direct impact on customer service delivery outcomes, costs, and satisfaction levels.

18
19 In 2016, Hydro Ottawa continued its transition towards a more proactive approach in managing
20 relationships with Key Account customers. This initiative focused on the continued evolution of
21 the utility's collaboration with key customers, aimed at assessing and addressing their unique
22 priorities and needs. Hydro Ottawa's structured approach to relationship-building with Key
23 Account customers is anchored in a five-phase cycle – strategy development, research, action
24 planning, plan execution, and review – with a continuous feedback loop. Specific services
25 offered under this approach include C-Level customer engagement, formal annual account plan
26 reviews, single point of contact for customers at the utility, simplified bill reporting service for
27 large customers with hundreds of individual accounts, landlord reversion agreements, and
28 conservation and demand management ("CDM") assistance.

1 Key Account Coordinators meet regularly with customers at their site. This allows Hydro Ottawa
2 to gain a comprehensive understanding of customer requirements and deeper insights that can
3 only be achieved through a face-to-face discussion. In the past few years, more than 200
4 on-site meetings have taken place.

5
6 Key Accounts require an elevated level of support, including the ability to contact Hydro Ottawa
7 after-hours and during emergency situations. Offering these customers a single point of contact
8 also helps them navigate the multi-divisional aspects of Hydro Ottawa's organization. The Key
9 Accounts team acts as the voice of the customer and has the responsibility for collecting
10 customer information and feedback, and sharing these insights with internal stakeholders. The
11 Key Accounts team takes the lead with these customers' requests, ensuring an efficient and
12 holistic approach that enhances the customer experience and expedites the response.

13
14 Hydro Ottawa's Key Accounts team also helps customers navigate the changing provincial
15 policy environment. For example, O. Reg. 20/17: Reporting of Energy Consumption and Water
16 Use was published in February 2017. The goal of the regulation is to assist Ontario in meeting
17 its energy conservation and greenhouse gas ("GHG") reduction objectives by requiring building
18 owners to submit reports on their energy and water use, and to benchmark their consumption
19 against comparator buildings. Under the regulation, LDCs are obligated to provide yearly
20 electricity consumption data to building owners, upon request.⁵

21
22 As an initial matter, following publication of the regulation, Hydro Ottawa convened internal
23 stakeholders to raise awareness around the new requirements and to assign compliance
24 accountabilities to relevant business units.

25
26 Hydro Ottawa also volunteered to participate in a working group of utility representatives formed
27 by the Ministry of Energy to offer guidance on numerous technical matters related to the
28 provision of electricity consumption data to building owners. This working group convened on

⁵ For further information on the regulation, including the three-year phased-in implementation schedule for reporting by building owners, please see the official webpage for O. Reg. 20/17: <https://www.ontario.ca/page/report-energy-water-use-large-buildings>.

1 three separate occasions over the course of Fall 2017. One of the most consequential initial
2 deliverables for this working group was the launch of pilot projects to test utilities' business
3 processes and systems for data reporting. Hydro Ottawa successfully supported the
4 participation of four Ottawa-area building owners in the pilot.

5
6 Key Accounts led the customer education and outreach in advance of the first reporting
7 deadline for building owners of July 1, 2018. Key Accounts partnered with the Building Owners
8 and Managers Association ("BOMA"), Enbridge Gas Distribution, and the City of Ottawa to
9 present an Energy and Water Reporting and Benchmarking ("EWRB") overview to an audience
10 of more than 110 participants that included many of Hydro Ottawa's Key Accounts. The
11 invitation to this event included basic information about EWRB and was sent to more than 3,000
12 customers. Of the 90 customers in Hydro Ottawa's territory who were required to report, 19
13 reached out to Hydro Ottawa to obtain data (approximately 20%). Each customer was provided
14 with that data, as well as further guidance on energy incentives and other resources for energy
15 management and reduction. The effort was repeated in early 2019 in advance of the second
16 reporting deadline (July 1, 2019). With 450 new customers being phased into the pool of
17 building owners with mandatory reporting requirements, 172 customers ultimately requested
18 data (approximately 38%). All customers were directly engaged by Hydro Ottawa, and were
19 provided data and other resources prior to the reporting deadline. Customer outreach will
20 continue in 2020, in advance of approximately 900 new building owners being required to report
21 on their energy and water consumption.

22
23 Another recurring engagement that Hydro Ottawa continues to refine is the hosting of Key
24 Account Symposiums. Held in 2016 and 2019, these events feature networking, valuable
25 business development opportunities for customers, and presentations from Hydro Ottawa on
26 issues of critical importance to customers' businesses. Issues covered have included the supply
27 and cost of electricity, new and emerging grid technologies, opportunities related to the adoption
28 of "Smart City" solutions in the Ottawa area, and service offerings related to electrical vault
29 maintenance and ownership.

1 In 2016, an on-site anonymous survey of customers' satisfaction with Hydro Ottawa was
2 conducted at the Key Account Symposium with results made available in real-time. Sixty-five
3 representatives from three dozen of the utility's largest customers attended the event. After the
4 2016 Symposium, numerous customers reached out to Hydro Ottawa to proactively replace
5 aging equipment at end-of-life, and to increase reliability for their companies – and, in turn, for
6 Hydro Ottawa's distribution system.

7
8 As part of the Symposium in September 2019, Hydro Ottawa hosted a panel discussion on
9 Distributed Energy Resources ("DERs"). Customers gained an understanding of DERs, the
10 benefits and challenges they provide, the associated pressure points on the electricity
11 distribution system, current options, considerations when connecting to the grid, and adoption
12 rates and roadblocks. The goal of the session was to help interested customers in building a
13 better understanding of key DER issues and opportunities and what some of the key influencers
14 will be for growth and adoption in the future. There were more than 30 customers in attendance,
15 which included representation from two of the utility's largest and most influential customers on
16 the panel moderated by Hydro Ottawa.

17
18 Based on a similar but smaller format, Hydro Ottawa will offer an additional two seminars per
19 year. These sessions will be tailored to a subset of Key Accounts based upon specific
20 requirements or industry impacts.

21
22 The utility's Key Accounts team also delivers presentations to inform local business
23 organizations. One example was a presentation to Invest Ottawa, an organization that delivers
24 economic development programs and initiatives to increase entrepreneurial momentum and job
25 growth in the City of Ottawa. The goal of this presentation was to update business development
26 staff on the services and benefits Hydro Ottawa can offer prospective companies considering
27 operations in Ottawa. As a result of this opportunity, Hydro Ottawa has established itself as a
28 credible and reliable ally to businesses promoting economic development.

1 The Key Accounts team also maintains membership in a number of local stakeholder
2 associations, including the following:

- 3
- 4 • BOMA
- 5 • Illuminating Engineering Society of North America
- 6 • Mechanical Contractors Association
- 7 • Association of Energy Engineers
- 8 • Association of Energy Services Professionals
- 9 • Professional Engineers of Ontario
- 10 • Eastern Ontario Landlord Organization
- 11 • Greater Ottawa Home Builders Association
- 12 • Kanata Chamber of Commerce
- 13 • Carleton University – Industrial Engineering Advisory Board
- 14 • Advisory Group – Algonquin College Energy Manager Program
- 15

16 By using the above approach, and by providing regular opportunities for consultation with the
17 utility's Key Account Coordinators, Hydro Ottawa fosters continuous improvement in its
18 engagement with this particular segment of customers.

19

20 **2.2.8. Conservation and Demand Management**

21 Customer engagement enables Hydro Ottawa to tailor local CDM programs to meet the needs
22 of its customers. Customer outreach activities have also been successful in identifying and
23 leveraging CDM-funded projects completed by progressive customers. This often inspires other
24 customers in a similar situation that would benefit from adopting the same energy-saving
25 measures (e.g. the installation of LED lighting, high efficiency equipment, upgraded mechanical
26 systems, and voltage regulation) to follow suit. Hydro Ottawa further engages customers in
27 post-implementation program evaluation activities that have often led to program refinements,
28 improvements, and insights into program effectiveness.

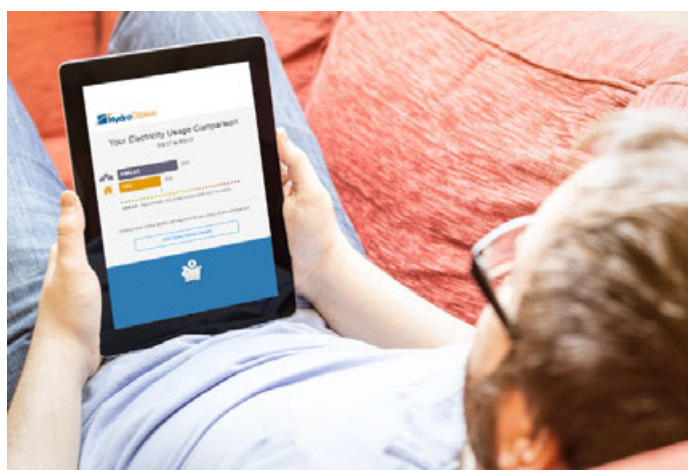
29

30 Customers have influenced Hydro Ottawa's CDM programming in a number of ways.

For example, the Save on Energy Small Business Retrofit Lighting program provided small business customers with up to \$2K in free upgrades. In response to customer feedback, Hydro Ottawa modified the Independent Electricity System Operator's ("IESO") Retrofit Lighting Program worksheet and replaced it with one that required less effort for customers and contractors to complete. With the updated worksheet, information was entered only once and other related fields were subsequently automatically filled in. The final output was a single page report including clearly presented financial impacts, incentive opportunities, and multi-year cash flows which enabled customers to make informed decisions on potential projects. In addition, the report served as the customer's application to the program. Success measurements of this initiative included increased sales by lighting contractors and the adoption of the spreadsheet by several LDCs across Ontario. At the inaugural "Powerful Ideas" conference hosted by the IESO in June 2017, Hydro Ottawa received three awards for best-in-class projects involving sales and marketing – one being "Best Sales Tactic" for its Retrofit Lighting Program worksheet.

Hydro Ottawa provided Home Energy Reports ("HERs") to its customers between May 2017 and May 2019. These emails were sent to residential customers on a monthly and periodic basis (depending on the topic). They provided personalized information to help customers understand their electricity usage and costs, as well as guidance on how to save energy.

Figure 2 – Home Energy Reports Displayed on a Customer's Device



1 In response to customer feedback, a number of changes were implemented to improve the user
2 experience with HERs:

- 3
4 • Consolidation of the Home and Appliance Profile – Originally, customers were asked to
5 complete two separate forms to customize their experience. This included an appliance
6 profile and a home profile. These two forms were consolidated into one “Home Profile”
7 form to simplify the user interface.
- 8 • Reconfiguration of Email Feedback Pages – The ‘email feedback pages were revised to
9 improve the user experience by including more channels for feedback.
- 10 • Revision of the Monthly Summary Report – The Monthly Summary Report email was
11 revised to include a link to the customer’s Home Profile, simplifying the customization
12 process and providing a direct link to more information on “Appliance Breakdown.”
- 13 • Introduction of Personalized Email – Hydro Ottawa launched a “personalized email” that
14 informed customers of how much earlier they started heating their home compared to
15 similar homes. This email was not well received by customers. Based on feedback,
16 Hydro Ottawa made the decision to discontinue distribution of this email.
- 17 • Seasonal Stay-Up-to-Date Emails: Hydro Ottawa learned that customers preferred
18 seasonal updates with general tips rather than a personalized email. These seasonal
19 emails, distributed in the summer and winter of 2018, were well received.

21 **2.3. COMMUNICATIONS AND PUBLIC AFFAIRS GROUP**

22 Hydro Ottawa’s Communications and Public Affairs Group deploys a variety of communication
23 tools to educate, raise levels of understanding, and encourage customer feedback. This
24 includes communicating across a variety of platforms, both online and traditional, taking into
25 account customer language preference. The group systematically monitors, tracks, and
26 analyzes customer and stakeholder feedback on these channels and in traditional media
27 outlets.

28
29 Feedback and analysis provides Hydro Ottawa with insight into customers’ level of
30 understanding, needs,, and expectations. This, ultimately, establishes communications priorities

1 and informs planning and key decision-making in order to successfully engage with customers
2 in a way that is both timely and relevant.

3 4 **2.3.1. Social Media**

5 Hydro Ottawa uses social media channels to engage in two-way conversations with its
6 customers on a daily basis. In collaboration with subject matter experts from each Division
7 across the utility, content is created that ranges in topic from power outages and infrastructure
8 upgrades and repairs, to customer service information such as Time-of-Use ("TOU") rates and
9 periods, and special events. In addition, channels are monitored during business hours and
10 during prolonged power outages in order to answer customer questions or concerns and to
11 keep the public safe.

12
13 Positive and negative feedback are valued equally, enabling Hydro Ottawa to understand what
14 is working and what improvements need to be made. Customer feedback indicates that users of
15 social media appreciate the real-time replies to their inquiries, particularly during power outages,
16 storms, and times of crisis. In order to ensure 24/7 communication with its customers, Hydro
17 Ottawa has introduced a Twitter Bot to its outage communications channels, which provides
18 timely notification to customers after-hours. Please see Exhibit 1-1-13: Productivity and
19 Continuous Improvement Initiatives for more information.

20
21 As of the end of 2019, Hydro Ottawa's social media audience had grown to over 56,000 users.
22 In part, this growth was attributable to the impacts associated with recent significant power
23 outages caused by extreme weather events, especially the September 2018 tornadoes.⁶
24 Customers routinely turn to social media to let Hydro Ottawa know their power is out or to obtain
25 more information about current power outages. Customers share photos and information related
26 to damaged distribution system equipment, both during power outages and in normal day-to-day
27 interactions. This additional insight helps Hydro Ottawa determine the root cause of power
28 outages more quickly, resulting in shorter duration times. Hydro Ottawa employees engaged in

⁶ Prior to the tornadoes, Hydro Ottawa's social media audience totalled 29,000 users.

1 power restoration efforts also access the utility's Twitter feed, allowing them to understand in
2 real-time the customer landscape and sentiment.

3
4 Facebook, Instagram, and YouTube provide a platform for Hydro Ottawa to educate and inform
5 its customers. Videos provide guidance on submitting moving information online, navigating new
6 communication channels that include the Hydro Ottawa app and smart speaker skill, accessing
7 conservation tips, and observing electrical safety. In addition to pre-recorded video, Hydro
8 Ottawa also live-streams content during large power outages, at community events, and to
9 promote new services. Live-streaming allows customers the opportunity to ask questions and
10 receive an answer in near real-time.

11
12 Hydro Ottawa's LinkedIn presence helps the utility to stay connected to its customers, keeping
13 them informed of corporate initiatives, its suite of business programs, and career opportunities.

14
15 Social media customer feedback is received through public comments and private messages.
16 Overall tone and sentiment of incoming messages is tracked and feedback shared with the
17 appropriate groups within the utility. Tracking the overall sentiment of all social media
18 interactions helps Hydro Ottawa understand and identify gaps in services, awareness, and
19 content.

20
21 Hydro Ottawa social media fast facts include the following:⁷

- 22
- 23 • An active presence on all major social media networks, with a total audience of more
24 than 56,000 users.
 - 25 • Twitter Bot integration with power outage communications facilitating automatic updates
26 on larger outages within 15 minutes of start and continuing every 30 minutes until the
27 power outage is resolved.
 - 28 • The receipt of close to 19,000 inbound comments, mentions, and messages through
29 Facebook, Twitter, Instagram, and LinkedIn in 2019.

⁷ All figures are as of December 31, 2019.

- Facebook video views totalled 283,000 minutes in 2019, with the most-watched videos focusing on distribution system upgrades, severe weather events, and employee volunteerism. The average length of Hydro Ottawa's videos is two minutes.
- A two-way conversation with customers on Bell's 2019 "Let's Talk" day about mental health initiatives, resulting in approximately 10,000 Hydro Ottawa video views, over 1,000 customer engagements, and a 21% increase in positive customer sentiment on social media (when compared to the previous day).

2.3.2. Website

Hydro Ottawa's website is a key forum for communicating with customers and capturing their feedback.

Customer feedback and inquiries are received through multiple web-based channels that include Hydro Ottawa's Customer Service contact form and a recently introduced Web Chat interface. Customer concerns and opportunities for improvement are addressed as soon as possible, while issues requiring further consideration and resources are discussed and assessed for inclusion in larger projects.

Google Analytics data, combined with feedback received from customers, helps Hydro Ottawa establish priorities. There have been a number of enhancements made to the website that have been influenced by customer feedback. These changes have focused on improving navigation, adding new content, refining the clarity of existing information, and eliminating gaps that impact organizational effectiveness. Some examples of website enhancements initiated by customer feedback include the following:

- Increasing the resiliency of Hydro Ottawa's outage map during large scale power outages;
- Making it easier for customers to find, understand, and print TOU rates, rate periods, and holiday schedule;

- 1 • Addition of a new page and updated claims form for damages, so as to mitigate the
- 2 requirement for customer follow-up;
- 3 • A high-level summary of available financial assistance programs that links to more
- 4 detailed information, as needed; and
- 5 • Videos for customers who require new or modified electrical service in order to allow
- 6 them to better understand the requirements and procedures.

7

8 The tracking and analysis of the devices that customers are utilizing when interacting with the

9 website has ensured the website's design is compatible for multiple screen sizes, readers, and

10 accessibility tools. Furthermore, the information architecture is continuously reviewed and

11 simplified to reduce customer effort in finding information faster.

12

13 Customer feedback has also allowed Hydro Ottawa to improve the user interface and user

14 experience of its MyAccount online customer service portal. Forms within this portal, such as

15 moving requests and pre-authorized payment plan registration, have been enhanced to include

16 fillable fields and connectivity to customer accounts.

17

18 As a key customer interface, the website is regularly audited by Hydro Ottawa to ensure the

19 information presented remains up-to-date, secure, user-friendly, robust, and fully accessible to

20 its diverse customer base. In 2019, the existing custom web platform was replaced with an

21 enterprise-class, cloud-based product that has further refined the content architecture, visual

22 presentation, device compatibility and accessibility. This next generation website positions

23 Hydro Ottawa's website as "best in class" with regards to content, interactivity (e.g. surveys),

24 expanded feedback channels, and tools designed to share the voice of the customer.

25

26 **2.3.3. Media and Stakeholder Relations**

27 Since 2016, Hydro Ottawa has issued more than 80 news releases. Using a media monitoring

28 service, Hydro Ottawa tracks the reach and click rate of its news releases. In addition, it

29 monitors traditional media sentiment on a daily basis. For example, Hydro Ottawa's neutral and

1 positive media sentiment was 97.87% in 2016, 98.85% in 2017, and 99.27% in 2018. As of
2 October 1, 2019, neutral and positive media sentiment was 100%.

3
4 During significant events, all major news outlets receive Hydro Ottawa's power outage alerts.
5 For additional information, the media turn to the utility's Twitter account for photography from the
6 field and drone footage. This allows them to communicate the extent of damage and the work of
7 crews in dynamic ways. Media regularly use Hydro Ottawa's footage in their broadcasts. During
8 the 2018 tornadoes, Hydro Ottawa live-streamed from the field and played a lead role in City of
9 Ottawa press conferences. Hydro Ottawa responded to more than 100 media inquiries and
10 accommodated numerous behind-the-scenes media tours with access to crews and subject
11 matter experts. It is important to note that, despite not being able to estimate and communicate
12 restoration times during most of this major outage, mainstream media tone towards Hydro
13 Ottawa was neutral (95.6%) or positive (4.4%), with no negative coverage.

14
15 With respect to stakeholder relations, a crucial relationship for Hydro Ottawa is with the sole
16 shareholder of the utility's parent company (Hydro Ottawa Holding Inc.) – the City of Ottawa.
17 Hydro Ottawa seeks to continuously strengthen this relationship in a number of ways.

18
19 To keep the Mayor and City Councillors abreast of major initiatives, announcements, and during
20 times of crisis, memos from the Office of the President and Chief Executive Officer ("CEO") are
21 issued. The memos invite feedback and questions, and include the CEO's direct contact
22 information. During times of crisis, such as the 2016 wind storm, 2017 and 2018 ice storms,
23 2017 and 2019 floods, and the 2018 tornadoes, multiple memos were sent to the Mayor and
24 Council. These memos provided updates during the multi-day events and, in turn, allowed them
25 to keep their constituents (i.e. Hydro Ottawa customers) informed.

26
27 The Mayor and City Councillors are invited by Hydro Ottawa to multiple events each year,
28 including community open houses related to planned work in their wards, important
29 announcements, press conferences, electrical safety presentations at elementary schools, and
30 neighbourhood community events.

1 As the sole shareholder of Hydro Ottawa's parent company (Hydro Ottawa Holding Inc.), the
2 City of Ottawa hosts an Annual General Meeting at City Hall to review Hydro Ottawa's Annual
3 Report and ask questions related to its business.

4
5 Hydro Ottawa's online shareholder newsletter is sent directly to Councillors every month to
6 highlight the utility's work in the community, regulatory and provincial government policy
7 changes, and/or business highlights. The online format enables Hydro Ottawa to identify the
8 top-read stories and tailor content in future issues.

9
10 Based on feedback provided by City Council, a dedicated email address was developed to
11 expedite customer inquiries received by City Councillors on behalf of their constituents. All
12 inquiries are tracked and the process ensures a timely response to both City Councillors and
13 constituents.

14
15 With regards to timely notification of power outages, City Councillors and local media are invited
16 to subscribe to power outage alerts. These emails provide details such as the area and ward
17 where the outage is occurring as well as the restoration time and cause, if known. This enables
18 Hydro Ottawa to leverage its channels and audiences to help assist in communicating updates
19 in real-time.

20
21 To take this service a step further, Hydro Ottawa's Twitter Bot posts information on power
22 outages that impact more than 500 customers. These tweets, posted to social media after
23 hours, highlight the ward affected – down to the street names, number of customers, cause, and
24 restoration time, if known. In addition, relevant City Councillor Twitter accounts are tagged in the
25 posts. This immediately flags the power outages to City Councillors and makes it easier for
26 them to share and retweet the information to their followers, enhancing their reputation as a
27 caring, informed supporter of the residents in their ward.

2.3.4. Community Engagement

Between 2016 and 2018, Hydro Ottawa's community outreach included a "feet-on-the-street" approach led by the Conservation Events Team. The objective was to develop a "culture of conservation" in the community.

The Conservation Events Team participated, on average, in 150 events each year. This included festivals, community and City Councillor BBQs, trade-shows, sporting events, retailer events, and educational presentations.

Some notable engagements included annual participation in the Home and Remodelling Show and the Ottawa Home and Garden Show. These two events draw more than 45,000 active and engaged attendees each year. Hydro Ottawa's team interacted with an average of 2,000 customers during the Home and Remodelling Show and 4,000 customers during the Home and Garden Show each year. This forum supports in-depth, two-way conversations with customers about energy efficiency. During these face-to-face opportunities, Hydro Ottawa informed customers on ways to incorporate energy efficiency into their homes and promoted energy-saving programs and services.

In addition to events, the conservation team delivered educational presentations to youth in schools and summer camps. Between 2016 and 2018, Hydro Ottawa attended 58 schools, delivering 78 presentations to more than 2,000 Grade 5 students on the importance of electricity conservation.

Following a successful inaugural event in 2016, Hydro Ottawa hosted its second annual Community Forum, in which the utility provided updates on Hydro Ottawa's latest initiatives and programs to community associations, city councillors, and community housing representatives.

As a result of this community engagement, customers of all ages are more knowledgeable about energy efficiency. In addition, further insight is gained into the evolving needs of customers, which inform future service offerings and delivery.

1 **2.3.5. Public Awareness of Electrical Safety**

2 Helping customers understand the importance of staying safe and using electricity wisely is a
3 priority for Hydro Ottawa.

4
5 In order to gauge overall electrical safety awareness amongst the general public, Hydro Ottawa
6 commissioned a research firm to conduct the utility's first Public Awareness of Electrical Safety
7 Scorecard Survey, during March 2016. The online survey consisted of a representative sample
8 of 407 respondents, 18 years or older, residing in Hydro Ottawa's service territory.

9
10 Responses to the six core survey questions resulted in a 2016 Public Safety Awareness Index
11 of 70%. The results of the survey helped to inform Hydro Ottawa's subsequent public safety
12 messaging and programs.

13
14 In 2017, Hydro Ottawa launched an electrical safety awareness campaign that included web,
15 video, and social media channels. Targeted to elementary students, this bilingual campaign's
16 goal was to increase general awareness about electrical safety. Between January 1, 2018 and
17 September 30, 2019 the videos were viewed more than 150,000 times across various social
18 media platforms. Related web pages on hydroottawa.com were viewed more than 5,600 times.

19
20 To tie its community safety campaign and elementary school educational programs together,
21 Hydro Ottawa introduced the "Smart as a Fox Whiz Quiz" contest in 2017. After participating in
22 one of Hydro Ottawa's free in-school safety presentations, students are encouraged to complete
23 the Whiz Quiz to show off their newly-acquired knowledge. Questions cover the six core
24 questions, including who to call before digging to plant a tree, and what to do if someone is
25 stuck inside a vehicle surrounded by a downed powerline. Not only does the quiz benefit the
26 students, it also educates parents as they assist younger children in navigating the website.

27
28 Approximately 220 in-school presentations were delivered between January 1, 2018 and
29 September 30, 2019, with more than 3,300 students and their parents completing the online
30 Whiz Quiz, in French or English.

1 While the 2017 and 2018 Public Safety Awareness Indexes remained unchanged at 70% each
2 year, the online Whiz Quiz resulted in an average score of 95% between the same time period
3 (January 1, 2018 and September 30, 2019). Since the Whiz Quiz began in February 2017, there
4 have been more than 4,800 entries (with overall average scores of 94%).
5

6 **2.3.6. ThinkEnergy Podcast**

7 In May 2019, Hydro Ottawa launched a podcast series entitled "ThinkEnergy." The podcast is
8 designed to expose customers to the latest trends in the electricity sector, emerging
9 technologies, and cutting-edge innovations. Each 15-minute podcast features an informative
10 conversation with an industry expert focusing on the fast-changing world of energy. Episodes
11 have featured drones in the energy sector, EV adoption, and electrical safety. Since launch,
12 more than 1,000 downloads have occurred with an average watch time of 81%.

Customer Engagement Activities Summary

Provide a list of customer engagement activities	Provide a list of customer needs and preferences identified through each engagement activity	Actions taken to respond to identified needs and preferences. If no action was taken, explain why.
2021 - 2025 Rate Application Engagement		
Planning-Specific Customer Engagement: Phase I - Residential and small business customers (<50 kW demand) - Telephone and online surveys	- Majority of low volume customers satisfied with current service - Top responses to improvement opportunities were 'nothing' followed by 'lower or reduce rates' - 'ensuring reliable electrical service' identified as top priority followed by 'distribution rates' and 'finding cost savings'. These top three priorities were followed by the need for Hydro Ottawa to maintain service quality; address key pressures in the distribution system and to make prudent investments in emerging technologies to either enhance service offerings and/or reduce costs. Please refer to: - Exhibit 1-2-2: 2021-2025 Rate Application Customer Engagement; Attachment 1-2-2(A) - Innovative Consolidated Customer Engagement Report and Appendices;	- Informed the business plan; price is still a top concern for customers. Minimizing rate increases was a key principle in the business planning process. - Informed the development of the draft business plan that was taken back to customers during Phase II customer engagement.
Planning-Specific Customer Engagement: Phase II - Online survey to residential and small business customers (<50 kW demand) - Mid-market focus groups - Key Accounts focus group - Online survey to 50 kW to >1,500 kW billing demand - Online survey to <1,500 kW billing demand	- A strong majority of Hydro Ottawa customers support either what is currently included in the utility's draft plan, or an approach that accelerates the pace of investment. - Exhibit 1-2-2: 2021-2025 Rate Application Customer Engagement; Attachment 1-2-2(A) - Innovative Consolidated Customer Engagement Report and Appendices	- Informed the business plan. Specifically the DSP (Exhibit 1-2-1; Exhibit 1-2-2 and Exhibit 2-4-3).
Ongoing Customer Engagement		
Project-Specific Open Houses for Major Projects - These sessions provide an opportunity to educate customers on project needs and considerations, as well as, address questions to enable customers to provide informed feedback.	Needs and preferences of customers with respect to major infrastructure projects include concern for potential loss or enjoyment of natural spaces, potential impact on ecosystem, the visibility and footprint of equipment and structures, noise, public safety and business interruptions.	Sought alternatives to use less impactful equipment where possible. Hydro Ottawa both accelerated and delayed construction work to accommodate stakeholder needs, such as peak business seasons and school years. Revised plans, where feasible, in response to customer input. Where feasible, work times were scheduled around core business hours and temporary public access routes were created for pedestrians. Worked with local business associations to understand and mitigate negative impacts and took an active role towards proactively updating the community on progress and developments. These and other initiatives resulted in solutions that were acceptable and productive for all stakeholders. (ref: Exhibit 1-1-9, Section 4.1; Exhibit 1-2-1, Section 2.1.2).
Participation in Trades and Business Associations - These collaborations foster greater awareness and opportunities to work effectively and efficiently with the business community.	Business stakeholders look to Hydro Ottawa for advice and information that is relevant to their business success such as technical standards, business policies and practices.	Hydro Ottawa actively engages with the Electrical Contractors Association ("ECA") which serves Hydro Ottawa's service territory; consults with contractors and developers on an ongoing basis to streamline business interfaces and improve planning and delivery efficiencies. Hydro Ottawa also communicates with the City of Ottawa and works closely with several of their departments to continuously improve the co-ordination of joint initiatives and seek their comments on proposed changes to Hydro Ottawa's business practices, such as its Conditions of Service. Please refer to Exhibit 1-1-9, Section 4.1; Exhibit 1-2-1, Section 2.1.3.
Customer Surveys - Annual, ad-hoc, transactional and industry surveys provide timely and ongoing feedback as to how Hydro Ottawa is meeting customer expectations and needs in a constantly-evolving business landscape.	Customers expect their needs and feedback to be heard and acted upon.	Surveys are utilized to monitor customer needs, service experiences and satisfaction levels in order to adapt business processes as needed, as well as, identify new opportunities to enhance customer services. Examples of some ad hoc surveys conducted during the prior rate period included surveying customers on their bill presentment preferences and interest in 24-hour call centre services. Surveying methodologies have also evolved, which has resulted in greater use of electronic communications channels, as compared to telephone outreach. Benefits include reduced costs and increased opportunities for customers to engage at their convenience. Refer to Exhibit 1-2-1, Section 2.2; Attachments 1-2-1(C); 1-2-1(D) and 1-2-1(E); Exhibit 1-2-1; Attachment 4-1-5(D).

<p>Community Engagement - offers an opportunity for Hydro Ottawa to educate, raise awareness and encourage customer feedback, whether face-to-face, or, electronically.</p>	<p>Customers want to be informed and/or consulted on matters that impact them directly or materially.</p>	<p>Ongoing public engagement through memberships in local associations that represent diverse segments of Hydro Ottawa's customer base. For example, this led to the establishment of a Key Accounts Program. Community collaborations have led to improved business interactions and enhanced public safety awareness. Further, as an outcome to Hydro Ottawa's semi-annual Public Safety Awareness Survey, a number of additional measures have been taken to reinforce public safety messages, such as the launch of an electrical safety awareness campaign in 2017, targeting elementary students. As a further example, Hydro Ottawa makes safety presentations in elementary schools throughout the year and reinforces safety messaging through social media engagement, as well as, industry topics of interest. Social media is also the primary tool used for customer and stakeholder communications during major events. This timely and visual communications method was very successful in the aftermath of the 2018 tornados (as well as other major events) during which no negative media coverage was experienced. Hydro Ottawa also hosts community meetings when planning major distribution projects that impact local communities. This engagement often results in better solutions and greater customer support. For example, website feedback resulted in resiliency improvements of Hydro Ottawa's Outage Map, more customer-friendly navigational features on Hydro Ottawa's website and website improvements for managing customer damage claims. Please refer to Exhibit 1-1-13; Exhibit 1-2-1, ; Sections 2.2 and 2.3; Exhibit 1-2-1, Attachment 1-2-1(B), Attachment 4-1-5(D); Exhibit 2-4-3 Distribution System Plan, SECTION 1, Sections 3.1.10, 3.2.4.</p>
<p>Conservation and Demand Management Programs - offer customers information and, in some cases, funding support to implement measures that reduce their electricity consumption and costs</p>	<p>Customers want to have more insight and information about their electricity consumption, in order to control their electricity costs.</p>	<p>Customer feedback influenced Hydro Ottawa's decision to modify the IESO Retrofit Lighting Program worksheet for greater simplicity and efficiency. These changes enabled customers to make more informed decisions on potential impacts and also made the application process more efficient. Between 2017 and 2019 to residential customers, to help them understand their electricity usage and potential ways to save energy. Hydro Ottawa began providing Home Energy Reports ("HERs"). Customer feedback informed further enhancements to this program. Please refer to Exhibit 1-2-1, Section 2.2.8; Attachment 1-2-1(B); Exhibit 4-1-6.</p>

CUSTOMER STRATEGY

1. INTRODUCTION

Hydro Ottawa's vision is *to be a leading partner in a smart energy future*. This vision recognizes that the electricity service model is in the midst of significant transformation – taking on a more decentralized, customer-centric, technologically-advanced and environmentally sustainable form – and that the role of electricity utilities will be transformed along with it.

As a utility that provides an essential service to the public, delivering an exceptional experience to customers is critical to Hydro Ottawa's success. Hydro Ottawa is in the fifth year of executing its *2016-2020 Strategic Direction*. Many initiatives have been implemented over this timeframe that have changed the way the utility works and have improved its customer service, providing more value to customers.

This Attachment outlines Hydro Ottawa's 2021-2025 Customer Strategy, which builds upon the foundation that was established during the implementation of the utility's 2016-2020 Customer Strategy. In the sections below, Hydro Ottawa identifies the outcomes to date, with respect to the 2016-2020 rate plan, and highlights its future plans to ensure that the utility remains well positioned to support customers as their needs and priorities continue to evolve.

2. CURRENT BUSINESS CONTEXT

Customer expectations around service continue to increase.

The customer state of being "in the know" and accessing information has grown from Time-of-Use ("TOU") rates and periods to accessing integrated energy saving tips and real-time outage information.¹ Communication mediums have shifted since Hydro Ottawa first embarked on its 2016-2020 rate plan, with customers relying less on print and desktop computers and more on mobile technologies and social media, even for one-to-one communication. Customers expect near real-time feedback and interaction through their communication channel of choice.

¹ Hydro Ottawa makes all such information readily available through its website (hydroottawa.com), its mobile application, and Alexa or Google Skills.

1 Hydro Ottawa must therefore continue to monitor and interact with customers across multiple
2 channels.

3
4 Customer expectations around service continue to increase. To maintain a robust level of
5 customer satisfaction, Hydro Ottawa must continue to pursue initiatives that expand 24/7
6 support for its customers. As expressed by customers during the customer engagement process
7 undertaken prior to filing this Application, the increasing cost of electricity remains a concern.²
8 As such, the utility's focus on increased productivity and automation has been integrated
9 throughout the Customer Experience Roadmap to minimize price impacts to customers. Hydro
10 Ottawa is committed to providing a seamless service experience for customers and allowing
11 them to receive or access information via their channel of choice, anytime and anywhere.

12
13 ***The energy business is changing rapidly.***

14 Since 2015, residential and commercial customers have significantly increased their knowledge
15 and expertise around energy needs. Access to energy data and data-driven services through
16 connected home devices such as smart home thermostats and commercial grade energy
17 management solutions provide customers with a means to manage energy consumption
18 through real-time data. This allows them to make decisions and take immediate action,
19 ultimately providing customers more control and potentially saving on their electrical costs. It is
20 imperative that Hydro Ottawa understand the dynamics of this as well as, or better than, its
21 customers in order to best support them and their future energy needs.

22
23 ***Technological innovation continues to dramatically transform the electricity business.***

24 The ability to use data and analytics to provide personalized service will further transform the
25 customer's relationship with, and expectations of, the electricity grid and their electricity
26 distributor. In addition, Smart Grid technologies and the "Internet of Things" will increasingly
27 "connect the customer to the control room," giving them a much bigger role. Their homes,
28 offices, businesses, and farms are becoming an integral part of the power system. The Internet

² See Exhibit 1-2-1: Customer Engagement on the 2021-2025 Application for more information on this topic.

1 of Things will likely create significant product innovation, game-changing partnerships, and
2 converging markets. Both new and existing market players will seek to enable customers to
3 harness the potential of the Internet of Things for efficiency, revenue generation, convenience,
4 control, and environmental performance. Essentially, the Internet of Things is creating a new
5 “digital ecosystem” for energy.

6
7 Customers’ expectations for choice, convenience, and responsiveness, informed by their
8 experience with other industries, are growing. Notably, their ability to access information from,
9 and complete transactions with, the local distribution company (“LDC”) “anywhere, anytime” is
10 now a baseline expectation. Interactions need to be seamless, effortless, and instantaneous
11 with the appeal to satisfy a wide ranging demographic.

12
13 ***The energy requirements are changing.***

14 There is a trend toward the electrification of transportation. Although market penetration of
15 electric vehicles (“EVs”) is still fairly low in Hydro Ottawa’s service territory, there are a number
16 of initiatives in motion that will impact the utility’s operations over the 2021-2025 rate period and
17 have thus been factored into Hydro Ottawa’s business plan. Of note, the City of Ottawa has
18 made significant investment in a Light Rail Transit (“LRT”) system powered by electricity,
19 signaling a change in what they expect of their electricity distribution system. As the LRT system
20 expands across the service territory, EV charging spots in parking lots are being considered.
21 Commercial and multi-residential buildings are exploring opportunities to electrify private and
22 public parking lots for their residents. Consumer interest in EVs is increasing and sales are likely
23 to grow exponentially as costs decline. This presents new possibilities for customer choice,
24 control, and convenience and must be factored into the utility’s service programs for customers.

25
26 ***With the increasing availability and decreasing costs of renewable energy generation and***
27 ***energy storage solutions, Hydro Ottawa customers have more choices.***

28 As the industry continues to evolve, customers are no longer simple passive consumers of
29 electricity. The growing maturity and affordability of distributed energy technologies such as

1 solar generation, storage, and geothermal heating is expected to reshape the energy supply
2 landscape. Customers will increasingly produce a portion of the energy they need on site, and
3 could be poised to be sellers of energy as well as consumers. In fact, electricity consumers are
4 poised to become the most influential actors in a new energy landscape – a dramatic break from
5 the passive role consumers have traditionally played in electricity markets. A growing number of
6 Hydro Ottawa customers have already invested in being part of the electricity market. As such,
7 a growing number of customers are looking to the utility to enable adoption and use of these
8 technologies.

9
10 ***LDCs are uniquely positioned to succeed in this new energy landscape.***

11 Local distribution companies, like Hydro Ottawa, will be more relevant than ever in this new
12 landscape. But their role will change, along with those of every other player in the system –
13 consumers, system operators, generators, transmission companies, and regulators.

14
15 With its established relationship with customers, along with its assets and expertise, Hydro
16 Ottawa is well positioned to serve as the interface between customers and the new energy
17 system. Many customers also their local utility as the preferred partner in value-added energy
18 services. Hydro Ottawa will engage in the future marketplace for energy, one where customers
19 will generate more of their own electricity, store that electricity, and send what is not used back
20 to the grid.

21
22 ***Utilities must change in lockstep with their customers.***

23 As the customer's place within the electricity system evolves, successful utilities will be those
24 that recognize customers are not all the same. They will adapt and tailor their service delivery,
25 leveraging technology to enhance the customer experience and increase operational agility.

26
27 The tools exist for utilities to understand and engage their customers at an individual level and
28 to provide truly personalized service. Leveraging the power of big data, the capabilities of the
29 Smart Grid, and the convenience of mobile technology, utilities can anticipate and meet

customer needs with increasing precision, offer services “anytime, anywhere,” and create a more effortless customer experience. Hydro Ottawa anticipates that this will include personalized energy management information in the form of tailored energy data reports, data aggregation tools, and proactive insights to help solve business challenges.

The focus is shifting from Customer Service to Customer Experience.

To meet these new challenges, and in response to customer feedback, Hydro Ottawa has transitioned from a “Customer Service” to a “Customer Experience” focus. Customer Service initiatives typically address transactional items such as how quickly a telephone call is answered, and how long an issue takes to resolve. Customer Experience initiatives, by contrast, take an overall view of how the customer is “feeling” related to the entire experience, including the transactional elements generally associated with Customer Service.

Hydro Ottawa will deliver on its 2021-2025 Customer Strategy from a position of strength.

Over the 2016-2020 rate period, Hydro Ottawa has earned a number of industry awards, both national and international, for its customer service initiatives and the benefits which they have yielded.³ Among the hallmark initiatives and achievements of the utility that were recognized through these awards were the following:⁴

- 59% customer uptake of MyAccount (Hydro Ottawa’s customer web portal);
- 50% adoption rate of online billing;
- Introduction of an Interactive Voice Response (“IVR”) system that allows customers to access account information without the assistance of a customer service representative;
- Availability of the Hydro Ottawa mobile application providing billing details, outage information, and energy tips all in one place;
- Launch of a Twitter Bot to support power outage alerts and updates; and
- Proactive communication around planned work and planned outages.

³ For a list of these awards, see Table 1 on the last page of this Attachment.

⁴ All of the figures mentioned in the bulleted list are as of December 31, 2019.

1 As further reinforcement of the broader context in which the utility has earned widespread
2 recognition from its peers for noteworthy accomplishment in customer service, receipt of these
3 awards has coincided with an uptick in overall customer satisfaction levels. For example, in
4 2018 Hydro Ottawa achieved a customer satisfaction level of 93% as compared to a 90% score
5 in 2017. For more detail on the 2018 results, please see Exhibit 1-2-1: Customer Engagement
6 Overview.

7
8 While Hydro Ottawa would emphasize that it views such recognition as only one measure of
9 success and performance, the utility nevertheless regards these acknowledgments as a vote of
10 confidence in its ability to continue delivering on its objectives for customer service excellence.
11

12 3. CUSTOMER EXPERIENCE APPROACH

13 As a utility, Hydro Ottawa's vision is to be a leading partner in a smart energy future. The
14 transition to a smart energy future will be driven by customers' needs, preferences and
15 objectives, and will continue during the 2021-2025 period. For the purposes of Hydro Ottawa's
16 Customer Strategy, this means being among the top performers in the business and regarded
17 as a credible and trusted voice in the industry. It also means providing customers greater
18 choice, convenience, control, and communications, and continuing to be a partner that is:

- 19
20 ● **Easy to do business with** because Hydro Ottawa's processes are simple and effective,
21 and customers can do business with the utility when and how they would like;
22
- 23 ● **Caring** because Hydro Ottawa's employees understand what customers want and are
24 focused on providing a superior customer experience;
25
- 26 ● **Efficient** because Hydro Ottawa responds to its customers' questions or concerns, and
27 when problems do occur, the utility fixes them quickly and strives to prevent them from
28 happening again; and

- **Knowledgeable** because Hydro Ottawa's employees understand the needs of customers and the benefits and features of the utility's services.

Hydro Ottawa has adopted a "whole-of-company" Customer Experience approach, aimed at achieving five strategic imperatives:

- **Developing a customer-centric culture:** Fundamentally, Hydro Ottawa's Customer Strategy requires the utility to "put the customer at the centre of everything it does." This means going beyond providing good customer service to proactively ensuring that each customer's experience — the sum total of all their potential interactions with the utility — is positively meeting their needs and expectations. Helping employees to understand this distinction and how and why Hydro Ottawa is moving in this important direction is key to the success of the Strategy.
- **Understanding its customer:** To better anticipate and respond to customer needs, Hydro Ottawa is focused on learning more about its customers in general and about individual customer segments and their unique needs and expectations. This detailed customer knowledge will enable Hydro Ottawa to anticipate and respond to customer needs with personalized services and improve its customer-facing operations.
- **Improving customer touchpoints:** A customer touchpoint is any communication or interaction between a customer and Hydro Ottawa throughout a customer's relationship lifecycle with the utility. A touchpoint can be an advertisement, website, phone call, sales meeting, or an encounter with field staff. These touchpoints are important because customers form perceptions of Hydro Ottawa and its brand based on their cumulative experience with these touchpoints.
- **Providing leading services and products:** To become the preferred partner of customers for value-added services, Hydro Ottawa must meet its customers'

1 expectations for innovative tools and information to help them manage their energy costs
2 and access their account information on a 24/7 basis.

3

- 4 • **Enhancing its technologies and processes:** Effective and innovative use of
5 technology will enhance the customer experience and streamline processes. Hydro
6 Ottawa is continuing the digital transformation of its business, using the power of mobile
7 and digital technology to offer service to customers “anytime, anywhere,” in a more
8 engaging and effortless manner. This transformation is focused on improving productivity
9 by leveraging technology to eliminate waste and unnecessary costs.

10

11 These initiatives are underpinned by the following:

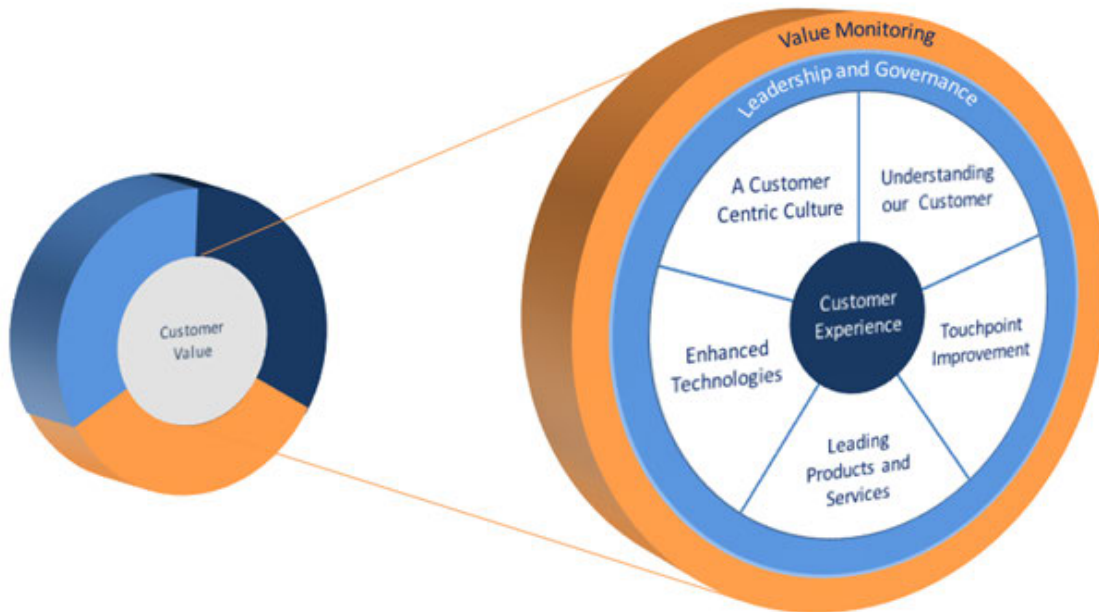
12

- 13 • **Leadership and governance:** To lead this “whole-of-company” strategy in a
14 coordinated way that eliminates organizational silos, Hydro Ottawa has established a
15 Customer Experience Steering Committee with senior representatives from across the
16 corporate enterprise. Accountable to the Executive Management Team, this Committee
17 meets monthly to oversee the progress of the utility in achieving the Customer Strategy.

18

- 19 • **Customer Value Monitoring:** To track progress on achieving the Customer Strategy,
20 Hydro Ottawa has established a Customer Value Performance Metrics scorecard, using
21 relevant Key Performance Indicators and metrics to monitor outcomes. In addition, the
22 “Voice of the Customer” initiative incorporates direct feedback from customers, forms the
23 basis of measuring overall customer satisfaction, provides insights into customer
24 touchpoint improvement opportunities, helps shape program effectiveness, and
25 highlights potential for additional value-added services. Mechanisms used to collect
26 insights include ongoing surveys across all transactional communication channels,
27 annual customer satisfaction survey, feedback from community events, and inputs on
28 program effectiveness.

Figure 1 – A Customer Experience Approach Focused on Customer Value



4. CUSTOMER SERVICE APPROACH

Hydro Ottawa offers a broad spectrum of services and options which customers can access, when and where they want, through their preferred channels. Over the 2021-2025 period, the utility will continue to expand and enhance customer communications channels (whether text, email, telephone, smart audio, or a new technology). This communication will include personalized alerts and notifications focused on the core topics of interest to customers, including billing, power outages, and energy management. Additionally, Hydro Ottawa's efforts will concentrate on continually improving the quality, relevance and accuracy of the information provided by the utility to customers.

Hydro Ottawa will focus on four objectives to take its Customer Strategy to the next level of excellence, in conjunction with the execution of its impending five-year rate plan. As further

illustrated in the discussion below, these objectives are complementary to, and informed by, the utility's *Digital Strategy*.⁵

1. Expand 24/7 access to self-serve

To become the preferred partner of customers for value-added services beyond the meter, Hydro Ottawa must meet its customers' expectations for innovative tools and information to help them manage their energy costs and access their account information anytime, anywhere.

Over the course of its 2016-2020 rate term, Hydro Ottawa continued to transform its online self-serve offerings to meet evolving customer preferences. **Social login** capability, introduced in 2017, supports increased customer choice and convenience as customers can now sign-in to **MyAccount** using email, Facebook, or Google. The utility also introduced a **mobile app** providing customers with the option to manage their account and access personalized insights through this growing channel of choice. **Video messaging** was likewise made available to online billing customers to keep them up to date on relevant news and information. In 2019, Hydro Ottawa's **website** was enhanced to include new integrated search functionality, more customized components that ensure a mobile-friendly experience, and a more robust foundation to allow for a smooth and seamless interface, even during times of high traffic.

In 2019, the ability to **report an outage online** and through the mobile app was introduced, providing added convenience through a new channel of choice. In partnership with Hootsuite, a third-party vendor, Hydro Ottawa developed a **Twitter Bot**. This Bot automatically tweets and interacts with Twitter followers to keep them up to date on power outages, around the clock. Through **Twitter**, Hydro Ottawa shares outage information, often in the form of **video**, when major power outages occur.

⁵ See Attachment 1-1-13(B): Digital Strategy.

The critical importance of outage communications was underscored by a seminal event that occurred during the 2016-2020 period. When six tornadoes, heavy winds, and lightning caused more than 250 separate outages across the Ottawa region on September 21, 2018, half of Hydro Ottawa's customers (174,000) were left without power. Before the storm arrived, storm warnings and safety messages were issued on the utility's social channels. Over the four-day event, Hydro Ottawa live-streamed from the field and during press conferences, produced 10 videos (including drone footage), and took over 250 photos, allowing the web and social media teams to communicate the extent of the damage. The utility shared damage and restoration efforts with customers in a customer-centric way.

On Twitter and Facebook, these videos received 20,000 to 150,000 views each. This proactive approach resulted in earned trust, high engagement, and more than 14,000 new followers, growing our Twitter following from 19,000 to 33,000 and Facebook from 4,300 to 7,000.

Figure 2 – Screenshots of YouTube Videos from 2018 Tornado Response and Restoration



As innovative technology becomes the "new normal," Hydro Ottawa has integrated and enhanced its voice channels. This includes the introduction of a **Smart Speaker Skill** for both Amazon Alexa and Google Home. This voice-activated digital assistant answers the most common questions asked by customers, such as the cost of electricity, current outages, account

1 activity, and conservation tips, all from the convenience of a customer's home. The utility's **IVR**
2 was amplified with the addition of "**Voice ID**" capability which uses voice biometrics to
3 authenticate and enable customer access to answers to their most common questions about
4 billing and payment, without the need to speak to a Customer Service Representative.

5
6 Additionally, Hydro Ottawa's **request for service** customer portal has been scheduled for
7 enhancements in 2021. It will include the ability for customers to schedule appointments, view
8 job status, and allow for service layout payments improving the entire lifecycle of this customer
9 service.

10
11 Hydro Ottawa will continue to evolve each of the aforementioned touchpoints and expand or
12 amplify, as required, to meet evolving customer expectations.

13 14 **2. Reduce customer effort**

15 *Creating a more effortless and engaging customer experience moving forward includes*
16 *expansion into a broader range of services. The digital transformation of Hydro Ottawa's*
17 *business will harness the power of Artificial Intelligence, Robotics, and the Internet of*
18 *Things.*

19
20 Customers registered for MyAccount can connect one-on-one, in real-time, on desktop or
21 mobile with a Customer Service Representative using a recently introduced **Web Chat** service.
22 The continued expansion of Hydro Ottawa's self-serve will include the integration of a **Chat Bot**.
23 Artificial intelligence will be used to carry out interactive conversations based on predetermined
24 common questions with the capability to hand-off to a live agent for complex inquiries.

25
26 Digital technology will enable Hydro Ottawa to offer services that include interactive virtual
27 assistance and enhanced online searches. It will also facilitate learning to predict bills, inform
28 customers of outages, deliver visibility into repairs in their areas, order services, and obtain
29 quotes online.

1 Hydro Ottawa's significant investments in **Advanced Metering Infrastructure ("AMI")** will
2 provide the means for this "always-on" technology to integrate data with new and existing
3 systems to enable enhancements to customers' experience. Future plans encompass the
4 implementation of advanced data analytics, including analytics required to enable bill
5 forecasting, to perform load disaggregation, and to profile customer usage.

6
7 Offering intuitive, seamless, easy-to-use tools that save customers time will include the
8 integration of fully automated forms into the utility's systems and the introduction of additional
9 payment options and communications channels as technology evolves. The intent is to reduce
10 the complexity of Hydro Ottawa's interactions with customers, so that their experience with the
11 utility is simple, satisfies their needs, and is virtually free of friction or frustration.

12 13 **3. Focus on productivity**

14 *Hydro Ottawa leverages technology to eliminate waste and save time, in the context of*
15 *both internal and external processes.*
16

17 In 2017, Hydro Ottawa transitioned its **Customer Contact Centre**, for both general calls and
18 outage communications, to a new service provider. This move allowed for additional agents to
19 be available during high-volume time periods during the day and emergency events. This
20 transition also enabled Hydro Ottawa to expand the Contact Centre's hours of operation to
21 include Saturdays and provide customers access to service in up to 120 languages. In addition,
22 the utility moved from a manual outage message recording process to an automated one using
23 **text-to-speech** technology increasing operational efficiency.

24
25 Hydro Ottawa **remotely disconnects and reconnects** a significant number of its meters
26 through its AMI. This technology allows Hydro Ottawa to restore electricity service more
27 expeditiously for customers and results in operational efficiencies and savings. Other
28 efficiencies introduced included the implementation of an **automated outbound calling** system
29 to replace the previous hand-delivery of Disconnect Notices. As part of this new approach, the

1 utility no longer dispatches a truck to the service address for residential and small business
2 customers who are within 48 hours of disconnection.

3
4 Hydro Ottawa also utilizes **outbound calling for planned work power outage**
5 **communications**. Customers are provided with advance notification so that they can plan
6 accordingly. The historical practice of hand-delivering planned power interruption notices was
7 discontinued, allowing skilled resources to focus on higher-priority capital and maintenance
8 work.

9
10 The utility will continue its focus on productivity and capitalize on emerging Business Process
11 Automation technologies through system integrations and Robotic Process Automation to
12 further streamline its back-office operations and to improve its customer processes. Hydro
13 Ottawa will also look to automation to generate more value from the customer data it collects,
14 with the goal of enhancing customer interactions.

15 16 **4. Deliver customer-centric, value-added programs**

17 *Hydro Ottawa has been fostering a deeper understanding of its customers, with the goal*
18 *of moving towards more customer segmentation and personalization of customer*
19 *services.*

20
21 Over the next five years, Hydro Ottawa will be implementing a new **Customer Relationship**
22 **Management** system that will provide a 360-degree view of the customer. The compilation and
23 analysis of customer interactions and data throughout the customer lifecycle will provide a
24 single, end-to-end picture of the customer's journey aggregated from across various channels,
25 systems, and data silos. This approach will enable Hydro Ottawa to synchronously manage
26 different customer-interfacing activities, including customer service, marketing, field activity, as
27 well as technical and operational support. Relevant customer-centric solutions will drive better
28 outcomes for customers.

1 Hydro Ottawa will continue to evolve its **“Voice of the Customer”** initiative, whereby the utility
2 proactively reaches out to customers for their feedback through transactional surveys, an
3 annual customer satisfaction survey, and focus groups. Hydro Ottawa will also bring together a
4 group of representative customers to serve as its Customer Advisory Board.

5
6 Personalized notification of outages in the form of text messages and emails will be introduced
7 during the 2021-2025 rate term. A move to a cloud Content Management System will enable
8 further personalization of websites, creation of microsites, and efficiencies in content
9 management.

10
11 Hydro Ottawa intends to remain a trusted advisor to its customers in the emerging smart energy
12 future through its **Conservation and Demand Management** team. This future includes a
13 growing array of electricity generation alternatives, electricity storage, demand management,
14 and Smart Grid technologies. This positioning of Hydro Ottawa as the go-to resource for
15 electricity optimization services and programs is critical to the future success of the utility. Hydro
16 Ottawa’s focus will continue to be on outcomes that deliver value to customers, while adapting
17 to the increased emphasis on the need to mitigate the impact of electricity consumption on
18 climate change.

19
20 Hydro Ottawa will continue to move forward in lock-step with its customers who are no longer
21 just consumers of electricity. The growing maturity and affordability of distributed energy
22 technologies such as solar generation, storage, and geothermal heating is expected to reshape
23 the energy supply landscape. Customers will increasingly produce a portion of the energy they
24 need on-site, or become sellers of energy in addition to being consumers.

25
26 These trends, combined with innovation and market convergence that will occur with the
27 emerging Internet of Things, will present new possibilities for customer choice, control, and
28 convenience.

1

Table 1 – Industry Awards Received by Hydro Ottawa

Organization	Year	Award
Independent Electricity System Operator	2019	2019 MDM/R Data Excellence Award
International Association of Business Communicators - Ottawa Chapter	2019	Communicator of the Year in 2018
International Association of Business Communicators Gold Quill Awards	2019	Award of Merit for Hydro Ottawa/CHEO “Go Paperless” Strategic Partnership
Electricity Distributors Association Awards 2019 - Celebrating LDC Excellence	2019	EDA Public Relations Excellence Award for Outage Communications
CS Week 2019 Expanding Excellence Awards	2019	Innovation in People & Process
Edison Award - Edison Electric Institute	2019	Emergency Recovery Award for Outage Communications
Chartwell’s Outage Communications and Outage Restoration Awards	2019	Gold Award for Outage Communications
Chartwell’s 16th Annual Best Practices Awards	2019	Silver Award for Billing and Payment Programs Award - Hydro Ottawa’s “Go Paperless” campaign
Chartwell’s 16th Annual Best Practices Awards	2019	Silver Award for Self-Service Award for Voice Services
Chartwell’s Outage Communications and Outage Restoration Awards	2018	Silver Award for Outage Communications
Edison Award - Edison Electric Institute	2018	Emergency Recovery Award for Outage Communications
International Association of Business Communicators Gold Quill Awards	2017	Award of Excellence for Hydro Ottawa’s “Go Paperless” campaign
Electricity Distributors Association Awards 2017 - Celebrating LDC Excellence	2017	Communications Excellence Award for Outage Communications
Edison Award - Edison Electric Institute	2017	Emergency Assistance Award for Outage Communications
International Association of Business Communicators Silver Leaf Awards	2016	Award of Excellence for Hydro Ottawa’s “Go Paperless” campaign

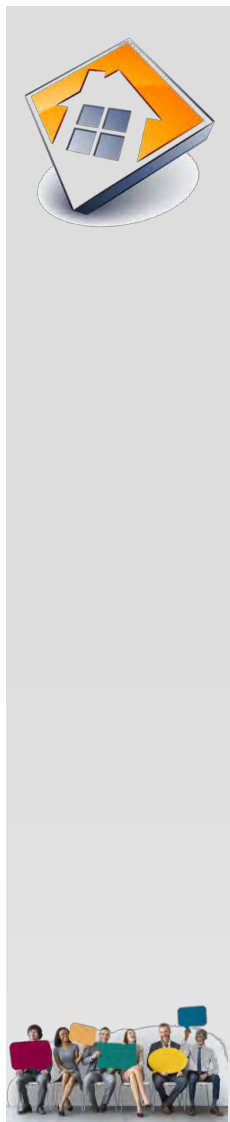
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Hydro Ottawa

2018 Electric Utility Customer Satisfaction Survey



Summary Report



The purpose of this report is to profile the connection between Hydro Ottawa (Hydro Ottawa) and its customers.

The primary objective of the Electric Utility Customer Satisfaction Survey is to provide information to support discussions about improving customer care at every level in your utility.

The UtilityPULSE Report Card® and survey analysis contained in this report is intended to capture the state of mind or perceptions about your customers' need and wants – the information contained in this report will help guide your discussions for making meaningful improvements.

This survey report is privileged and confidential material, and no part may be used outside of Hydro Ottawa without written permission from UtilityPULSE, the electric utility survey division of Simul Corporation.

All comments and questions should be addressed to:

Sid Ridgley, UtilityPULSE division, Simul Corporation

Toll free: 1-888-291-7892 or Local: 905-895-7900

Email: sridgley@simulcorp.com



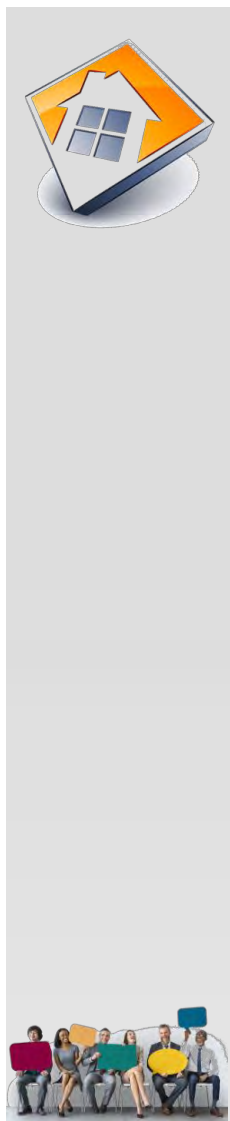
Feedback, Information & Insights

Eighteen months ago, customers were very angry about the quickly increasing costs of electricity over the previous 5 or more years. In fact, some years were double-digit increases while wages and inflation hovered around the 2% mark. We know this because the number of survey respondents in the Ontario benchmark survey who said they ‘sometimes worry about paying their bill’ grew from 21% to 31% and the number of At Risk customers grew from 11% to 17%.

Data from the Hydro Ottawa and Ontario benchmark surveys show the level of “anger” has dramatically reduced. Whether changes in perception were created by the Liberal Government’s Spring 2016 reduction by 25% in electricity prices, or the change to a Conservative government June 2018, or the promise of further reductions in electricity prices, or improvements in the economy, or improvements that LDCs have made in managing outages while improving customers service, or all of the above - a major shift towards a more positive view has taken place. Customers who have a positive view of their LDC and the industry exhibit less resistance to change.

For Hydro Ottawa in the Fall 2018 survey 16% of respondents and 21% of the Ontario benchmark respondents said they ‘sometimes worry about paying their bill.’ Also, the At Risk customer respondent levels were 7% for Hydro Ottawa and 13% for the Ontario benchmark. To be clear, customers are still concerned about the costs of electricity as shown by very low scores in the attribute “The cost of electricity is reasonable when compared to other utilities such as gas, cable or telephone.”





Your survey was conducted from September 17 - October 10, 2018 and is based on 600 one-on-one telephone interviews with residential and small commercial customers who pay or look after the electricity bill. Also, survey findings for Hydro Ottawa are enhanced with the inclusion of data from our UtilityPULSE database and the independently produced Ontario and National Benchmarks.

Helping the LDC generate higher levels of customer satisfaction, or maintaining their current high level, will be based on doing the core job as promised by being professional, efficient and cost-effective. But expectations continue to change. For Fall 2018, three key observations emerge from examining the trends in data from the UtilityPULSE database. They are: customers want to know they have been heard, they have reasonable access to services, and, their LDC is pro-actively communicating – especially during emergency situations.

81%
 Pro-actively
 communicates changes
 and issues

86%
 Provides excellent
 quality services



92%
 Standard of reliability
 meets expectations

88%
 Delivers on its service
 commitments



The Core Responsibilities

Hydro Ottawa survey respondents agree strongly + agree somewhat (Top 2 boxes), their LDC: Provides consistent, reliable electricity 93%, Quickly handles outages and restores power 91%, Accurate billing 89% and Makes electricity safety a top priority for employees, contractors, and the public 91%.

Issues: Billing and Blackouts, the “Killer B’s”

In a world, which is becoming more complex, and where people are time-pressed, outage and billing issues are likely to motivate customers to contact their LDC.

Problems: Blackouts

Percentage of Respondents indicating that they had a Blackout or Outage problem in the last 12 months			
	Hydro Ottawa	National	Ontario
2018	54%	39%	44%

Base: total respondents



Problems: Billing issues

Percentage of Respondents indicating that they had a Billing problem in the last 12 months			
	Hydro Ottawa	National	Ontario
2018	8%	9%	9%

Base: total respondents



While it is true, Hydro Ottawa receives very good operational scores, it also has a responsibility to professionally and quickly deal with issues customers contact them about. In a complex electricity industry world, this puts additional strain on the skills and competencies of everyone who interacts with customers.





Customer Service

Satisfaction with Customer Service			
Top 2 Boxes: 'very + fairly satisfied'	Hydro Ottawa	National	Ontario
The time it took to contact someone	73%	66%	64%
The time it took someone to deal with your problem	70%	72%	65%
The helpfulness of the staff who dealt with you	65%	70%	64%
The knowledge of the staff who dealt with you	62%	70%	64%
The level of courtesy of the staff who dealt with you	74%	78%	70%
The quality of information provided by the staff who dealt with you	65%	73%	61%

Base: total respondents who contacted the utility

Traditionally LDCs handle inbound, or customer initiated communications when there are issues. However, more and more customers have an expectation their LDC will also be proficient with outbound communications regarding the important issues.

Communication Score – New for 2018

The pressure to communicate via multiple communication platforms continues to increase. There is also an expectation the utility will, from an outbound perspective, contact the customer via their preferred channel.

Communication Score		
	Ontario LDCs	Hydro Ottawa
Communication Score	79%	80%

Base: An aggregate of respondents from 2018 participating LDCs / total respondents from the local utility



Communication channels preferred by customers to receive notice about Billing Issue

Most, if not all, of our LDC clients, expect that customers will utilize the electronic channels for getting information or dealing with issues. By doing so, costs for the LDC should decrease. However, in a world where customers expect some outbound contact, they expect their LDC to use those channels to communicate directly with them. Therefore, when problems do occur, and the LDC must initiate contact with their customer, it would be beneficial to the process if customers were contacted via channels they most prefer.

Hydro Ottawa's customers' preferred or primary method for Hydro Ottawa to contact them about billing issues are as follows:

Preferred method of communication to receive notice of a billing issue		
	Ontario LDCs	Hydro Ottawa
Telephone	56%	44%
Voice Mail	2%	2%
Text	7%	7%
Email	34%	46%
Don't know	1%	1%

Base: An aggregate of respondents from 2018 participating LDCs / total respondents from the local utility









Communication during Unplanned Outages

In times of emergency, be they extreme weather events or major equipment failures that cause blackouts and unplanned outages, customer communication can help customers understand what to expect next and when





disrupted electricity service might be restored. Early and effective communication helps increase confidence in and credibility of the electricity service provider.

Method of communication Customers prefer their LDC uses during an UNPLANNED OUTAGE							
Recorded Telephone Message	Email Notice	Posted on the Website	Social Media	Local Radio	Local TV	Text Message	Alert on APP
							
22%	28%	6%	6%	7%	2%	22%	3%

Base: total respondents

Communication about general news or changes in the industry

Method of communication Customers prefer their LDC uses about general news		
	Ontario LDCs	Hydro Ottawa
Recorded telephone message	22%	13%
Email notice	40%	45%
Posted on the utility's website	7%	11%
Social media	6%	8%
Local radio	5%	6%
Local TV	5%	6%
Text message	9%	7%
Alert on APP	2%	2%

Base: An aggregate of respondents from 2018 participating LDCs / total respondents from the local utility





Notice the difference in the preferred channel based on subject matter. Hydro Ottawa shouldn't, for example, assume a customer who prefers email for a billing issue will want an email for outage issues. These added variables add complexity to capturing and then using each customers' preferences. Getting the most out of your CRM system is becoming increasingly important.

Providing communication channels that are effective and meet customers' needs is key to improving the customer experience. To do this, Hydro Ottawa must understand how customers communicate with you, and how they would like Hydro Ottawa to communicate with them in the future. Knowing this will allow Hydro Ottawa to: allocate resources where they are most needed; tailor services to meet customers' needs; and, identify where improvements can be made.

Customers were asked about their level of satisfaction with the information provided by Hydro Ottawa on the following:

Satisfaction with information provided		
Top 2 Boxes: 'very + fairly satisfied'	Ontario LDCs	Hydro Ottawa
The amount of information available to you about energy conservation	82%	83%
The quality of information available when outages occur	73%	81%
The electricity safety education provided to the public	74%	70%
The timeliness and relevance of information for things such as planned outages, construction activity, tree trimming.	78%	80%

Base: An aggregate of respondents from 2018 participating LDCs / total respondents from the local utility



Based on customer responses, Hydro Ottawa has achieved a score of 80% for Communications while Ontario LDCs rated 79%.

The Convenience of Services Score – New for 2018

Rising customer expectations and demands means customers expect to be able to contact you 24 hours a day, seven days a week using various communication avenues, i.e. Telephone, your website and/or even social media. Customers expect flexible and more personalized services. Providing customers with clear, easy to access services and information which is easy to understand has a significant impact on the customer experience.



Access to services		
Top 2 Boxes: 'very + somewhat satisfied'	Ontario LDCs	Hydro Ottawa
The availability of call-centre staff Monday to Friday	76%	82%
The 24/7 availability of system operators to respond to outages	77%	80%
The online self-serve options for managing your account	63%	69%
The online self-serve options for request services	56%	57%

Base: An aggregate of respondents from 2018 participating LDCs / total respondents from the local utility |
 Hours: Ontario LDCs 8:30 am to 4:30 pm, Hydro Ottawa 8:00 am to 8:00 pm and Saturdays 9:00 am to 3:00 pm





Convenience of Services Score

Based on customer responses, Hydro Ottawa has rated 80% for Convenience of Services while Ontario LDCs rated 79%.

Credibility & Trust Index

As society becomes more complicated and complex, the opportunities for failure increase. A key to healthy relationships with customers is to be trusted, trustworthy and credible. Hydro Ottawa Credibility & Trust score is 85% while the Ontario benchmark is 80% and the National benchmark is 81%.

Customer Experience Performance rating (CEPr)

Do customers believe they will have a good experience if/when they do contact their LDC? Or do they believe they must prepare for 'war'? Of course, subject matter and customer affinity levels play a role in determining how a customer might prepare for interaction with a professional at Hydro Ottawa.



Customer Experience Performance rating (CEPr)			
	Hydro Ottawa	National	Ontario
CEPr: all respondents	87%	84%	83%

Base: total respondents





Ensuring that the customer experience is a good one, requires high quality services and well-trained people. Survey respondents gave Hydro Ottawa excellent operational and representative scores.

Operational Attributes			
	Hydro Ottawa	National	Ontario
Provides consistent, reliable energy	93%	89%	90%
Quickly handles outages and restores power	91%	87%	86%
Accurate billing	89%	86%	87%

Base: total respondents with an opinion

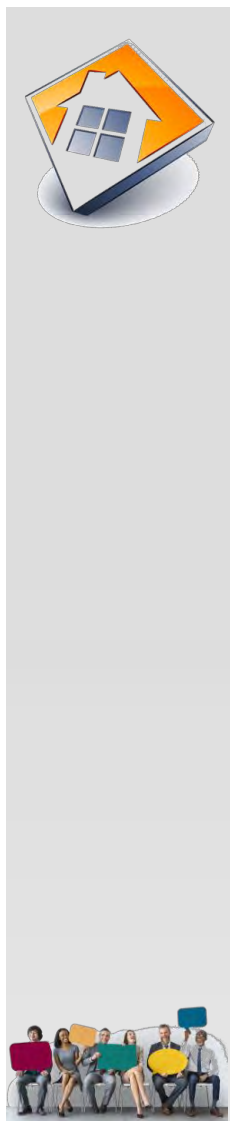
Representative Attributes			
	Hydro Ottawa	National	Ontario
Deals professionally with customers' problems	88%	83%	82%
Is 'easy to do business with'	85%	82%	82%
Customer-focused and treats customers as if they're valued	83%	80%	79%

Base: total respondents with an opinion

Customer Centric Engagement Index

The term "customer engagement" is used by many but understood by few. The purpose of customer engagement is to have two-way interactions which build understanding between the stakeholders and stronger





professional business-like relationships. Customers who are highly engaged are more inclined to look past costs and money issues and be more supportive of what the LDC wants to do or accomplish.

As we have stated in previous reports: Customer Engagement is about how customers think, feel and act towards the organization. Ensuring customers respond positively requires they be rationally satisfied with the services provided AND emotionally connected to the LDC and its brand.

Utility Customer Centric Engagement Index (CCEI)			
	Hydro Ottawa	National	Ontario
CCEI	84%	81%	80%

Base: total respondents

Customer Satisfaction

By itself, this metric is not good enough to gain a picture of how well an LDC is doing but it is a measure about whether the LDC is “doing the job” as expected. However, without satisfaction, there is no gateway to loyalty.

SATISFACTION SCORES – Electricity customers’ satisfaction			
Top 2 Boxes: ‘very + fairly satisfied’	Hydro Ottawa	National	Ontario
PRE: Initial Satisfaction Scores	94%	91%	91%
POST: End of Interview	93%	91%	89%

Base: total respondents



The real prize is in the development of a relationship with customers. More good things exist when a customer has a high affinity for the LDC than when they dislike it. At Risk customers are more likely to complain than other customers when there are issues. Secure customers are more likely to support the direction of their LDC.

Loyalty Groups

Customer Loyalty Groups				
Hydro Ottawa	Secure	Favorable	Indifferent	At Risk
2018	32%	15%	46%	7%

Base: total respondents

In the monopoly world of the LDC, loyalty is an attitudinal metric. In private industry, it is a behavioural metric.

Customer Commitment

Electricity customers' loyalty – ... Is a company that you would like to continue to do business with			
	Hydro Ottawa	National	Ontario
Top 2 Boxes: 'Definitely + Probably' would continue	84%	80%	78%

Base: total respondents

Customer Advocacy

Electricity customers' loyalty – ... is a company that you would recommend to a friend or colleague			
	Hydro Ottawa	National	Ontario
Top 2 boxes: 'Definitely + Probably' would recommend	79%	76%	70%

Base: total respondents





UtilityPULSE Report Card®

The purpose of the UtilityPULSE Report Card is to provide electric utilities with a snapshot of performance – on the things customers deem to be important.

Hydro Ottawa's UtilityPULSE Report Card®				
Performance				
	CATEGORY	Hydro Ottawa	National	Ontario
1	Customer Care	A	B+	B+
	Price and Value	B+	B	B
	Customer Service	A	A	B+
2	Company Image	A	B+	B+
	Company Leadership	A	B+	B+
	Corporate Stewardship	A	A	B+
3	Management Operations	A	A	A
	Operational Effectiveness	A	A	A
	Power Quality and Reliability	A+	A	A
OVERALL		A	A	B+

Base: total respondents



Looking to the future, where to from here?

Technological advances, social disruptions, and other issues will continue for everyone in the LDC industry. Fixing the ills of yesterday are not possible, but instilling confidence that the LDC can handle future customer needs & wants strengthens the customer-supplier relationship. By engaging stakeholders and obtaining their input in undertaking a priority planning process helps to build "prepared minds"—that is, to make sure that the LDC decision makers have a solid understanding of customer priorities, and what the business might need to change or make investments in.

High priority items based on information taken from our UtilityPULSE database include: 'Pro-actively maintaining and upgrading equipment,' 'Reducing response times to outages,' and 'Investing more in the electricity grid to reduce outages and to increase reliability and safety.'

The high scoring attributes demonstrate Hydro Ottawa's operational effectiveness, while the low scoring attributes point to a need for more marketing communications and/or PR types of activities.

Highest scoring attributes

High scoring attributes			
Top 2 Boxes: 'Strongly + Somewhat agree'	Hydro Ottawa	National	Ontario
Provides consistent, reliable electricity	93%	89%	90%
Makes electricity safety a top priority for employees and contractors	91%	87%	86%
Quickly handles outages and restores power	91%	87%	86%
Has a standard of reliability that meets expectations	92%	88%	88%

Base: total respondents with an opinion





Lowest scoring attributes

Low scoring attributes			
Top 2 Boxes: 'Strongly + Somewhat agree'	Hydro Ottawa	National	Ontario
Spends money prudently	77%	73%	66%
Operates a cost-effective electricity system	76%	70%	71%
Provides good value for your money	75%	72%	71%
Cost of electricity is reasonable when compared to other utilities	65%	66%	61%

Base: total respondents with an opinion

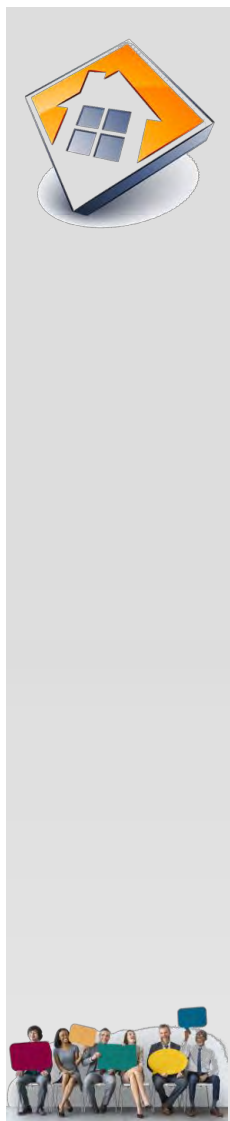
Paying for electricity

Fall 2018 data shows dramatic changes in customers' ability to pay. Whether the change is due to price reductions, or anticipated price reductions, or a better economy, is unclear. Ability to pay is highly correlated to satisfaction. The number one billing problem, for 20 years, is "the amount is too high."

Is paying for electricity a worry or a major problem?				
	Not a worry	Sometimes	Often	Depends
Hydro Ottawa	78%	16%	4%	0%
National	71%	18%	7%	0%
Ontario	68%	21%	8%	1%

Base: total respondents





Numbers at a Glance

	Hydro Ottawa	National	Ontario
Customer Satisfaction: Initial	94%	91%	91%
Customer Satisfaction: Post	93%	91%	89%
Communication Score	80%	--	79%
Overall Satisfaction with the most recent experience	77%	78%	77%
Convenience of Services Score	80%	--	79%
Customer Experience Performance Rating (CEPr)	87%	84%	83%
Customer Centric Engagement Index (CCEI)	84%	81%	80%
Credibility & Trust Index	85%	82%	81%
UtilityPulse Report Card®	A	A	B+

Over the past 5-6 years LDCs have witnessed their customers move from being concerned about costs, to worried about cost, to being upset about costs and being angry about costs – and now returning to what we believe is a concern about costs. From a human nature point-of-view, when people are angry, they tend to look back in time to find someone or something to blame for their predicament. Now that customers have returned to being concerned, they are more apt to be looking forward while putting more focus on identifying and determining how they might handle future issues. The data from our Fall 2018 interviews with over 9,000+ customers shows there is support for making pro-active investments in reliability, outage restoration, outage management, and communications.



We believe, for many in society, from 2008 to mid-2017 survival was the key goal less so in 2018. The outlook for the economy is better; wages are improving and, job openings are more plentiful – therefore putting more focus on the future.

The good news is Hydro Ottawa remains what we call an influential brand company. The safe, reliable distribution of electricity to homes and businesses is a job which makes life better, more interesting and meaningful for consumers and customers. As a company which affects the daily life of people and businesses – an influential brand – it must consistently demonstrate that it is credible, trusted, future-oriented, cares about customers, cares about safety, cares about the environment, is professional, has high standards and is a valued corporate citizen.



The industry is far more complex today than it was 20 years ago when we conducted the 1st Annual Customer Satisfaction survey for electric utilities. Data shows that being customer-centric is important for ensuring future success of the LDC. Customers want respect.

We recommend leveraging the results from your 2018 customer satisfaction survey by having meaningful conversations with everyone about your customers' – satisfaction, concerns, wants, etc. LDCs with a constructive employee culture with high levels of employee engagement and empowerment will have an easier time defining a future path forward.



Sid Ridgley
Simul/UtilityPULSE
Email: sridgley@simulcorp.com

November 2018



Good things happen when workplaces work. You'll receive both strategic and pragmatic guidance about how to improve Customer satisfaction & Employee engagement with leaders who lead and a front-line which is inspired. We provide training, consulting, surveys, diagnostic tools, and keynotes. The electric utility industry is a market segment we specialize in. Both large and small utilities have received actionable insights. For 20 years we have been talking to 1000's of utility customers in Ontario and across Canada and we have expertise which is beneficial to every utility.

**Culture, Leadership & Performance –
Organizational Development**

Leadership development

Strategic Planning

Teambuilding

Organizational Culture Transformation

**Focus Groups, Surveys, Polls,
Diagnostics**

Diagnostics ie. Change Readiness, Leadership
Effectiveness, Managerial Competencies

Surveys & Polls

Customer Satisfaction and Loyalty
Benchmarking Surveys

Organization Culture Surveys

Customer Service Excellence

Service Excellence Leadership

Telephone Skills

Customer Care

Dealing with
Difficult Customers

Benefit from our expertise in Customer Satisfaction, Leadership development, Strategy development or review, and Front-line & Top-line driven-change. We're experts in helping you assess and then transform your organization's culture to one where achieving goals while creating higher levels of customer satisfaction is important. Anyone can present data, or design programs – we believe having an understanding of the industry before doing so is crucial. Call us when creating an organization where more employees satisfy more customers more often, is important.

Your personal contact is:

Sid Ridgley, CSP

Phone: (905) 895-7900 x 29 E-mail: sridgley@simulcorp.com



Hydro Ottawa

2018 Electric Utility Large Customer Satisfaction Survey



November 2018

The purpose of this report is to profile the connection between Hydro Ottawa and its customers.

The primary objective of the Large Customer Electric Utility Customer Satisfaction Survey is to provide information that will support discussions about improving customer care at every level in your utility.

The UtilityPULSE Report Card® and survey analysis contained in this report are intended to provide data and information that will help guide your decisions for making improvements to your operations.

This survey report is privileged and confidential material, and no part may be used outside of Hydro Ottawa without written permission from UtilityPULSE, the electric utility survey division of Simul Corporation.

All comments and questions should be addressed to:

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Connections...Large Customer Survey

[General Service (50-4999 kW)]

As society becomes more complicated and complex, the opportunities for failure increase. We believe this statement is fundamentally true for all commercial enterprises. Every industry is facing changes in customer behaviour and expectations causing LDCs to take a look at the type, quality and timeliness of communications with their customers. No easy task.

Also, there are many structural and technological changes taking place in the electricity industry adding more complication to being able to look after individual customer needs. For example, LDC professionals are getting, (and will get many more), questions about energy storage, energy analytics, etc. The LDC isn't in the energy storage or energy analytics business, but LDC professionals will be asked to provide comment. How LDC professionals answer these questions are what we call a "moment of truth," i.e., does the LDC care about the issues the customer faces? Your large(r) commercial (LC) respondents scored 90% compared to the UtilityPULSE (UP) database of 88% on the attribute of being knowledgeable, professional and courteous.

What hasn't changed for large(r) commercial (LC) customers is the two major concerns of cost impact and reliability. However, effective communications – especially during emergency situations – is becoming more important than in previous years. Being pro-active on the communication front with LC customers is valued. LC respondents valued pro-active communications and gave Hydro Ottawa a score of 83% (Top 2 boxes) for doing so.

Despite the robust nature of the current economy, reducing costs, improving the bottom line, being competitive or gain a competitive advantage and watching their environmental impact remain a priority focus for most LC customers. The number one reason from the Fall 2018 Large Commercial Customer survey cohort of respondents wanting to have their LDC contact them was to discuss the cost of power and how to reduce it.

Your survey conducted from September 20 to October 10, 2018 contains feedback from 250 one-on-one telephone interviews with individuals who have the responsibility to interact with the utility in the event of a power outage. To enrich your survey results we have included data from our UtilityPULSE LC Ontario database of customer surveys completed over the past 12 months.



The core of the job at Hydro Ottawa is to operate efficiently by safely and reliably delivering high-quality electricity to its customers. But that is not all LC customers expect. They also expect LDC representatives to effectively deal with a wide range of subjects of interest to the client. We continue to encourage LDCs to adopt a robust “major account management” methodology for supporting LC customers. Findings for operational and representative attributes for Hydro Ottawa include:

Operational Attributes		
	Hydro Ottawa	UP Database
Provides consistent, reliable energy	92%	90%
Quickly handles outages and restores power	92%	87%
Accurate billing	89%	85%

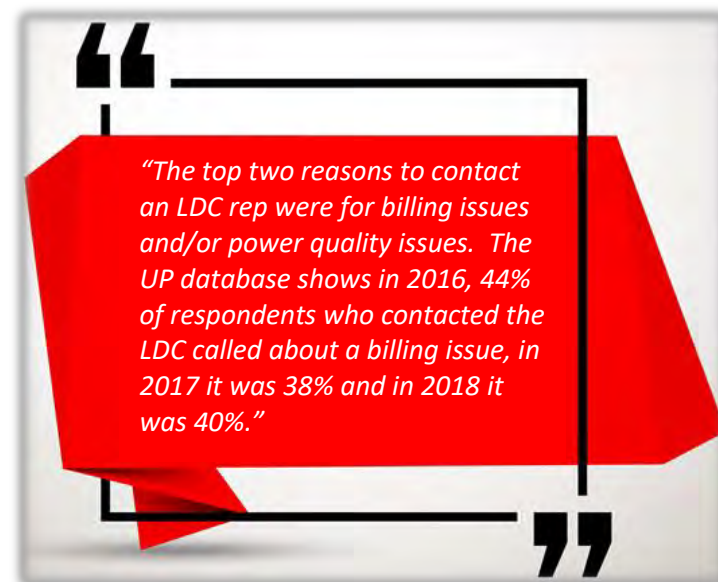
Base: total Large Customer respondents with an opinion

Representative Attributes		
	Hydro Ottawa	UP Database
Representatives are knowledgeable, professional and courteous	90%	88%
Is ‘easy to do business with’	87%	86%
Customer-focused and treats customers as if they’re valued	84%	83%

Base: total Large Customer respondents with an opinion

Hydro Ottawa's Large business customers can be both impatient and demanding when there are issues with the safe, reliable delivery of electricity. Survey respondents gave a score of (90%) for 'consistently delivering on its service commitments' and a score of (94%) on the attribute of 'adapting well to changes in customer expectations'.

While LCs may only represent a tiny fraction of the customer base, the amount of the total kWh used by LCs in the LDCs geographic territory is huge. The path to high levels of satisfaction is to recognize the importance of a "B" to "B" relationship.



Numbers at a Glance

	Hydro Ottawa	UtilityPULSE Database
Customer Satisfaction: Initial	94%	93%
Customer Satisfaction: Post	95%	93%
Overall Satisfaction with the most recent experience	88%	84%
Customer Experience Performance Rating (CEPr)	89%	86%
Customer Centric Engagement Index (CCEI)	88%	85%
Credibility & Trust Index	88%	85%

Base: total Large Customer respondents

New for 2018, respondents were asked to comment on the priority level of the implementation or execution of 17 different initiatives/projects which encompass operational aspects and/or financial commitment.

A focus on priorities can lower risk, increase efficiency and optimize resource utilization - resulting in faster deliveries of key requirements. Where things can go downhill is when the LDC either misunderstands a customer's priorities or fails to manage what they know are priority issues. A better understanding of priorities gives the LDC the opportunity to focus its limited resources better and to prepare knowledgeable answers to questions about LC priorities.



Based on the responses received from Large Customer survey respondents for Hydro Ottawa, the top 5 initiatives which were given **high priority** ('very high + high') rating within the next 5 years are as follows:



1- Maintaining and upgrading equipment	88%
2- Reducing response times to outages	87%
3- Investing more in the electricity grid to reduce outages	86%
4- Providing expertise to commercial customers regarding changes in energy technology	76%
5- Educating the public as it relates to electricity safety	75%

Based on the responses received from Large Customer survey respondents, the following 5 initiatives are those which were given the **lowest priority** ('low + very low') by Hydro Ottawa ratings within the next 5 years:



- | | |
|--|-----|
| 1- Making better use of social media (such as Twitter, Facebook, etc.) | 36% |
| 2- Developing a SMART phone application to allow you to view usage and pay your bill | 26% |
| 3- Providing more self-serve services on the website | 23% |
| 4- Providing sponsorships to local community causes | 21% |
| 5- Engaging with commercial customers on a more frequent basis | 20% |



LC customers were asked to look ahead down the road 1-2 years and whether they anticipated any changes to their business which would affect electricity consumption by more than 5% in either direction. 27% believed their business would undergo some changes while 70% did not foresee any changes affecting electricity consumption.

Consistent with findings from the Fall 2017 Large Commercial Customer Survey, the Fall 2018 survey tells us that energy storage is continuing to show up on the radar of many organizations. We asked a question about familiarity with this subject matter, and if the respondent was familiar with the subject, then we proceeded with a follow-up question about interest in energy storage. 46% of Hydro Ottawa respondents said they were “very + somewhat familiar” with the subject. 72% of those who said they

were familiar with the subject said they were 'very + somewhat interested' in implementing energy storage in the next 3 years.

The standard deviation calculation, in research, provides some idea about the distribution of scores around the mean (average). Essentially, it is a measure of the extent to which survey respondents agree or disagree with one another. If everyone gave the same score, then the standard deviation would be zero and the agreement would be high (or perfect).

It could be advantageous to have discussions about what may be causing or influencing the wide disagreement in responses given the nature of the following list of attributes.

- 1- Provides good value for your money
- 2- Is a company that you would recommend to a colleague or friend
- 3- Adapts well to changes in customer expectations
- 4- Representative provides a high level of consistency when interpreting policies and regulations
- 5- Customer-focused, treats customers as if they're valued

It is important to have a meaningful two-way dialogue with employees and others in your LDC to leverage results from this survey. Retaining high levels of customer satisfaction and affinity starts with understanding their wants, needs, and priorities.

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Satisfaction (pre & post)

Customer satisfaction is one dimension for measuring the effectiveness of an enterprise. But focusing on customer satisfaction as a sole measure is not enough to gain a picture of how well an operating unit/enterprise might be doing. Customer satisfaction as a measure is an effectiveness measure (not an efficiency measure) on the historical relationship or delivery of services to clients.

“Satisfaction happens when an enterprise’s core services meet or exceed customer’s needs, wants, or expectations.”



Customer Satisfaction		
	Hydro Ottawa	UP Database
Very satisfied	48%	43%
Fairly satisfied	46%	50%
Neither satisfied nor dissatisfied	1%	1%
Fairly dissatisfied	3%	4%
Very dissatisfied	2%	1%

Base: total Large Customer respondents, may not add to 100% due to rounding

94% of customers said they were **satisfied** with **Hydro Ottawa**. 93% were satisfied in the UP database.

Base: total respondents:
 Top 2 Boxes: 'very + fairly satisfied'

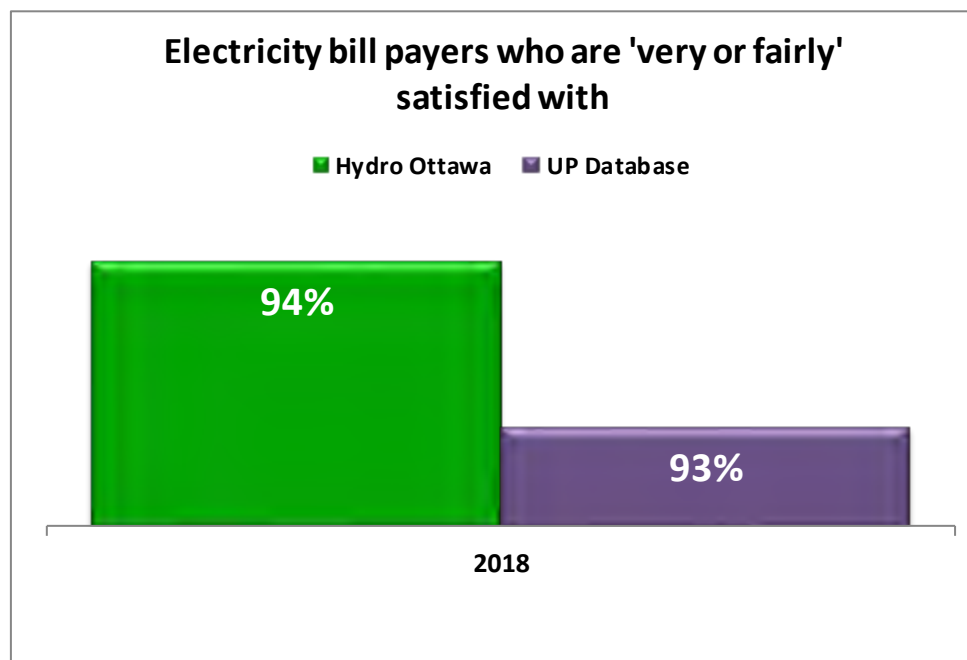
A focus on satisfaction prompts an organization to continue to evolve in ways which make sense to those that pay the bills. A focus on satisfaction is a focus on effectiveness in the delivery of service to the customer. Satisfied customers who trust their LDC may be more likely to seek advice, i.e. energy efficiency methods

and may be more receptive to important messages, i.e. safety, new capital projects, data analytics, energy storage, etc. Another reason to focus and measure satisfaction is to reduce negative word of mouth.

If customers cannot leave what are the reasons why every LDC should place a premium on satisfying customers? Here are some of the important ones:

- 1- Every enterprise has an obligation to satisfy its customers
- 2- Feedback, when acted upon, is beneficial to all parties
- 3- Different LCs have different needs, one-size certainly doesn't fit all
- 4- Stronger relationships with customers generate higher levels of involvement and participation
- 5- Without satisfaction, it is difficult to inspire LCs to pursue new ideas and possibilities
- 6- Economically, high levels of satisfaction lead to fewer customer complaints and less scrutiny (hence less cost)
- 7- As an effectiveness measure, it prompts discussion about policies, procedures, planning, use of technology, and more
- 8- When things go wrong (and they do), customers with high levels of satisfaction handle the problem far better than customers with very low levels of satisfaction
- 9- For employees, there is a morale boost when working in an organization with a high level of customer satisfaction
- 10- Customers (as well as others) have growing levels of expectations which means the things that satisfy customers today may not tomorrow.

Satisfaction levels with their LDC greatly influence the future behaviour of LCs. In an energy world rife with current and future disruptions, LCs will increasingly be turning to their LDC for advice and counsel.



Base: total Large Customer respondents

In the private sector, customer satisfaction and loyalty are often seen as essential for survival and success.

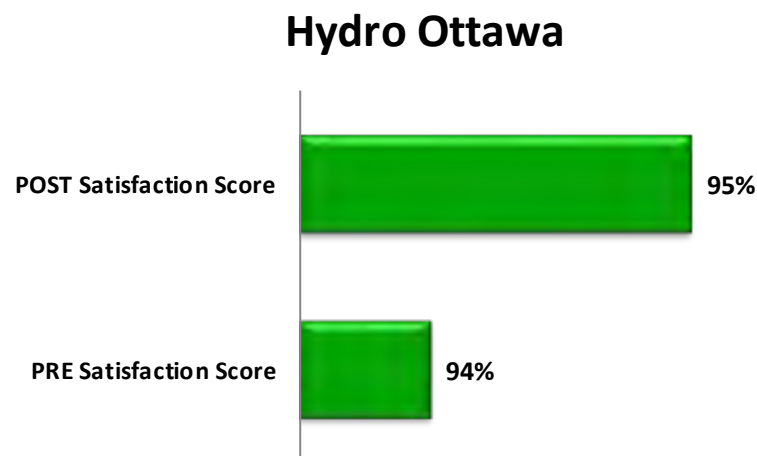
Public sector organizations, especially MUSH sector organizations (municipalities, universities, schools, hospitals), have come to realize that looking after their customers and taking the opportunity to learn from them is key to delivering services which are both effective and efficient.

Large commercial customers are not the same as a residential or small commercial customer. After 20 years of continuous research with electric utility customers, expectations of their electric utility go far beyond “keeping the lights on,” “billing me properly,” and “restoring power quickly.” For LC’s electricity is an input cost for delivering their products or services. The cost of electricity can affect the pricing and profitability of the LC.

Satisfaction happens when utility core services meet or exceed customer's needs, wants, or expectations.

- **Loyalty** occurs when a customer makes an emotional connection with their electric utility on a diverse range of expectations beyond core services. In the monopoly world of the LDC, loyalty is an attitudinal metric.

In the Simul/UtilityPULSE Customer Satisfaction survey, the overall satisfaction question is asked both at the beginning (PRE) and the end (POST). Asking the general satisfaction question at the start of the survey avoids bias, and we obtain a spontaneous rating. This allows measurement of customers' overall impressions of the utility before prompting them to think of specific aspects of the relationship. After we have asked about specific aspects of the customer experience, we gain a more *considered* (or conditioned) response. LCs expect certain things from their electric utility such as being able to get speedy service, professionalism, problem resolution, understanding, and responsiveness.



Base: total Large Customer respondents

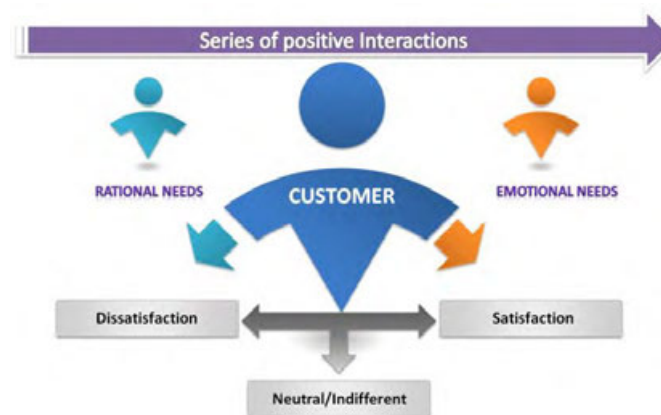
Satisfaction alone does not make a customer loyal; a willingness to commit and advocate for a company along with satisfaction identifies the three basic customer attitudes which underpin loyalty profiles. While

satisfaction is an important component of loyalty, the UtilityPULSE loyalty definition includes attitudinal and emotive components. However, Customer satisfaction is a gateway to earning loyalty.

Customer Satisfaction		
Top 2 Boxes: 'very + fairly satisfied'	Hydro Ottawa	UP Database
Initially	94%	93%
End of interview	95%	93%

Base: total Large Customer respondents

Customers, as human beings, are both rational and emotional. The rational side of the customer holds the LDC accountable for doing its job (as contracted), thereby fulfilling the customer's basic needs. The emotional side of the customer is about fulfilling expectations. Meeting rational needs – at best – gets the customer to a neutral state and at worst creates dissatisfaction. Emotional needs, when met, assuming base level rational needs are met, can move a customer from neutral to higher levels of satisfaction.



Every LDC executive we know, would (probably) raise their hand and say that they believe customer satisfaction is important for business success – even in a virtual monopoly business. Based on our experience most LDCs have been honing their skills at being professional, knowledgeable and efficient

when handling customer problems. While being good at these things continues to be important, it, however, promotes a transaction by transaction orientation. There is growing evidence that LCs appreciate it when LDCs have more than a “buyer-supplier” relationship.

Fostering true loyalty and engagement with customers begins at a basic level. Also, satisfied and engaged employees who work in an organizational culture that promotes service excellence is key for completing the job both efficiently and effectively. After all, employees do more than deliver customer service – they personalize the relationship between the customer and the utility.

One of the most illuminating results of your survey was the relationship between satisfaction and the attribute of Trust and Trustworthiness. When trust is high so is satisfaction, when trust is low so is satisfaction.

Relationship between Satisfaction and the attribute of Trust & Trustworthiness		
	Very + Fairly Satisfied	Fairly + Very Dissatisfied
Hydro Ottawa is a trusted and trustworthy company	97%	57%

Base: total Large Customer respondents

Being dependable, providing consistent and reliable service are crucial components in building trust, throughout every aspect of the service relationship. Actively engaging with customers helps build a stronger and committed alliance.

Trust is a complex judgment a person makes about someone or something. It can be interpersonal – as in the relationship of LDC professionals with their LC customers, and it can be impersonal – such as when there is an outage the LDC will fix it.

Based on our social research the formula for building trust could be expressed as:

Trust = (Credibility + Consistency + Mutual Respect + Candor + Shared Commitments) minus Self-focus



[illegible]

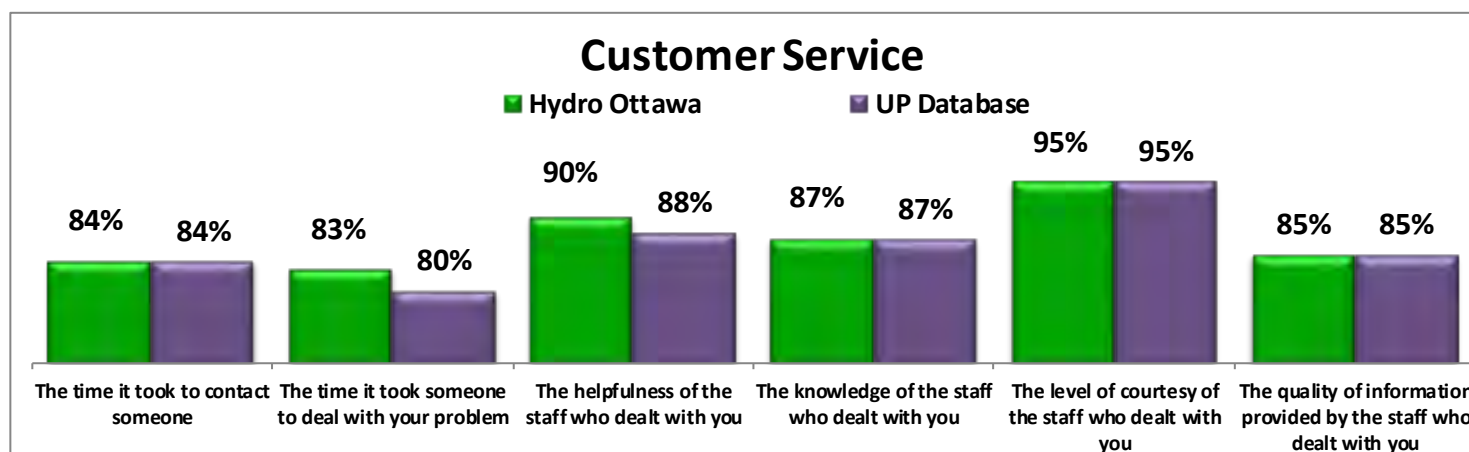
Respondents, who contacted their utility about a problem, were asked about six aspects of their most recent experience with a representative from Hydro Ottawa:

- Information – the quality of information provided
- Staff attitude – the level of courtesy
- Professionalism – the knowledge of staff
- Delivery – the helpfulness of staff
- Timeliness – the length of time it took to get what they needed
- Accessibility – how easy it was to contact someone

Attempts to contact the LDC		
	YES	NO
Did you contact the LDC regarding your problem?	44%	56%

Base: total Large Customer respondents with a problem

Customers value speed and responsiveness especially as it relates to solving problems. The more flexibility you're able to offer and the more empowerment given to employees, the better able employees will be to meet those "speed" and "responsiveness" requirements. Customers benefit, too, when employees can resolve problem issues "on the spot" instead of having to "talk to my manager." A recommendation that we consistently make to all LDC executives is to ensure your company professionals have the empowerment and decision-making authority necessary to make things happen quickly.



Base: total Large Customer respondents with a problem

The survey data shows that 44% of your Large customers contacted the utility about a problem, with 83% of them believing the problem was resolved. When asked about their most recent experience with the utility, 88% of those customers say they are "very and somewhat satisfied" with the way the utility handled their problem.

Overall satisfaction with the most recent experience		
	Hydro Ottawa	UP Database
Top 2 Boxes: 'very + fairly satisfied'	88%	84%

Base: total Large Customer respondents who contacted the utility

There is a difference between fixing a problem and engaging a customer. The key to resolving issues and improving customer engagement is to think beyond problem resolution. Though all customers want a satisfactory resolution to their problem, they are also concerned with how the utility handles that problem. Companies do not absolve themselves by fixing the issue; they do so by taking care of their customers' emotional needs as well.

Do you consider the problem solved?		
	Hydro Ottawa	UP Database
Solved = Yes	83%	78%

Base: total Large Customer respondents who contacted the utility

Top reasons why Large Customers contact their LDC		
	Hydro Ottawa	UP Database
Billing issue	28%	33%
Power quality issue	30%	26%
Maintenance/repair request	9%	9%
Ways to save energy	5%	5%
Account updates	6%	4%
Connect or Disconnect	11%	6%
Get a meter reading	3%	4%
Rebates/incentives for conserving energy	6%	6%
Conditions of service inquiry	6%	2%
Safety issue	2%	2%
Incentive programs	2%	3%
Upgrading services	3%	1%
Account issues	3%	1%

Base: total Large Customer respondents who contacted the utility

The key to effective handling of customer issues is empathy, patience, and consistency. Customer issues may not be easy to handle – ever – but we can say “when customers feel ‘*no one cares*’ that is where rage and outrage exist.”

Your LC survey respondents said they “strongly agree + agree” with the following:

Customer Service attributes:	Hydro Ottawa	UP Database
Customer focused and treats customers as if they're valued	84%	83%
Is pro-active in communicating changes and issues which may affect customers	83%	81%
Is 'easy to do business with'	87%	86%
Representatives provide a high level of consistency when interpreting regulations and policies	84%	82%
Representatives are knowledgeable, professional & courteous	90%	88%

Base: total Large Customer respondents with an opinion

Customers rely on their LDC contact for their knowledge on how best to solve a problem and, they appreciate a representative who will see the problem through to its resolution. When your Large customers are satisfied with the contact they had with a representative, contact satisfaction levels can be equal or higher (95%) than overall customer satisfaction scores; likewise, when customers are less satisfied or dissatisfied with contact satisfaction levels will be lower (54%) than overall scores.

Overall Customer Satisfaction in relation to Satisfaction with contact			
	Overall Customer Satisfaction	Satisfied with contact	Not Satisfied with contact
Top 2 Boxes: 'very + fairly satisfied'	94%	95%	54%

Base: total Large Customer respondents who contacted the utility

Customer Experience Performance rating (CEPr)

The CEPr score is an effectiveness rating and is affected by many dimensions of service. Every touch point with customers on the phone, website or in-person influences what customers think and feel about the organization. While an excellent transaction today creates a positive experience today, the perception created is that future transactions will be excellent too. Of course, a negative transaction creates the perception that future transactions will be negative.

Employee empowerment is a key success factor in aligning with your customers. All employees, front-line and otherwise, need to understand how their jobs and their performance tie in with the customer experience and customer expectations. If employees feel they are valued, enabled and set up for success, they will routinely go the extra mile to help customers realize value, achieve their desired outcome and have the experience they want. Keep in mind every interaction with a customer is an opportunity to strengthen positive perceptions about the LDC.



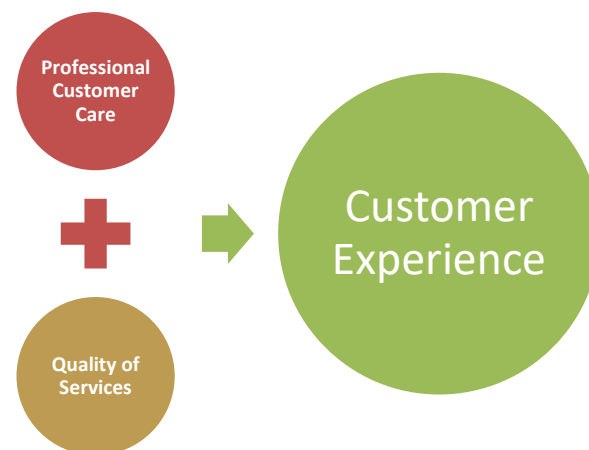
When the customer experience is strong, the opportunity to build loyalty is great. When the experience is a negative one, customers often conclude the organization doesn't care. When a customer believes the organization doesn't care, outrage and anger are a very real possibility

At the heart of the CEPr are 4 central questions:

- Are interactions with the organization professional and productive?
- Is the organization 'easy to deal with'?
- Does the organization effectively meet your needs?
- Does the organization provide high quality services?

Some of the factors which contribute to the overall Customer experience:

- Delivering accessible and consistent customer service
- Understanding customer expectations
- Maintaining timely resolution timelines
- Providing effective communication(s) according to customer needs
- Demonstrating responsiveness
- Speeding up problem resolution
- Conducting problem analysis to prevent recurring issues
- Easy to do business with
- Seeking customer feedback and following through on recommendations



Customer Experience Performance rating (CEPr)		
	Hydro Ottawa	UP Database
CEPr: Professional Customer Care	87%	85%
CEPr: Quality Services	90%	87%
CEPr: Overall	89%	86%

Base: total Large Customer respondents



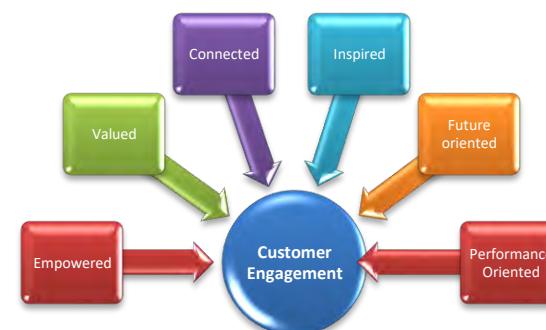
89% of Large customers have a belief that they will have a good to excellent experience dealing with your professionals.



Customer Centric Engagement Index (CCEI)

Customer-centric engagement is a measure of “goodwill” towards the utility. Customers who are less engaged, as measured by the CCEI are more likely to let costs and price impact their perceptions of their LDC. Customers who are highly engaged are more inclined to look past costs and money issues and use a rational approach to make values-based decisions. Highly engaged customers have a stronger emotional connection to your utility. It’s this emotional connection that will drive commitment, collaboration and involvement.

UtilityPULSE has identified the six key dimensions of what defines customer engagement. They are: empowered, valued, connected, inspired, future-oriented and performance oriented. Engagement is more than asking for an opinion or soliciting feedback. Engagement is also: how **customers think, feel and act towards the organization.**



Utility Customer Centric Engagement Index (CCEI)		
	Hydro Ottawa	UP Database
CCEI	88%	85%

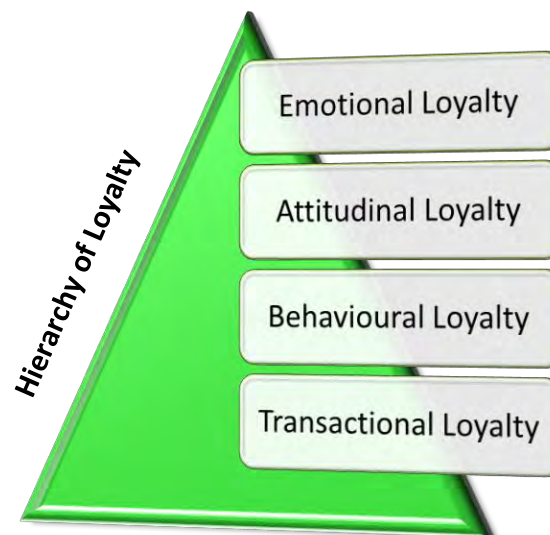
Base: total Large Customer respondents

The Loyalty Factor

Private industry often equates customer loyalty with basic customer retention. If a customer continues to do business with a company, that customer is, by definition, considered to be loyal. Applying this definition to an LDC in the utility industry, means, all customers would automatically be considered loyal. As such, measuring customer loyalty would appear to be unnecessary.

Natural monopolies (like LDCs) are not really different in what they should measure except that trying to determine which customers are “loyal” or “at risk” is not about their future behaviour but more about their “attitudinal” loyalty (are they advocates?).

Perhaps a better or more relevant way for utilities to approach the definition of customer loyalty is to expand further how they think about loyalty. Consider the following definition: Customer loyalty is an emotional disposition on the part of the customer that affects the way(s) in which the customer (consistently) interacts, responds or reacts towards the company – its products & services and its brand.



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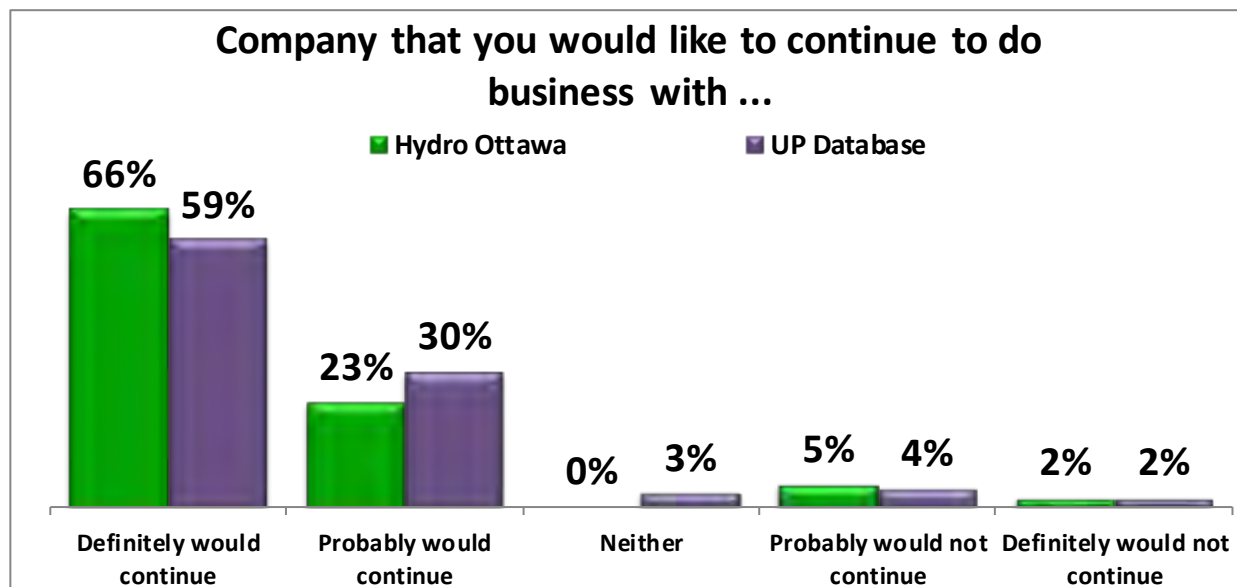
Customer commitment to the local electricity supplier is a very important driver of customer loyalty in the electricity service industry. In a similar way to trust, commitment is considered an important ingredient in successful relationships. In simpler terms, commitment refers to the motivation to continue to do business with and maintain a relationship with a business partner, i.e. the local utility. For electric utilities, this measurement is about identifying the number of customers who feel that they “want to” vs. “have to” do business with you.

Customer Loyalty Model



Electricity customers' loyalty – ... Is a company that you would like to continue to do business with		
	Hydro Ottawa	UP Database
Top 2 Boxes:		
'Agree strongly + agree somewhat'	90%	89%
Agree strongly	66%	59%
Agree somewhat	23%	30%
Neither agree or disagree	0%	3%
Disagree somewhat	5%	4%
Disagree strongly	2%	2%

Base: total Large Customer respondents



Base: total Large Customer respondents

What does it mean to respond favourably to a company? At a basic level, this can mean choosing to remain a customer. As previously mentioned, however, this is essentially a non-issue for many utility companies. It then becomes necessary to think beyond just customer retention. One needs to consider other ways in which customers can respond favourably toward a company.

Other favourable responses or behaviours are classified into one of three categories that reflect the concept of customer loyalty:

- Participation
- Compliance or Influence
- Advocacy

Specific examples of potential participatory behaviour in the electric utility industry include:

- Signing up for programs that help the customer reduce or manage their energy consumption
- Using the utility as a consultant when selecting energy products and services from a third party
- Participating in pilot programs or research studies.

Specific examples of potential compliance or influence behaviours that utility customers might exhibit include:

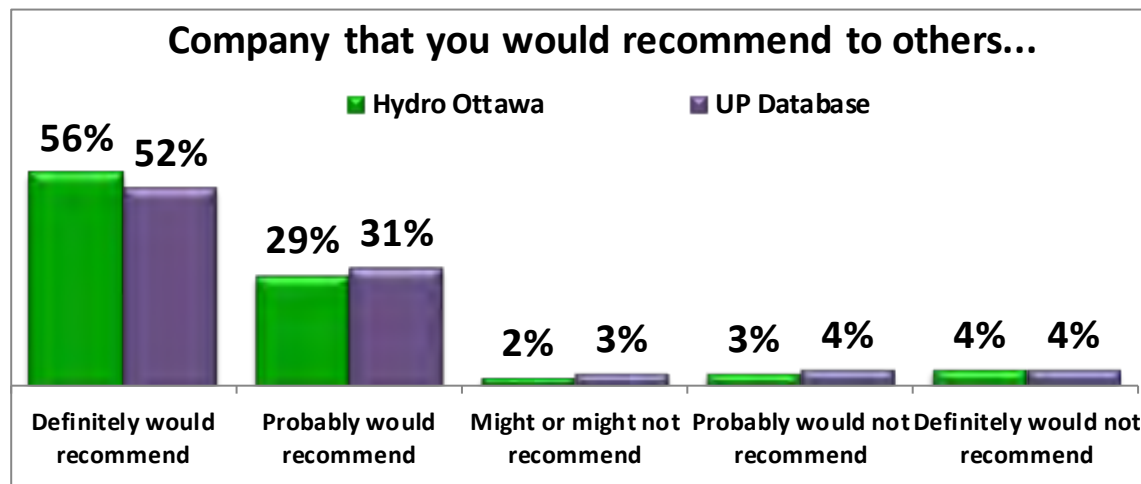
- Seeking the utility's advice or expertise on an energy-related issue
- Voluntarily cutting back on electricity usage if the utility advised the customer to do so
- Accepting the utility's energy advice or referrals to energy contractors or equipment
- Being influenced by the utility's opinion regarding energy- management advice, equipment, or technologies
- Providing personal information
- Paying bills online.

Creating customer advocates can be especially important for a company in a regulated industry. In the absence of customer advocates, or worse, in a situation where customers speak unfavourably about a company or actively work to support issues that are counter to those the company supports, companies can suffer a variety of negative consequences like increased business costs, lawsuits, fines, and construction delays. Specific examples of potential advocacy behaviour include:

- Supporting the utility's positions or actions on energy-related public issues, including the environment
- Supporting the utility's position on the location and construction of facilities
- Providing testimonials about positive experiences with the utility.

Electricity customers' loyalty – ... is a company that you would recommend to others		
	Hydro Ottawa	UP Database
Top 2 boxes:		
'Agree strongly + agree somewhat'	86%	83%
Agree strongly	56%	52%
Agree somewhat	29%	31%
Neither agree or disagree	2%	3%
Disagree somewhat	3%	4%
Disagree strongly	4%	4%

Base: total Large Customer respondents

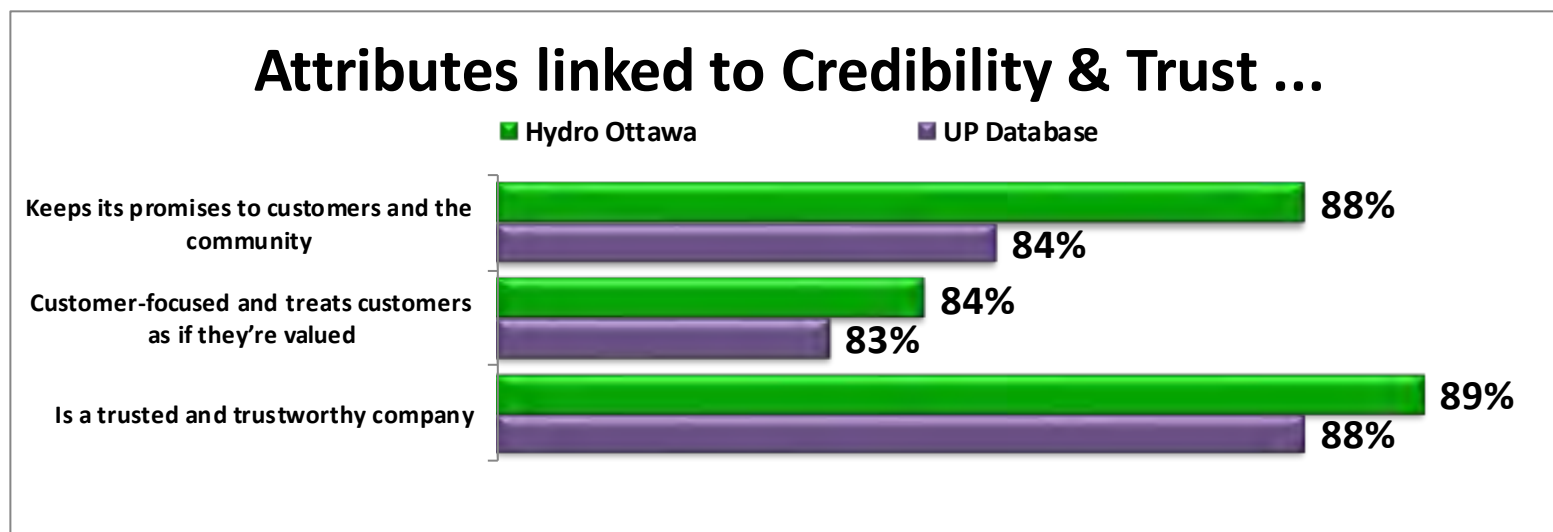


Base: total Large Customer respondents



Corporate image, credibility & trust

What Hydro Ottawa stands for, the way it works with customers, its profile in the industry are all parts of its brand. Throughout our years of research, our data show a direct relationship between a positive brand image and the credibility of the LDC.



Base: total Large Customer respondents with an opinion

Attributes strongly linked to Credibility & Trust		
	Hydro Ottawa	UP Database
Keeps its promises to customers and the community	88%	84%
Customer-focused and treats customers as if they're valued	84%	83%
Is a trusted and trustworthy company	89%	88%

Base: total Large Customer respondents with an opinion

Creating credibility is a process, which advances only through honest, continuous communication between the utility, its regulators, and the public at large.

Pro-active and credible communications from an LDC should do three things for its customers:

- 1- demonstrate competency
- 2- build confidence and
- 3- show a future orientation.

Trust and credibility are indicators of the degree of confidence stakeholders have in your organization's ability to deliver on its commitments. Trust and credibility are outcomes based on what your utility does, not what it might be doing.

Knowledge is captured by the utility's ability to demonstrate that it is actively aware of industry, regulatory and economic changes within the industry and how these might impact the lives of customers.

Trust — Trust is achieved through a track record of consistent and reliable performance, delivering on commitments and demonstrated accountability.

Integrity is established by demonstrating adherence to a code of conduct. It requires consistently acting in accordance with the values and goals that have been communicated to customers.



Simul/UtilityPULSE research shows the under-pinning components which lead customers to believe an organization has credibility and can be trusted are: Knowledge, Integrity, Involvement and Trust.

Involvement — Corporate Involvement is increasingly important to Canadian communities as it is an opportunity for their local utility to use their resources and man-power to benefit people at the community level. This helps to build credibility as customers see that the organization is acting and delivering on its commitments. This helps customers regard the utility with esteem and respect.

Credibility and Trust Index
Hydro Ottawa 88%
UP Ontario database 85%

Base: total Large Customer respondents

Brand image is the combination of customers' levels of awareness and association with the enterprise. It constitutes what customers *think* of the LDC's overall brand and what customers *feel* about the LDC based on impressions received about or interactions made with the LDC. The brand image then is built on name recognition and the belief of the organization's ability to live up to its brand promises.

Attributes strongly linked to a hydro utility's image		
Top 2 Boxes: 'strongly agree + agree'	Hydro Ottawa	UP Database
Customer focused and treats customers as if they're valued	84%	83%
Is pro-active in communicating changes & issues that may affect customers	83%	81%
Is 'easy to do business with'	87%	86%
Accurate billing	89%	85%
Delivers on its service commitments to customers	90%	87%
Keeps its promises to customers and the community	88%	84%
Is a trusted and trustworthy company	89%	88%

Base: total Large Customer respondents with an opinion

Every LDC has a brand and a brand image. While that image is affected by events in the industry beyond the control of the LDC, the reality is there is a cost benefit to improving the customer experience, generating higher levels of customer engagement and growing the loyalty, i.e., affinity level with your customers. Customers expect their LDC will conduct its business professionally **AND** be a proactive enterprise.

How can service to customers be improved?

Business success and survival hinges on an organization's ability to continuously improve everything it does. Your Large customers were asked for their input on service improvements. Using their responses as a guide will help you to identify which services you are offering are meeting your business objectives or addressing your customers' needs.

In addition, Hydro Ottawa should:

- Identify process bottlenecks so that you can make changes to drive service improvement
- Report key over and under performance indicators to all levels of your organization to help everyone focus on meeting your committed service levels
- Make business service data immediately accessible and actionable so that you can confidently make business decisions
- Invest to help employees succeed. By and large, employees want to perform well at their jobs. But improvements will be slow or nonexistent if people are dealing with outdated tools or policies that hinder them from delivering optimal performance.



Here is what some of your Large customers had to say:

And we are interested in knowing what you think are the one or two most important things 'your local utility' could do to improve service		
	Hydro Ottawa	UP Database
Better prices / lower prices	27%	24%
Improve billing / simplify the bill	10%	8%
Better communication i.e., notice of work	10%	8%
More information during outages	8%	6%
Restore power faster	7%	16%
Faster customer service response times	7%	7%
Better maintenance	5%	5%
Upgrade infrastructure	5%	5%
More energy conservation information	4%	6%
Improve website	4%	4%
Know your customers/more personal interaction	3%	3%
Bury overhead wires	3%	1%
Provide information on electricity generation	3%	2%
More knowledgeable staff	2%	4%
Satisfied / no problem	16%	21%

Base: total Large Customer respondents who made recommendations

Priority Planning

In the 2018 Large Customer survey, LDCs reached out to their Large Customers for comments on prioritizing various operational activities and financial investments. In today's highly competitive business environment, it is critical to gain a clearer picture and focus on what is important, versus checking things off down a list. By engaging stakeholders and obtaining their input in undertaking a priority planning process helps to build "prepared minds"—that is, to make sure that the LDC decision makers have a solid understanding of the business, potential strategies to be employed, and work to fill in any assumptions behind that strategy. Making it possible for LDC executives, managers and staff to respond swiftly to challenges and opportunities as they occur in real time.

A focus on priorities can lower risk, increase efficiency and optimize resource utilization - resulting in faster deliveries of key requirements.

Respondents were asked to comment on the priority level of the implementation or execution 17 different initiatives/projects which encompass operational aspects and/or financial commitment.



Priority Planning within the next 5 years		
Top 2 Boxes: 'very high + high priority'	Hydro Ottawa	UP Database
Maintaining and upgrading equipment	88%	89%
Reducing response times to outages	87%	90%
Investing more in the electricity grid to reduce outages	86%	86%
Providing expertise to commercial customers regarding changes in energy technology	76%	72%
Educating the public as it relates to electricity safety	75%	74%
Investing in projects to reduce the environmental impact of the utility's operations	73%	76%
Coordinating infrastructure planning with commercial customers	73%	72%
Educating customers about energy conservation	72%	74%
Investing more in tree trimming to help reduce the number of outages	71%	74%
Improving power quality	70%	74%
Burying overhead wires	64%	61%
Exhibiting strong leadership in the electricity industry	60%	59%
Developing a SMART phone application to allow you to view usage and pay your bill	52%	48%
Providing sponsorships to local community causes	48%	48%
Engaging with commercial customers on a more frequent basis	48%	50%
Providing more self-serve services on the website	43%	46%
Making better use of social media (such as Twitter, Facebook, etc.)	34%	28%

Base: total Large Customer respondents

Priority Planning for the next 5 years		
Bottom 2 Boxes: 'low + very low priority'	Hydro Ottawa	UP Database
Making better use of social media (such as Twitter, Facebook, etc.)	36%	35%
Developing a SMART phone application to allow you to view usage and pay your bill	26%	25%
Providing more self-serve services on the website	23%	22%
Providing sponsorships to local community causes	21%	22%
Engaging with commercial customers on a more frequent basis	20%	19%
Burying overhead wires	18%	13%
Exhibiting strong leadership in the electricity industry	13%	12%
Educating customers about energy conservation	11%	9%
Improving power quality	11%	7%
Investing more in tree trimming to help reduce the number of outages	10%	9%
Investing in projects to reduce the environmental impact of the utility's operations	10%	8%
Providing expertise to commercial customers regarding changes in energy technology	10%	9%
Educating the public as it relates to electricity safety	9%	10%
Coordinating infrastructure planning with commercial customers	8%	8%
Investing more in the electricity grid to reduce outages	4%	5%
Maintaining and upgrading equipment	4%	3%
Reducing response times to outages	4%	3%

Base: total Large Customer respondents

Based on the responses received from Large Customer survey respondents for Hydro Ottawa, the top 5 initiatives which were given **high priority** ('very high + high') rating within the next 5 years are as follows:

- | | |
|---|-----|
| 1- Maintaining and upgrading equipment | 88% |
| 2- Reducing response times to outages | 87% |
| 3- Investing more in the electricity grid to reduce outages | 86% |
| 4- Providing expertise to commercial customers regarding changes in energy technology | 76% |
| 5- Educating the public as it relates to electricity safety | 75% |



Based on the responses received from Large Customer survey respondents, the following 5 initiatives are those which were given the **lowest priority** ('low + very low') by Hydro Ottawa ratings within the next 5 years:

- | | |
|--|-----|
| 1- Making better use of social media (such as Twitter, Facebook, etc.) | 36% |
| 2- Developing a SMART phone application to allow you to view usage and pay your bill | 26% |
| 3- Providing more self-serve services on the website | 23% |
| 4- Providing sponsorships to local community causes | 21% |
| 5- Engaging with commercial customers on a more frequent basis | 20% |



Thinking ahead... a look into the future

Looking through the microscope while simultaneously looking through the telescope is what helps companies be more relevant & successful today while they prepare to be successful again “tomorrow” in a changed world. Though there are many factors which can affect the level of consumption for larger customers, your 2018 survey did ask respondents about the future.



...Thinking ahead over the next 1-2 years do you anticipate any changes to your business that would affect electricity consumption more than 5% up or down?		
	Hydro Ottawa	UP Database
Yes	27%	30%
No	70%	65%
Not at liberty to say	0%	0%
Don't know	3%	5%

Base: total Large Customer respondents

For those who did anticipate a change of more than 5% up or down:

...Could you tell us what might cause this change to electricity consumption...		
	Hydro Ottawa	UP Database
Business is growing	13%	27%
New machinery/change equipment	9%	11%
More work (e.g., products and services are being added)	6%	12%
More efficient lighting	22%	11%
Implementing conservation measures	34%	19%
Generating own electricity	4%	4%
More space	4%	-
Business is falling off	3%	1%
Moving to another location	3%	1%
Costs	10%	4%
Downsizing	0%	2%
Retro-fits	4%	3%
Other	7%	8%
Don't know	1%	3%

Base: total Large Customer respondents

Energy Storage

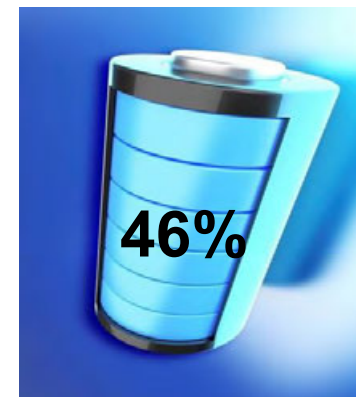
Definition: Energy storage is the capture of energy produced at one time for use at a later time.

Energy storage is something that more and more LCs are thinking about. Battery storage technologies along with other energy storage equipment seem to be going from being unfamiliar and novel to being known and economically sensible. The ability to fill up batteries with power (from off-peak times) for peak-shifting and storing production seems to be gaining the interest of consumers and operators alike.

“Prior to this interview how familiar are you with the subject of energy storage?”

Familiarity with energy storage such as batteries and other equipment		
	Hydro Ottawa	UP Database
Very familiar	11%	12%
Somewhat familiar	36%	34%
Neither familiar or unfamiliar	0%	0%
Not too familiar	29%	30%
Not at all familiar	24%	24%
Don't know	0%	0%

Base: total Large Customer respondents, may not add to 100% due to rounding

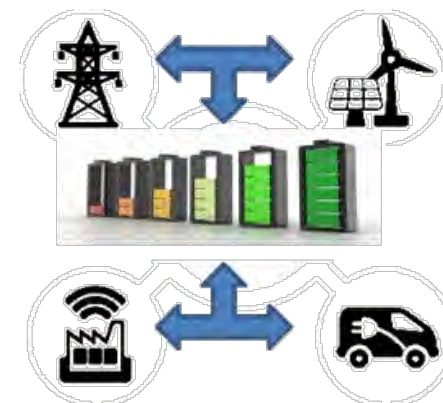


are familiar with energy storage such as batteries and other equipment.

Base: total Large Customer respondents:
 Top 2 Boxes: 'very + somewhat familiar'

Your LC survey respondents were asked about their familiarity with energy storage technologies: 46% of respondents indicated they were either "very or somewhat familiar" vs 46% in the UP database, 53% were "not at all or not too familiar" vs 54% in the UP database.

If utilities could store power during periods of low demand, then release it during peak times it would save a considerable sum of money on capital costs, while also smoothing out frequency variations and providing voltage support. Same could be said for business owners; valuable energy can be saved by storing surplus electricity in an energy storage system, and using it when needed. Also, a business energy storage system could act as a substitute for emergency generators during a power outage. Your LC respondents who indicated they had some familiarity with the subject of energy storage were asked about their interest in implementing energy storage in the next 3 years:



72% responded they were interested (“very + somewhat interested”) vs. 66% in the UP database, while 26% expressed disinterest (“definitely + somewhat not interested”) vs. 31% in the UP database.

Interest in implementing energy storage in the next 3 years		
	Hydro Ottawa	UP Database
Very interested	27%	24%
Somewhat interested	46%	42%
Neither interested or uninterested	0%	1%
Somewhat not interested	9%	12%
Definitely not interested	16%	19%



72% are interested in implementing energy storage in the next 3 years.

Base: total Large Customer respondents who were familiar with energy storage, may not add to 100% due to rounding

Appendix A: Recommendations for your next Large Customer Survey

History and experience tell us this group of customers are notoriously difficult to connect with and to do a survey with. Anyone in a managerial or professional position, in any company, is time-pressed. To improve the willingness of prospective respondents to participate in future LC surveys we recommend:

1. Continuously improving the quality of customer information contained in your system remains a highly important activity. We recommend conducting a verification check, at least annually.
2. Set up a system to send a pre-notification letter/postcard/email to customers or a department (if the name is unknown) letting them know about the upcoming survey and how they could go about updating their contact information; when the survey is conducted again in the future.
3. Where Hydro Ottawa has assigned major accountant customer responsibilities to specific personnel, consider having them reach out to their assigned accounts before conducting the next survey.
4. Send out a “thank you for participating in the survey” memo/letter/email with some highlights.
5. Track LC customer inquiries to help shape questions in future surveys.

Appendix B: Operational Recommendations:

- 1- [from 2017] Key-account management principles continue to evolve. A review of strategies, policies, and standards can be a productive exercise. Continue to review your definition of Key Accounts and then refine your Key Account Management (KAM) strategy & goals.
- 2- Update formal visitation standards, i.e., who visits which companies with a focus on both subject matter and frequency of the visit.
- 3- We recommend updating industry segment information for your LCs. Over time, and as customer information systems become more robust, client issues & comparisons could be generated by industry segment.
- 4- As stated in the body of the report, attributes with the highest “don’t know” answers or largest standard deviations represent a communication and educational opportunity.
- 5- [from 2017] When/if there is an invoicing inquiry, we recommend that the assigned Hydro Ottawa account professional be made aware of the inquiry and the outcome (assuming the invoice issue didn’t come through the assigned representative).
- 6- Develop consistent answers to the top inquiries that LCs make.
- 7- As we look into the future, we believe setting up a pattern of communications to solicit “viewpoints” and “feedback” will become increasingly important to all parties.

- 8- [From 2017] Look for ways to provide additional value to your Key Accounts such as:
- a. Holding an on-site seminar regarding energy conservation for employees
 - b. Conducting an energy consumption review
 - c. Use power quality measuring equipment for monitoring quality.
- 9- Energy storage will become a larger opportunity/issue in the future for every LDC. Internal discussions about how to handle questions about this subject should take place sooner rather than later.
- 10-[From 2017] In 2020 your LDC will be reporting results from its “public safety” survey as this is a measurement on an LDC’s scorecard. Targeted information sessions/seminar on the premises of the larger commercial customer could potentially be a way to educate more people in the community about electricity safety and being seen as providing value.
- 11-[From 2017] In addition to #10, identifying Key Accounts with active Safety Committees could present an excellent opportunity to provide electricity safety information.
- 12-We recommend being active in local chapters of building, developer, general contractor and electrical contractor associations.
- 13-With increasingly society complexities and rising “disruptive activity” we highly recommend running “mock” emergency scenarios.
- 14-Create a system of follow-up for any inquiry that an LC makes.

Method

The findings in this report are based on telephone interviews conducted for Simul Corp./ UtilityPULSE by the Logit Group between September 20 to October 10, 2018, with respondents have the responsibility to interact with their electric utility when there is an outage.

The sample of phone numbers chosen was drawn randomly to ensure each customer account phone number on the list had an equal chance of being included in the poll.

Small sizes in this customer segment are very small. As such we recommend interpreting the data as “directional information” only. Small sample sizes have a wider margin of error. UtilityPULSE provides you with its database information to help interpret results.

The margin of error for the sub-samples is larger. To see the error margin for subgroups, use the calculator at <http://www.surveysystem.com/sscalc.htm>.

The margin of error refers only to sampling error; other non-random forms of error may be present. Even in true random samples, precision can be compromised by other factors,

such as the wording of questions or the order in which questions were asked.

Random samples of any size have some degree of precision. A larger sample is not always better than a smaller sample. The important rule in sampling is not how many respondents are selected but how they are selected. A reliable sample selects poll respondents randomly or in a manner that ensures that everyone in the population being surveyed has an equal chance of being selected.

Interviewers completed 250 surveys from a randomly generated Large Commercial customer list supplied by Hydro Ottawa with a margin of error of +/- 5.96%. Participation response was 17.7%.

Data from the UtilityPULSE database is comprised of Ontario based customers [>50kW] - Large Commercial customer surveys completed throughout the previous 12 months.



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Dealing with
 Difficult Customers

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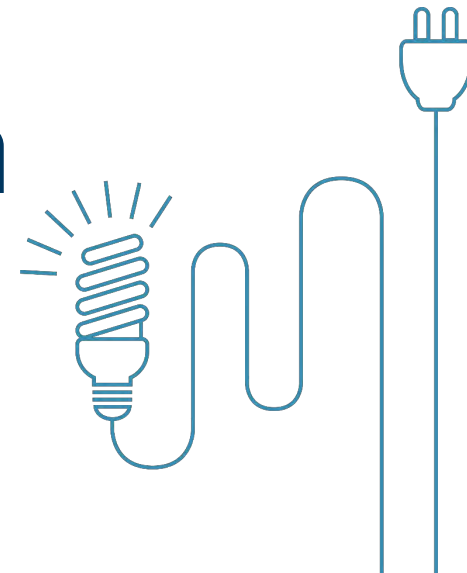
Your personal contact is:

Sid Ridgley

Phone: (905) 895-7900 Fax: (905) 895-7970 E-mail: sridgley@simulcorp.com



National Electricity Customer Satisfaction Report



January 2019

2018 National Electricity Customer Satisfaction Report Confidentiality

This report and all of the information and data contained within it may NOT be released, shared or otherwise disclosed to any other party, without the prior, written consent of Hydro Ottawa-Electric System Ltd. and the consent of the other CEA members included in this Report.

In addition and without limitation, comparative information besides company specific and corresponding national comparative results cannot be released in any public forum (such as company websites, regulatory proceedings, press releases or annual reports) without the consent of the companies or jurisdictions to which you are comparing.

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Key Findings

Hydro Ottawa improves year-to-year and outperforms provincial averages on all brand attributes



1. **Satisfaction and CSI increase in 2018.** Despite an increase in reported outages, general satisfaction with Hydro Ottawa and the utility's CSI increase in 2018. Regression analysis shows that the number of outages a customer experiences does not significantly impact their satisfaction with, or likelihood to recommend, Hydro Ottawa.
2. **"Quality and reliability" drives satisfaction and NPS.** Providing quality and reliable electricity service is one of the key drivers of customer satisfaction and NPS. On all five benchmarks that make up the "Quality and Reliability" factor, Hydro Ottawa has improved drastically year-to-year.
3. **Customer focus drive satisfaction.** Customers want to know that they matter to Hydro Ottawa. On all four attributes that make up the "Customer Focus" factor, Hydro Ottawa has improved substantially over the past year.
4. **Billing practices drives NPS.** Hydro Ottawa made gains on all attributes making up the "Billing Practices" factor from 2017.
5. **Value is also important.** Hydro Ottawa customers are marginally ahead of the provincial average on feeling that they are getting good value for what they pay for electricity. This is good news because this is another driver of satisfaction and NPS.
6. **Environmental controls.** With a continuing upward trend on utility satisfaction among those unhappy with government management, it appears that Hydro Ottawa is not only keeping happy people happy, but they are also overcoming dissatisfaction with government management.



Update on Core Benchmarks

Distributor Satisfaction

- General satisfaction with Hydro Ottawa is 11 points higher than it was in 2017, largely due to an increase in the proportion who are "very satisfied".
- Net satisfaction has increased on all brand attributes.
- On 5 out of 10 brand attributes, net satisfaction with Hydro Ottawa is higher than the national average.

Reliability & Power Quality

- The proportion who have experienced two or more outages has increased 7 points from 41% in 2017 to 48% this year.
- Hydro Ottawa's net satisfaction is highest on power reliability (+75%) and power quality (+74%).
- Net satisfaction with the provision of timely and accurate information (+47%) and considering customer needs when planning outages (+39%) is significantly lower than other benchmarks.

Billing & Payment

- E-bills (48%) are marginally more common than paper bills (45%) among Hydro Ottawa customers.
- Net satisfaction across billing attributes has increased at least 7 points since 2017, with increases in satisfaction intensity as well.

Communications

- At +65%, net satisfaction with overall communications from Hydro Ottawa is 26 points higher than it was in 2017.
- Net satisfaction with all forms of communication has increased across all attributes by as many as 31 points (outage notification: +8% in 2017, +39% in 2018).
- Half (52%) feel their customer experience with Hydro Ottawa is similar to other companies, but over a third (35%) say it is better.

Price

- Perception of electricity prices in Ontario is unchanged since 2017, with 35% deeming prices reasonable.
- Customers' perception that prices are reasonable is on par with the provincial average (34%), but it is 10 points lower than the national average (45%).
- Perception of value for money has also remained steady, with 33% agreeing that they get good value. Hydro Ottawa is slightly above the provincial average (28%) but slightly below the national average (37%).



Summary of New Issues

Planned Outages

- 3-in-10 (29%) have been impacted by a planned outage in the past two years, on par with provincial and national averages.
- Of those who have experienced a planned outage, most (76%) reported proactive communication from Hydro Ottawa, and most of them (86%) were satisfied with the communication they received.

Conservation

- One-in-ten (10%) say they have already sought information about conservation from their electricity company, and nearly half say they are either “very” (14%) or “somewhat” (31%) likely to do so.
- Half of those who have sought or are likely to seek out information say saving money (53%) is the primary reason for seeking information on electricity conservation.
- Most of those who are not likely to seek out information (56%) say they are most interested in conservation programs that include an incentive, with incentives on heating and cooling (20%) being the most popular. Tips and tools are the most popular non-incentive program at 23%.

Technology

- Net willingness to pay more for technology is lowest (-17%) for making it easier to interact with their distributor, compared to a net score of +31% for technology what would reduce the grid’s environmental impact.
- Only 3% have already bought an EV. Another 39% say they are likely to do so.
- Environmental benefits are the primary reason for interest in an EV (n=11) among those who are at least somewhat likely to buy an electric car (n=35), whereas cost (29%) is the main barrier for those who are not.

Methodology & Demographics

Research Overview

The Canadian Electricity Association (CEA) commissioned Innovative Research Group Inc. (INNOVATIVE) to conduct the CEA’s 2018 Annual National Electricity Customer Satisfaction Survey. The focus of this survey is public attitudes towards the electricity companies that serve them.

In 2018, the survey re-introduced Net Promoter Score (NPS) for distributors and key satisfaction metrics for transmitters.

Key company-specific (distributor) topics include:

- Overall satisfaction
- Performance attributes
- Customer experience (*planned outages, billing, and other customer contact*)
- Net Promoter Score

** Almost all respondents receive a bill from an electricity distributor and therefore they have a direct customer relationship with a utility. However, it should be noted that approximately 10% of respondents say they do not receive a bill directly from an electricity distributor.*

Other topics include:

- Key satisfaction metrics for transmitters
- The price of electricity
- Interest in conservation programs
- New technology
- Environmental controls (underlying factors – outside a utility’s control – that may impact perceptions of electricity companies)

Survey Methodology



The CEA’s 2018 Annual National Electricity Customer Satisfaction Survey is an online survey conducted by Innovative Research Group (INNOVATIVE). Data collection occurred between October 4th and October 29th, 2018 among 7,192 Canadian adults (18yrs or older).

A targeted oversample provided a total of 464 interviews with respondents who report receiving their electricity bill from Hydro Ottawa. Tracking results are drawn from the previous 2017 CEA National Survey.

The survey instrument was designed by INNOVATIVE, with input and direction from CEA members, and made available to respondents in either French or English.

The survey sample was weighted by age, gender and region using Statistics Canada Census data to reflect the actual demographic composition of the Canadian adult population. Because this is an online survey, and not a random probability sample, the results cannot be generalized across all Canadians, and we cannot apply a margin of error. Upon request, additional oversamples were conducted among the general population in a number of CEA member distribution service territories to provide greater confidence in the data at a sub-regional level of analysis. Oversampled regions were weighted down to a representative national sample size of n=1,600.** Respondents who receive a Hydro Ottawa bill were weighted by age and gender to a representative sample size of n=400.

Online survey respondents were recruited from a wide variety of sources to reflect the age, gender, and regional characteristics of the country as a whole. INNOVATIVE provided each survey respondent with a unique URL (hyperlink) to the online survey via an email invitation to ensure that only invited respondents are able to complete the survey. Unique URLs were disabled after survey completion to ensure that invited respondents could only complete their individual survey once.

Graphs and tables may not always total 100% due to rounding values rather than any error in data. Sums are added before rounding numbers.

*** NOTE ON TRACKING:** Reliable tracking from years prior to 2014 is limited to questions that were not impacted by the transition from 1-10 to 0-10 response scales in 2014. Where reliable tracking is available, in some instances it dates back as far as 2011.

**** NOTE ON WEIGHTING:** The survey data has been weighted by the population, age and gender distributions within 30 graphical sub-regions across Canada, using 2016 Census data. This weighting convention ensures that the survey data is representative at both the national- and provincial-levels of analysis.

Sample Design

	BC	AB	SK	MB	ON	QC	NB	PE	NS	NL	Total
Unweighted Sample (n)	465	410	623	412	3,657	374	396	101	199	555	7,192
Unweighted Sample (%)	6%	6%	9%	6%	51%	5%	6%	1%	3%	8%	100%
2016 Census Population (%)	13%	11%	3%	3%	38%	24%	2%	0%	3%	2%	100%
Weighted (n)	214	185	49	56	618	372	33	7	43	24	1,600



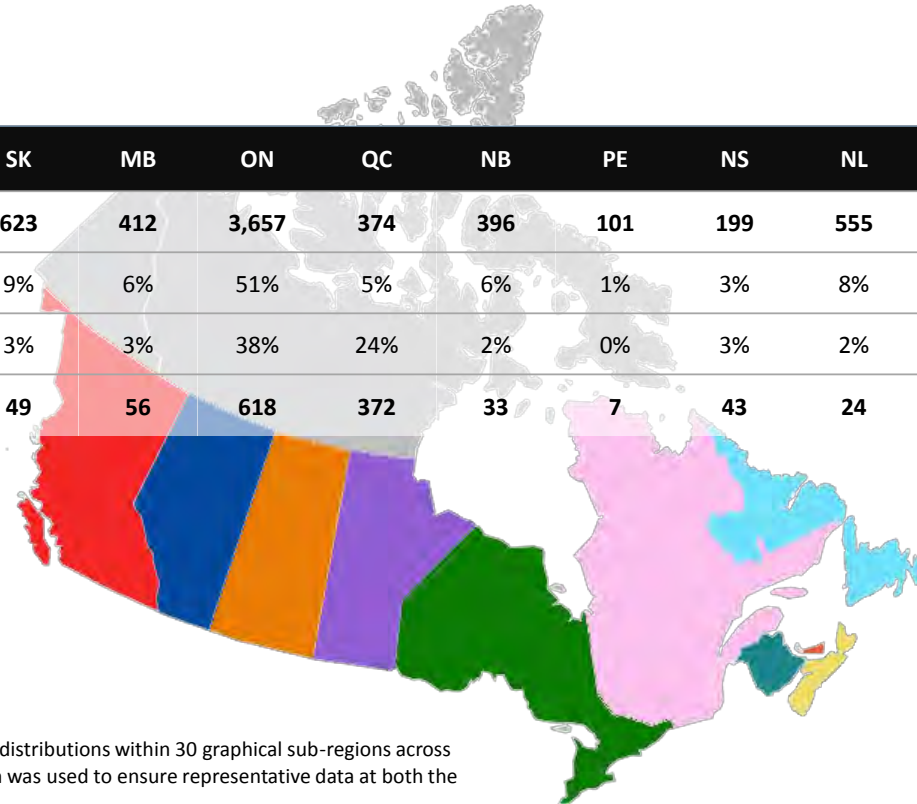
n=1,600

National Weighted Sample



n=450

Total Weighted Sample



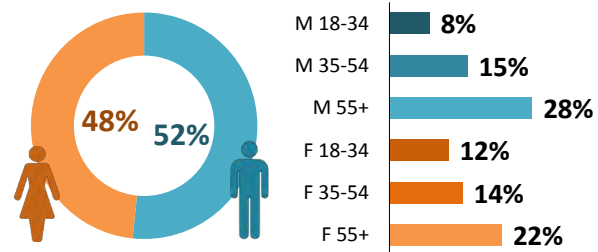
NOTE: The sample has been weighted by the population, age and gender distributions within 30 graphical sub-regions across Canada, using the latest available Census data. This weighting convention was used to ensure representative data at both the national- and provincial-levels of analysis.

Respondents from the territories are grouped with those in the nearby province for weighting purposes and regional analysis. Those from Yukon, Northwest Territories, and Nunavut are grouped together with BC, Alberta, and Manitoba respectively.

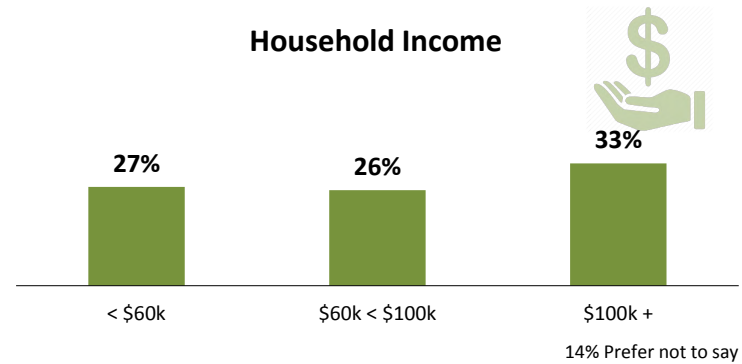
Oversampled regions were weighted *down* (as opposed to *up*) – from an unrepresentative national sample size of $n=7,192$ to a representative national sample size of $n=1,600$ – to ensure that respondent input from any region was not artificially inflated.

Demographics: *Hydro Ottawa's Service Area*

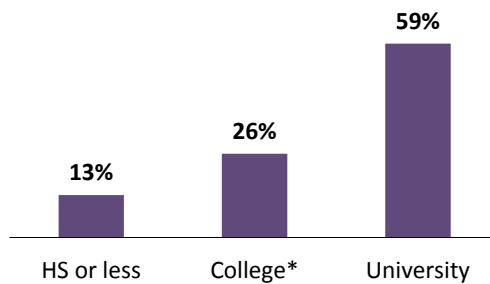
Gender and Age



Household Income

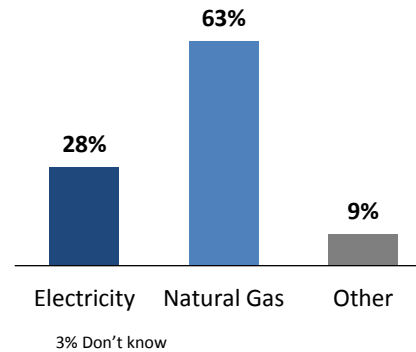


Education

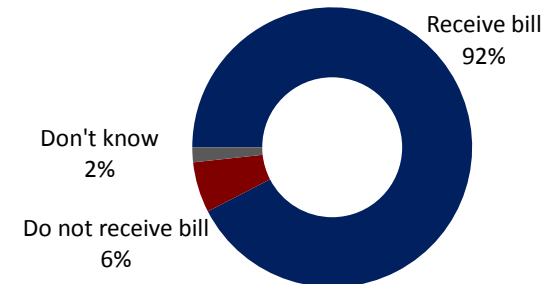


* Includes Diploma and Apprenticeship
 2% Prefer not to say

Primary Home Heating Source



Billing



Survey Design: Questionnaire Tracking

At the beginning of the survey, respondents are asked which company they get their electricity bill from. All survey questions prior to the Transmission questions relate back to this company. The company name is inserted into the actual question several times to remind respondents to base their responses on that company.

Survey Section	2018	2017	2016
Overall Satisfaction (Distributor)			
Familiarity with provincial electricity system	X		X
In general, how satisfied are you with Hydro Ottawa	X	X	X
Caring about its customers	X	X	X
Taking care of any problems the first time you contact them	X	X	X
Providing online services	X	X	
Operating in an environmentally responsible manner	X	X	X
Protecting public safety	X	X	X
Being trustworthy	X	X	
Being transparent	X	X	
Providing energy conservation and efficiency programs and information	X	X	
Being a good corporate citizen through initiatives such as contributing to community sponsorship programs	X	X	X
Consulting with customers before making decisions that impact them	X	X	
Reasons for contacting Hydro Ottawa in the past 12 months	X	X	X
Reliability and Power Quality			
In the past 12 months, how many power outages do you recall experiencing at home?	X	X	X
Providing reliable electricity service, as judged by the number of outages you experience	X	X	X
Providing timely and accurate information regarding outages	X	X	X
The amount of time it takes to restore power when power outages occur	X	X	X
Considering your needs when planning an outage	X	X	
The quality of power delivered to you taking into consideration voltage fluctuations, that can result in flickering or dimming of lights	X	X	
Planned Outages			
Over the past two years, have you been impacted by any planned outages?	X		
Did Hydro Ottawa proactively communicate with you about the most recent planned power outage that you experienced?	X		
Satisfaction with the way the company communication about planned outage	X		

NOTE: A red X indicates where question wording was slightly different in prior years

Survey Design: Questionnaire Tracking (cont'd)

Survey Section	2018	2017	2016
Billing and Payment			
Format of bill	X	X	
Providing accurate bills	X	X	
Providing bills that are easy to understand	X	X	
Providing convenient options to receive my bill	X	X	
Providing convenient options to pay my bill	X	X	
Communications			
Overall satisfaction	X	X	
Satisfaction with: Phone/In-person Website Social media Outage notifications Bill inserts Advertising Written inquiries	X	X	
Customer experience with Hydro Ottawa compared to that of other service providers	X	X	X
Conservation			
Likelihood to seek out information about energy conservation	X		
Reasons for / barriers to seeking information on conservation	X		
Conservation programs most interested in	X		
Technology			
Willingness to pay more for technologies to: Reduce outages Interact with distributor Test new tech Reduce environmental impact	X		
Priority for investing in new technology	X		
Likelihood of buying an electric car	X		
Reasons for buying / not buying an electric car	X		
Net Promoter Score (NPS)			
Likelihood to recommend Hydro Ottawa	X		X
Price			
Overall, do you think that the price for electricity in your province is reasonable or unreasonable?	X	X	X
My electricity bill has major impact on my finances and requires I do without other important priorities.	X	X	X
Thinking of all regular household bills, I receive good value for the price I pay for electricity.	X	X	X
General Attitudes			
Support for investment, replacement and/or expansion of electricity infrastructure to improve reliability and safety, and keep up with growth and innovation	X	X	X
Perception of increasing price of electricity to invest in electric system	X	X	X
Satisfaction with provincial government management of electricity system	X	X	X

A Note on Environmental Controls

What are environmental controls?

Environmental Controls: *Uncontrollable External Factors*

It is important to distinguish between what is within, and what is outside an electrical utility's influence or control when it comes to drivers of satisfaction.

Perceptions of electricity companies often tend to move with general perceptions of **provincial government performance in the sector** rather than in response to the utility itself.

In addition, perceptions of utilities are strongly correlated with **financial circumstances**. In tough times, perception and preference can change because customers are struggling with their bills, not because of anything the company has – or as not – done.

Control questions help distributors distinguish between two factors that impact public perception:

- a) utility-driven programs; and
- b) uncontrollable external factors.

In this survey, we include two environmental control questions to help capture external phenomena:



Government Performance: *How satisfied are you with the job your provincial government is doing to manage the electricity system?*



Financial Circumstances: *The cost of my electricity bill has major impact on my finances and requires I do without some other important priorities.*

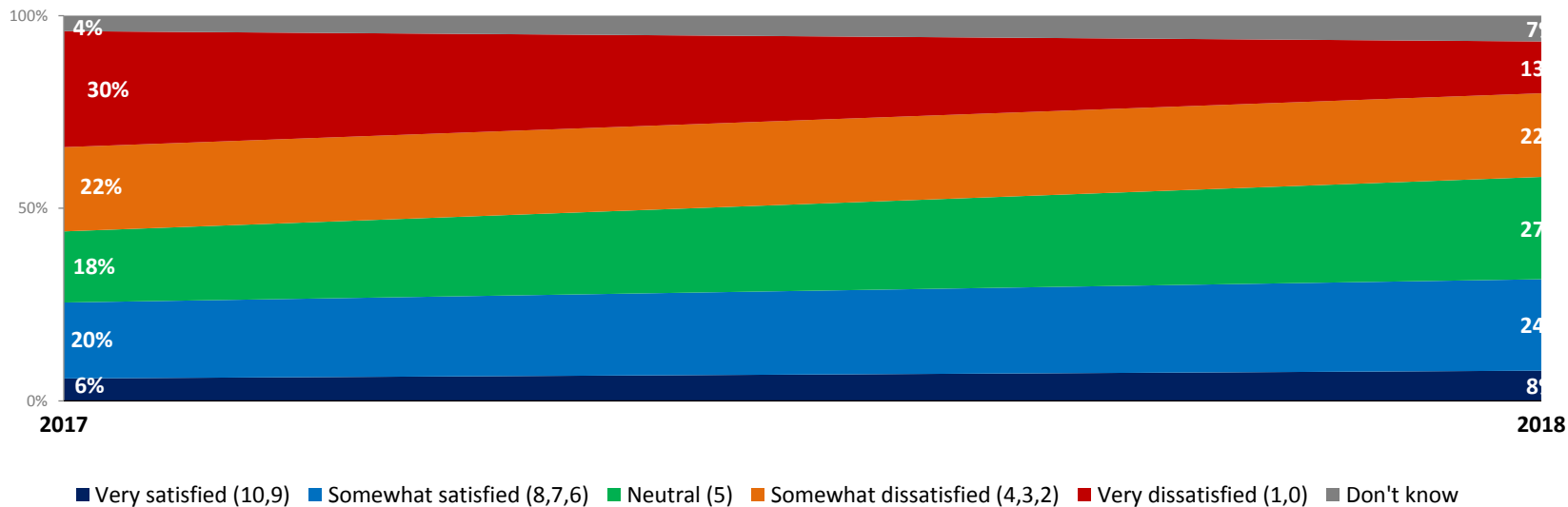
There is a more in-depth analysis of these environmental controls in the appendix

Gov't Performance | Tracking: While the level of satisfaction with government management is largely steady, the portion saying dissatisfied decreases



How satisfied are you with the job your provincial government is doing to manage the electricity system? Please use the scale from 0 to 10, where 0 means very dissatisfied and 10 means very satisfied.

[asked of all respondents, Hydro Ottawa; n=450]



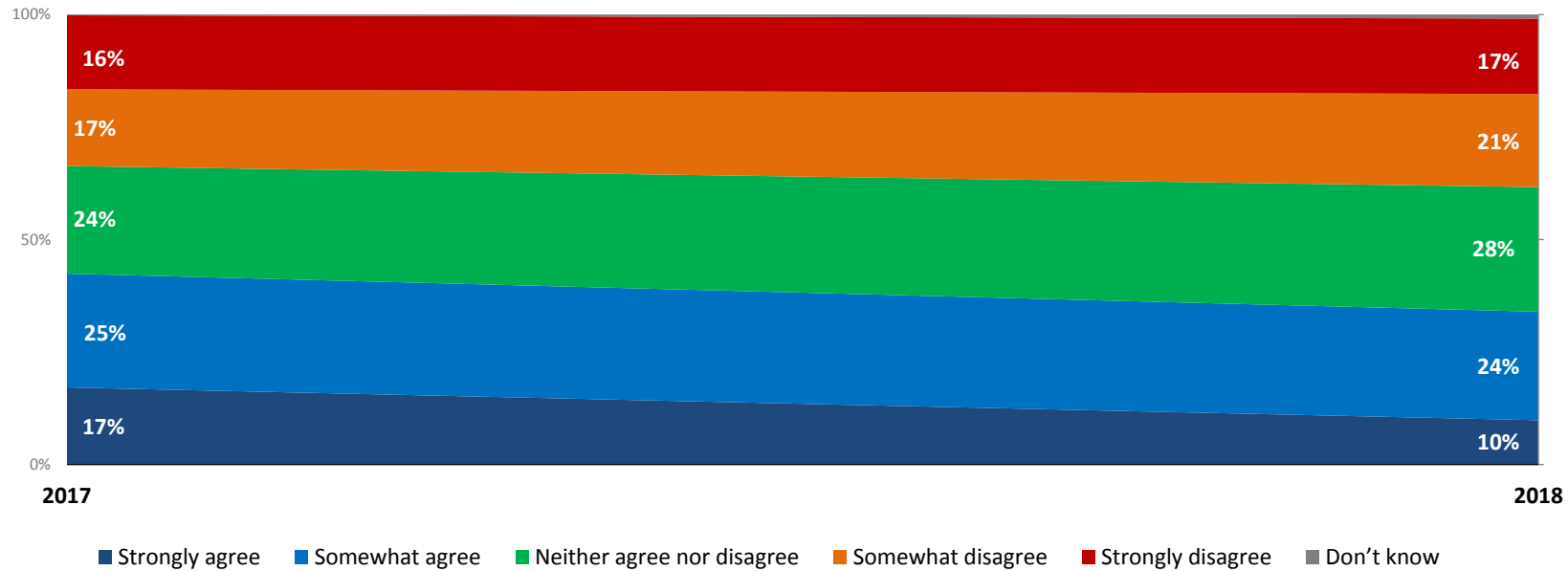
Financial Circumstances | Tracking: A third (34%) feel their bill impacts their finances, down from 42% last year



Do you agree or disagree with the following statement:

My electricity bill has major impact on my finances and requires I do without other important priorities.

[for tracking purposes, data filtered to show only those who receive a bill; Hydro Ottawa; n=416]



Customer Satisfaction Index (CSI)

Customer Satisfaction Index (CSI)

The **Customer Satisfaction Index (CSI)** is a number that summarizes respondents' overall satisfaction with their electricity distributor using an analysis of each brand attribute tested.

In 2014, INNOVATIVE updated the methodology used to construct the CSI. In 2017, the calculation methodology was updated again to reflect the survey redesign that occurred that year. This year's study follows the 2017 method.

Calculating CSI:

1. A **factor analysis** finds the true underlying dimensions of consumer satisfaction that explain the pattern of responses on the larger set of brand attributes.
 - Factor analysis allows us to find which attributes mean similar things to the public. The use of factor analysis allows us to determine which attributes should be grouped together in order to conduct meaningful analysis.
 - We tested **20 brand attributes** for all electricity companies in the analysis. While each of these attributes seems distinct in important ways to people who are close to the industry, many of these items seem similar to members of the general public. We found that **5 underlying factors**, along with 3 additional (standalone) attributes explain most of the variance in the larger set of attributes.
2. We use a **Shapley Values** regression analysis to determine the relative contribution of each *factor* to overall satisfaction.
 - *Shapley Values* are a calculation of how much of the variance in overall satisfaction can be explained by each individual factor, after statistically accounting for the fact that some of the factors are correlated with one another.
3. We then take an average of the mean score on each of the *factors*, weighted by their *Shapley Values* to determine the overall **CSI scores**.
4. *In keeping with the revised survey and analysis plan, the CSI is now being calculated as a single measure for all electricity companies included in the research.*

Factor Analysis (General Satisfaction): *Based on their responses, which attributes mean similar things to the public?*

Customer Focus

- Consulting with customers before making decisions
- Being transparent
- Caring about its customers
- Being trustworthy

Quality & Reliability

- Providing reliable electricity service
- The amount of time it takes to restore power
- The quality of power delivered to you

Billing Practices

- Providing convenient options to pay my bill
- Providing convenient options to receive my bill
- Providing bills that are easy to read and understand
- Providing accurate bills

Public Good

- Operating in an environmentally responsible manner
- Providing energy conservation and efficiency programs
- Protecting public safety
- Being a good corporate citizen

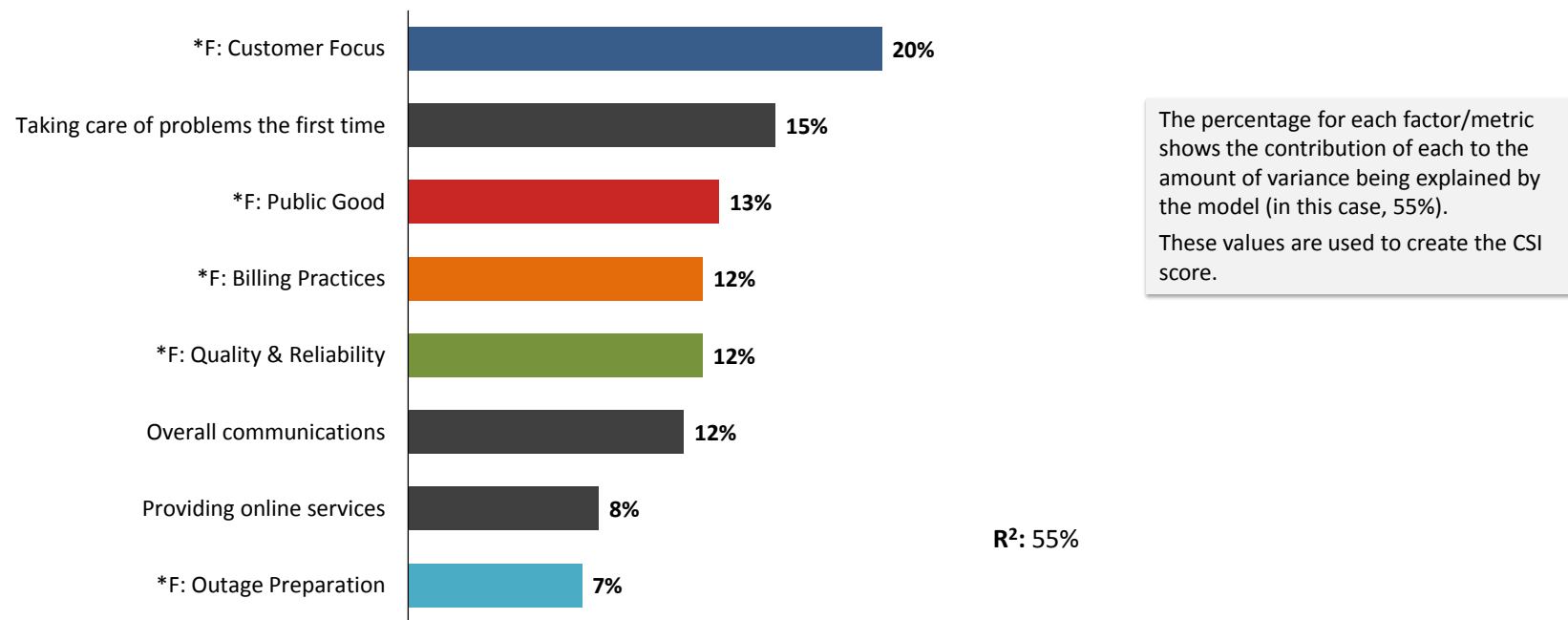
Outage Preparation

- Providing timely and accurate information re: outages
- Considering your needs when planning an outage

Standalones

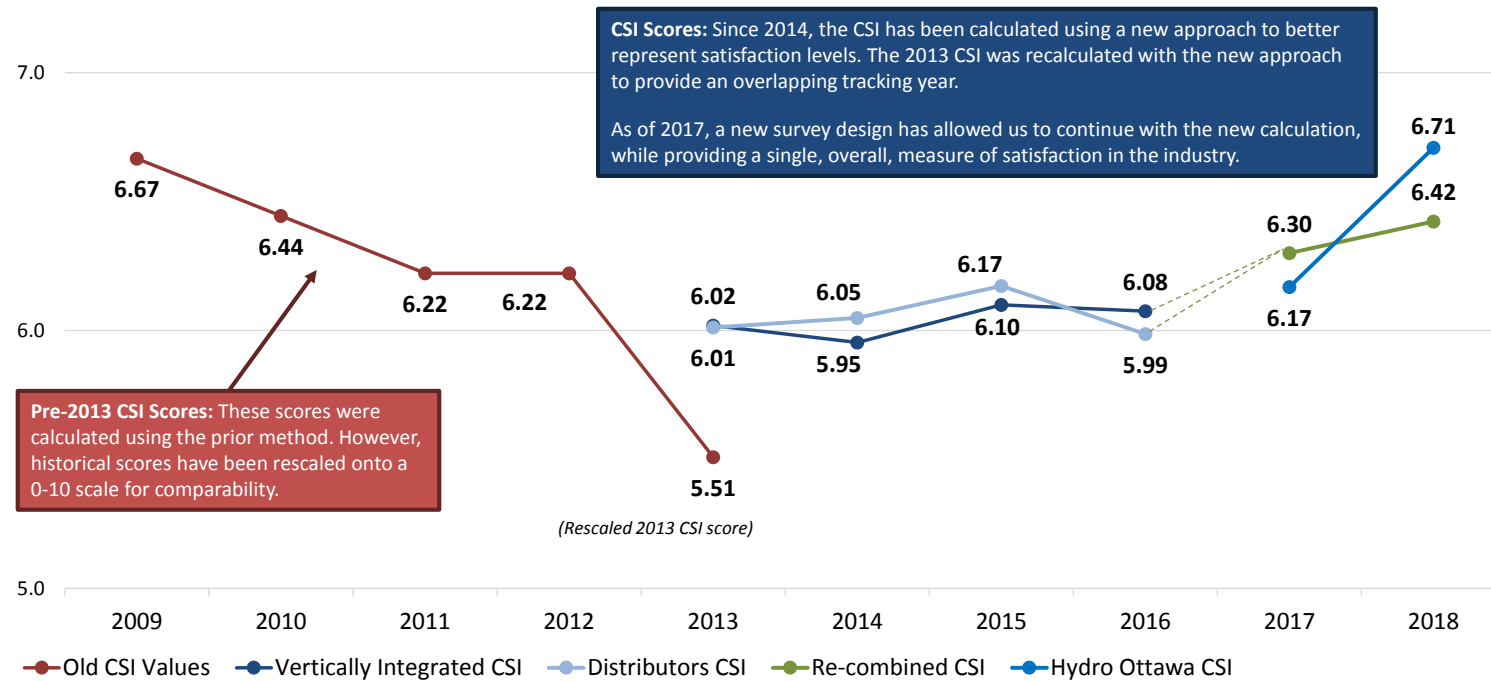
- Taking care of problems the first time you contact them
- Overall communication
- Providing online services

Shapley Values Regression: *Relative contribution of each factor to the Customer Satisfaction Index (CSI) according to Shapely Values regression*



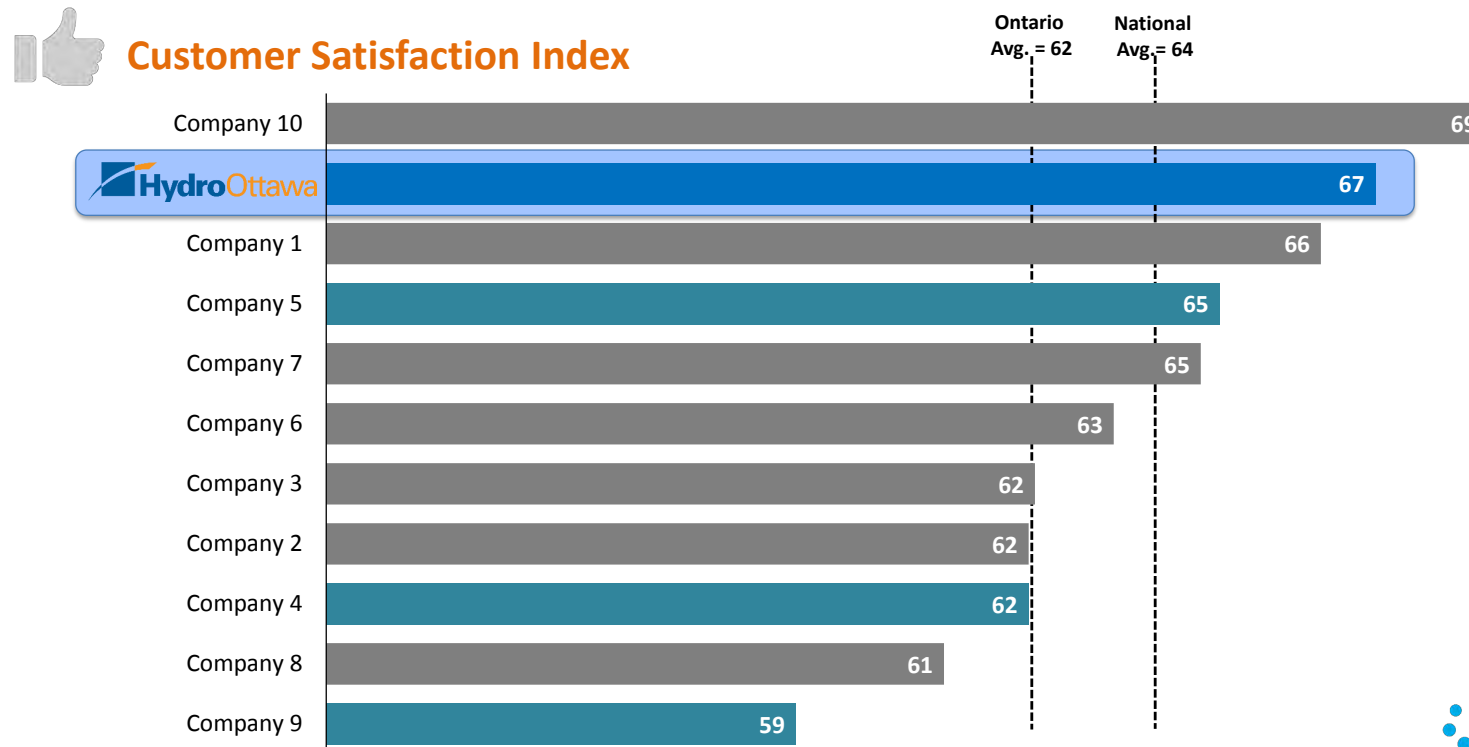
*F – Denotes what has been identified as a “factor”, where multiple attributes are viewed similarly to respondents. All others are standalone attributes

CSI Tracking: National CSI continues to improve, while Hydro Ottawa improves drastically year-to-year



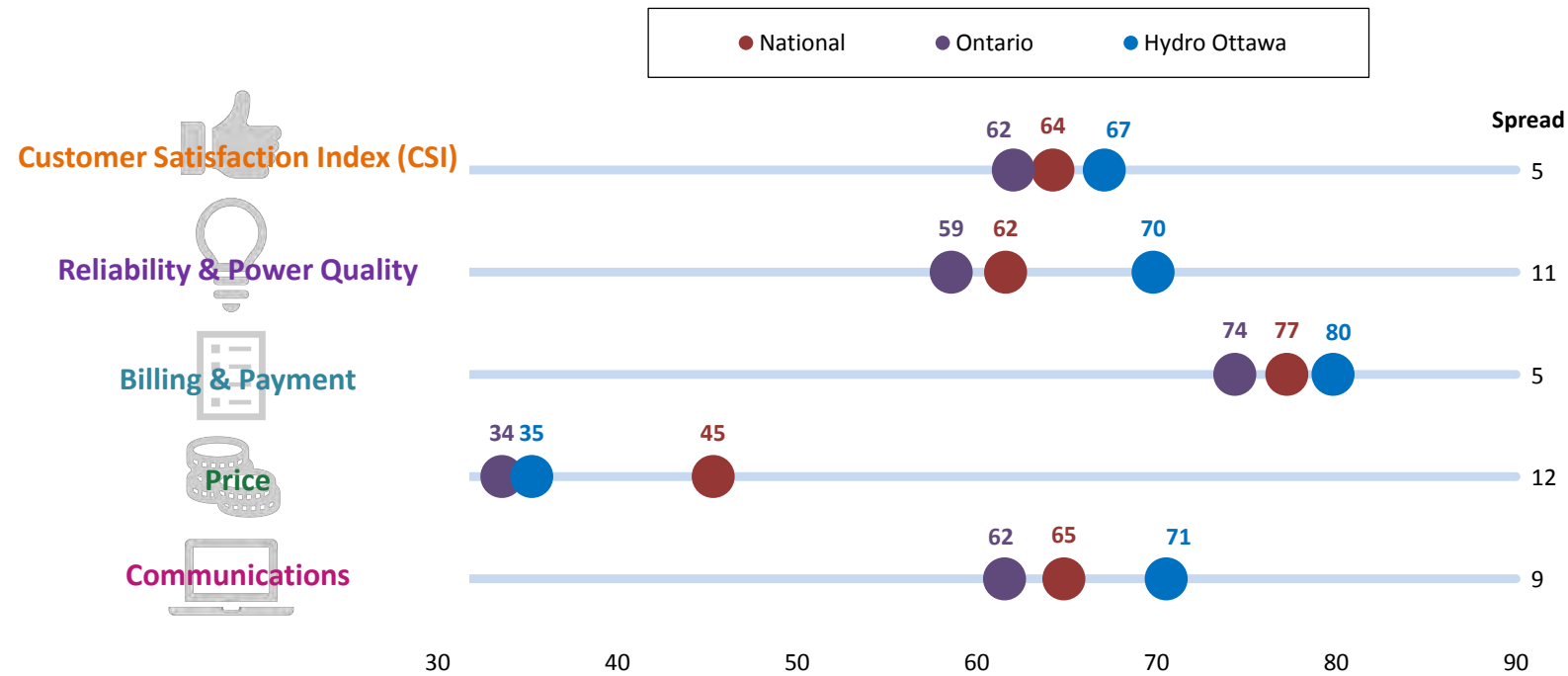
NOTE: Previously the CSI had been calculated on a 1-10 scale; in keeping with the move to a 0-10 scale for this year's survey, previous year's CSI scores have been rescaled 0-10. For example the 2013 score of 5.51 on a 0-10 scaled that is reported here corresponds to last year's reported score of 5.9 on a 1-10 scale.

CSI Benchmarking: Hydro Ottawa has the highest CSI in Ontario and second highest nation-wide



Note: Only utilities with an unweighted n-size of 100+ are shown.
Utilities highlighted in greenish blue are from Ontario.

Hydro Ottawa leads on almost all measures except price, where they are ahead of provincial but below national averages



NOTE: x-axis has been modified to show the difference between each group (x-axis lower bound = 30, upper bound = 90).

Regional CSI scores are multiplied by 10.

"Reliability & Power Quality" and "Billing & Payment" represent an index of all measures of satisfaction (6,7,8,9,10) within that section.

"Price" indicates the percentage of respondents who said the price is reasonable.

"Communications" indicates the percentage of respondents who are satisfied (6,7,8,9,10) with the overall communication from the utility.

Action Analysis

What does the data tell us about what to do next?

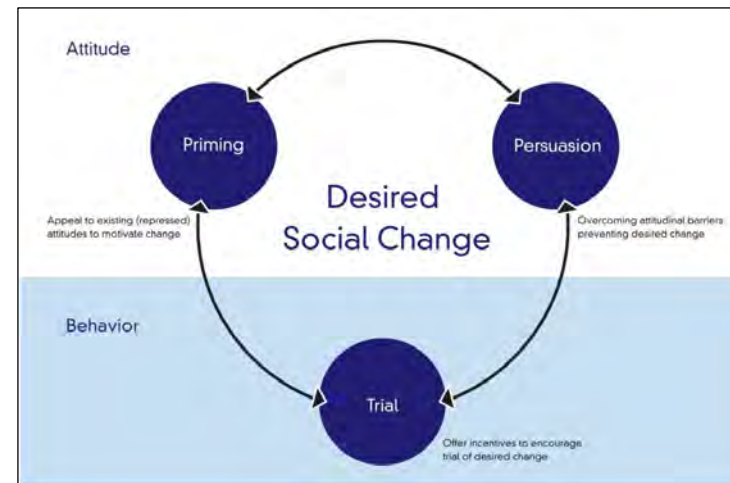
Changing Public Perception: *Social Marketing*

The concept of social marketing is all about getting people to change their behaviour. Getting a flu shot. Taking precautions when investing. Saving for retirement. Using less electricity. Accepting price increases. **Simply stated, but not simply achieved.**

There are three primary options for opinion change:

- **Persuasion** – Teaching people something they didn't know in order to increase their likelihood of doing the desired action or believing the desired belief.
- **Priming** – Reminding people of something they already know in order to increase their likelihood of doing the desired action or believing the desired belief.
- **Trial** – Getting people to do the desired behaviour so it becomes a habit.

On-going research will provide electricity companies with a framework to assess their target audience to identify the key opinion anchors for priming, the best new information for persuasion, and the most appealing offers for trial.



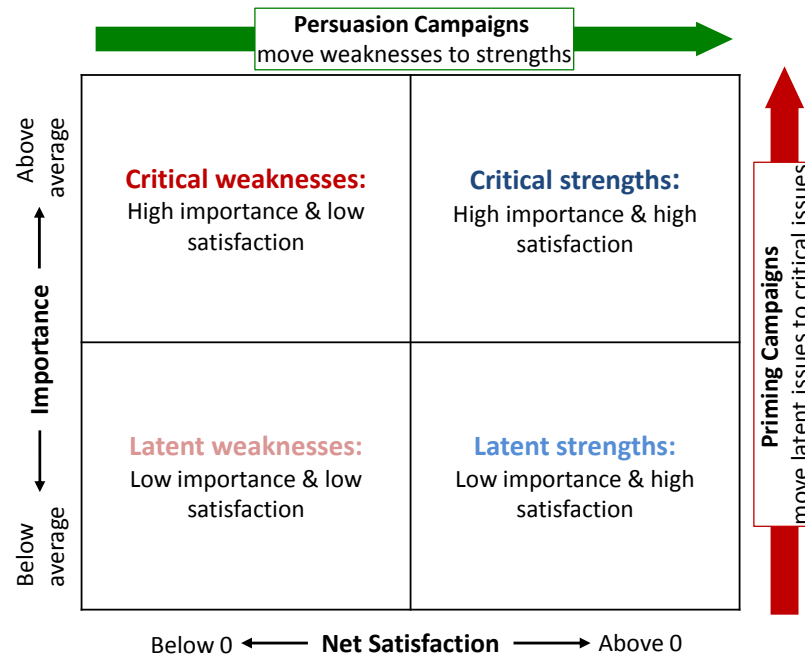
In terms of behaviour, **trial** is best since a change of behaviour is the goal. Trial works best if it is run in parallel with a supportive campaign to change attitudes that conflict with the behaviour.

Persuasion is the next best since persuasion results in permanent behaviour change.

Priming is often the least effective for long term change since once the campaign is over, the priming effect quickly fades. But if priming is sustained long enough to establish new habits, the change can be permanent.

Combining Importance & Satisfaction: *Priming and Persuasion*

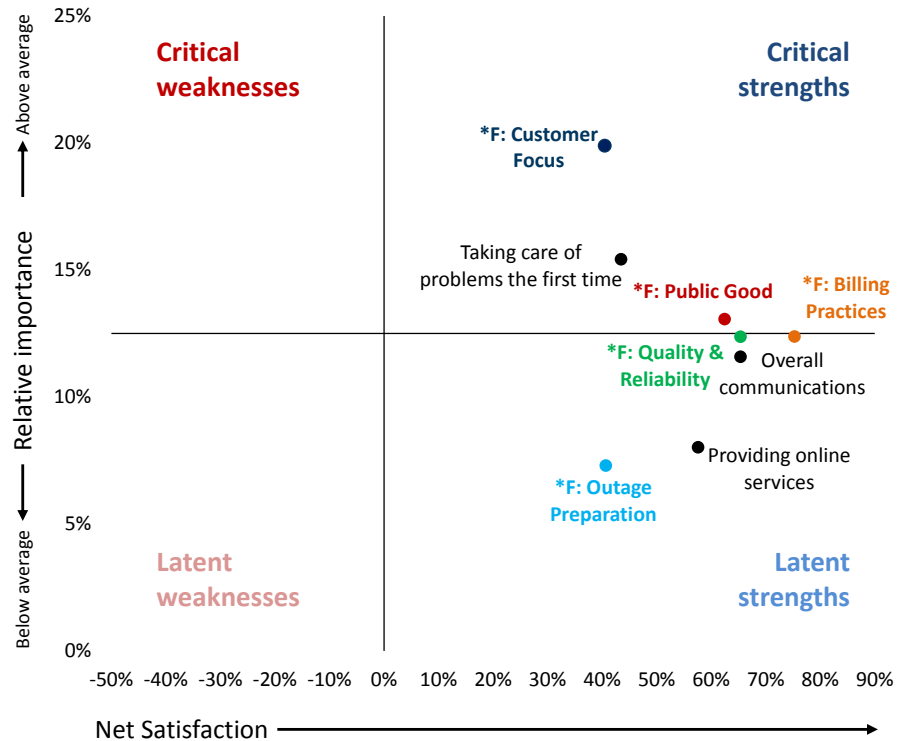
Once we understand what factors underlie each brand, we can examine how levels of overall satisfaction on each factor compare to their level of importance. The satisfaction scores shown below are net satisfaction while the level of importance is calculated using a *Shapley Values* regression as detailed in the previous section.



Improving the importance of an attribute is best approached through *Priming*. This means moving it away from being a *latent strength* towards being a *critical strength*. Priming by raising the salience of an attribute is usually executed through advertising and the media.

Increasing the levels of satisfaction with a brand is *Persuasion*. This means moving an attribute from a weakness to a strength. Once people are persuaded that an organization is doing well on a particular attribute, that opinion is likely to stick. However, persuasion campaigns are often long fought and expensive.

Action Analysis: While there are no current weaknesses, there is room for improvement on outage preparation and the provision of online services



*F – Denotes what has been identified as a “factor”, as described on the right

Customer Focus

- Consulting with customers before making decisions
- Being transparent
- Caring about its customers
- Being trustworthy

Public Good

- Operating in an environmentally responsible manner
- Providing energy conservation and efficiency programs
- Protecting public safety
- Being a good corporate citizen

Quality & Reliability

- Providing reliable electricity service
- The amount of time it takes to restore power
- The quality of power delivered to you

Billing Practices

- Providing convenient options to pay my bill
- Providing convenient options to receive my bill
- Providing bills that are easy to read and understand
- Providing accurate bills

Outage Preparation

- Providing timely and accurate information re: outages
- Considering your needs when planning an outage

System Familiarity

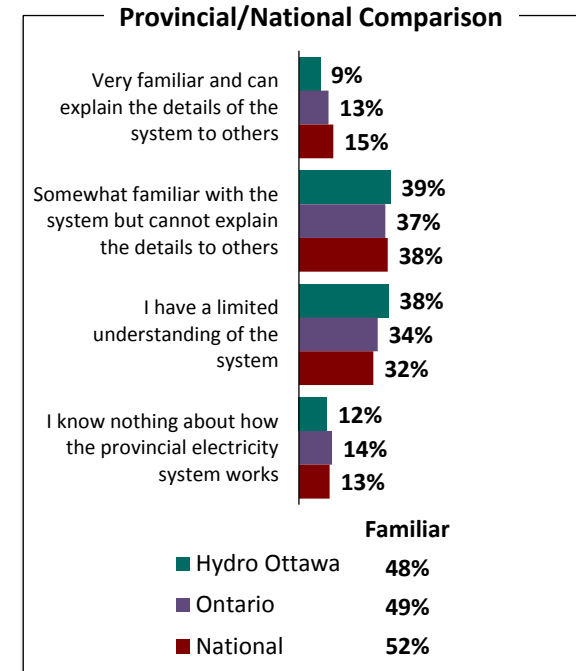
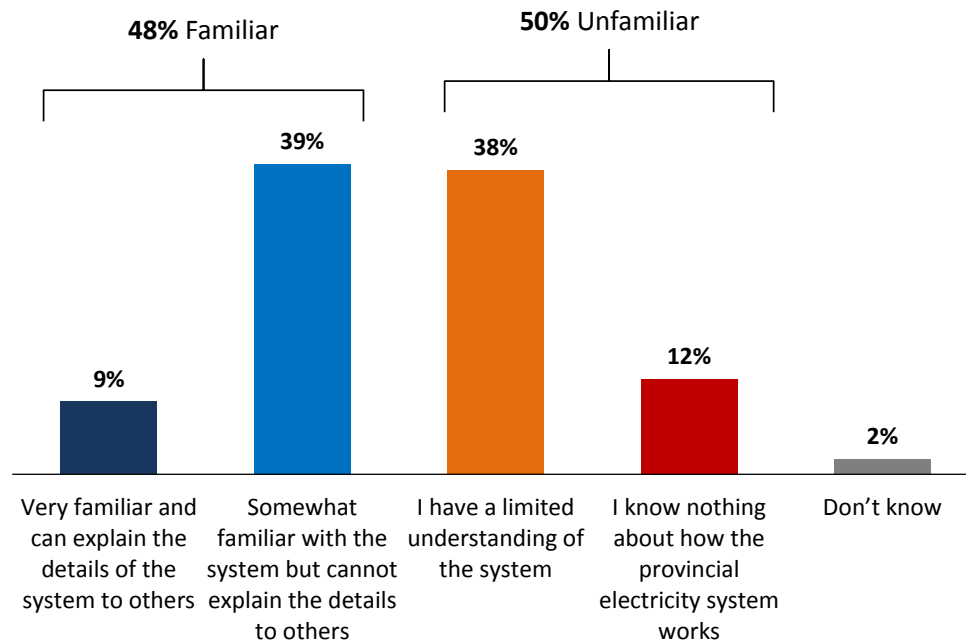
Familiarity Question Preamble

As you may know, [PROVINCE]'s electricity system has four key components: generation, transmission, distribution and retail market:

- Generating companies convert water from dams, coal, natural gas, wind and other resources into electricity;
- Transmission companies use large wires to connect the electricity produced at generating stations to transmission substations in the communities where it is needed;
- Distribution companies use smaller wires to carry electricity to homes and businesses; and
- Electricity retailers buy electricity from generators and sell it directly to consumers through contracts.

Familiarity with System: 48% familiar with the electricity system, slightly lower than national average

Q In general, how familiar are you with the way [PROVINCE]'s electricity system works?
[asked of all respondents, Hydro Ottawa; n=450]



General Satisfaction





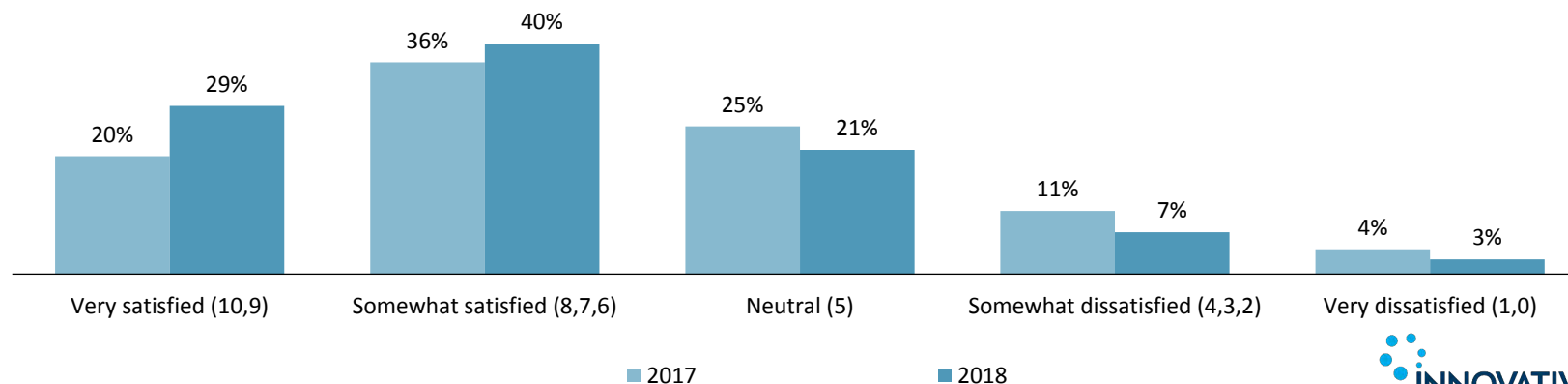
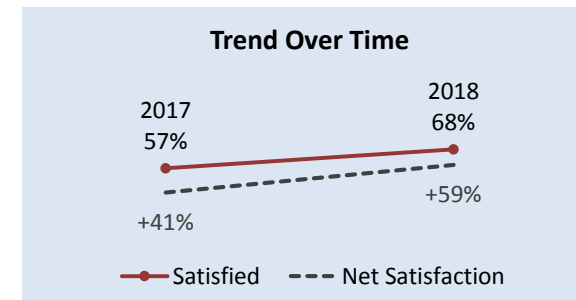
Summary: *General Satisfaction*

- General satisfaction improved from 57% in 2017 to 68% in 2018, with a nine-point increase in the proportion who are “*very satisfied*”. While the net satisfaction score (+41%) was below the provincial and national averages last year, this year’s score (+59%) is ahead of the two averages.
- Net satisfaction has improved on all brand attributes, with at least a 14-point gain on each of the following:
 - Caring about its customers (from +21% to +41%)
 - Being trustworthy (from +29% to +48%)
 - Protecting public safety (from +45% to +63%)
 - Providing online services (from +44% to +58%)
- Despite gains in net satisfaction, a handful of attributes have less than half saying they are satisfied:
 - Operating in an environmentally responsible manner (47% satisfied)
 - Being transparent (46% satisfied)
 - Being a good corporate citizen (41% satisfied)
 - Consulting with customers before making decisions that impact them (36% satisfied)
- Net satisfaction with Hydro Ottawa is at least marginally ahead of the national average on five brand attributes:
 - Protecting public safety (+63% vs +53% national)
 - Providing online services (+58% vs +51% national)
 - Being trustworthy (+48% vs +42% national)
 - Being transparent (+29% vs +22% national)
 - Consulting with customers before making decisions that impact them (+10% vs +7% national)



General Satisfaction: General satisfaction with Hydro Ottawa has improved 11 points since 2017, now nearly 7-in-10 (68%) satisfied

Q The following questions are about the local distribution system, the part of the system that brings electricity from nearby substations to your home and local businesses. In general, how satisfied are you with **Hydro Ottawa**? Please use the scale from 0 to 10, where 0 means very dissatisfied and 10 means very satisfied.
[asked of all respondents, Hydro Ottawa; n=450]

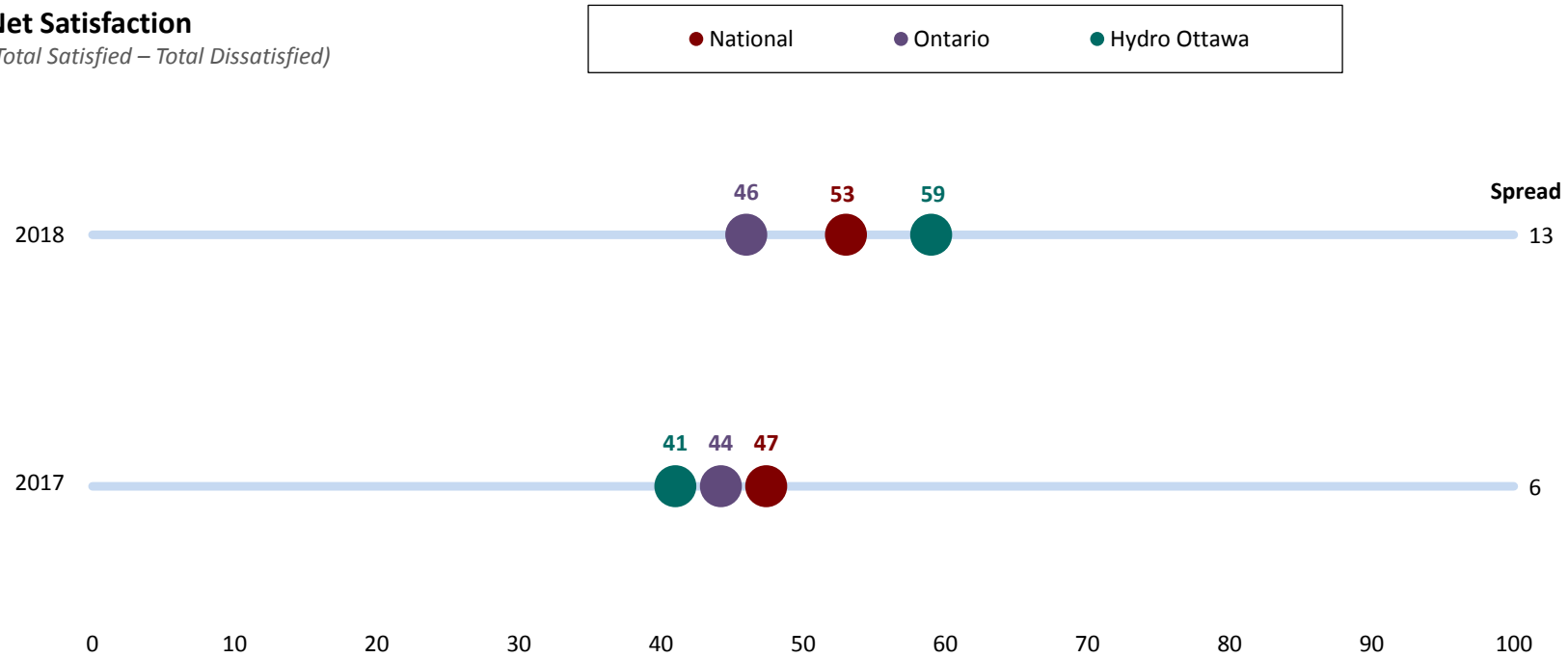


NOTE: 'Don't know' (1%) not shown.

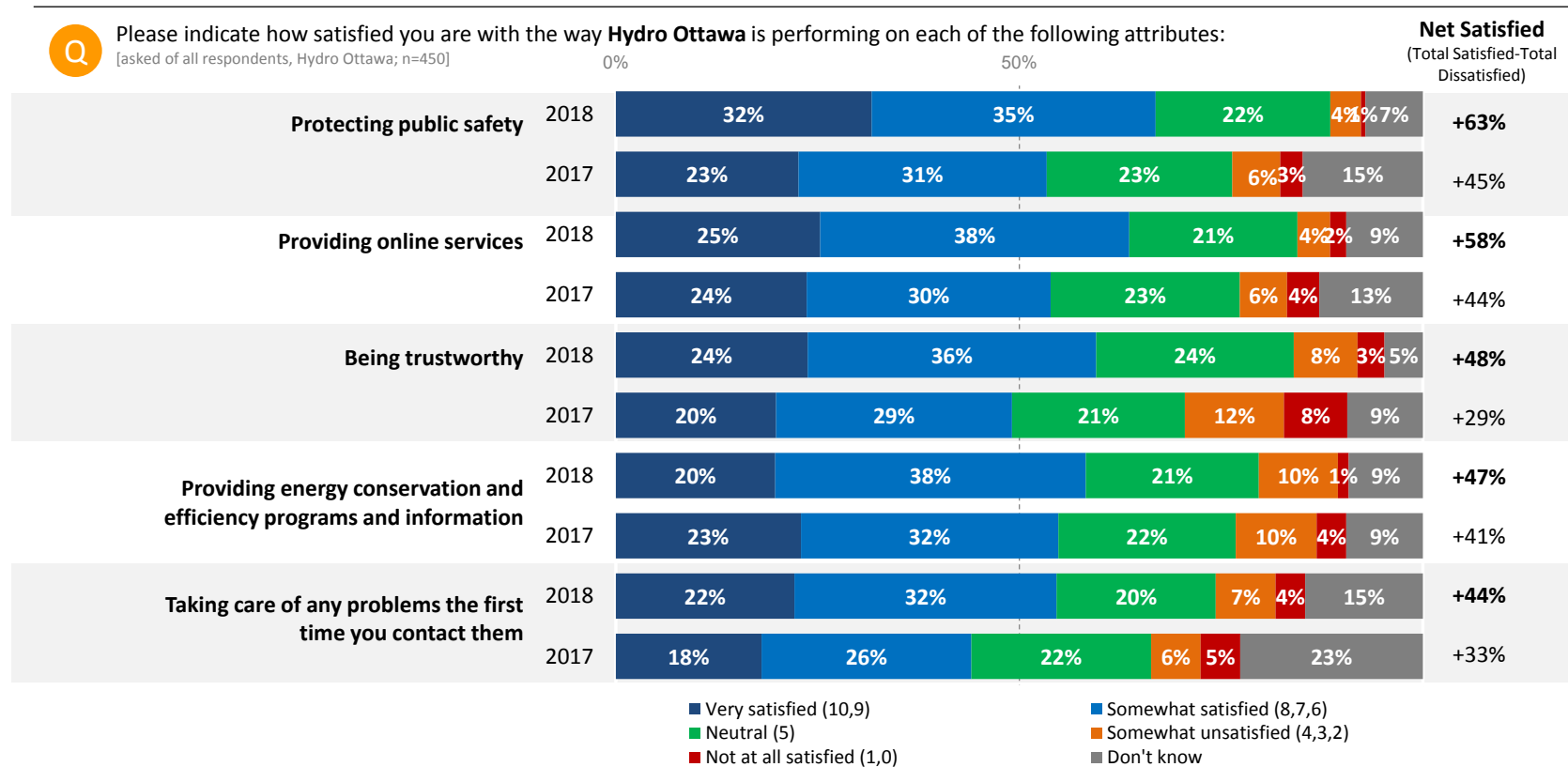
General Satisfaction | Provincial/National Comparison

Net Satisfaction

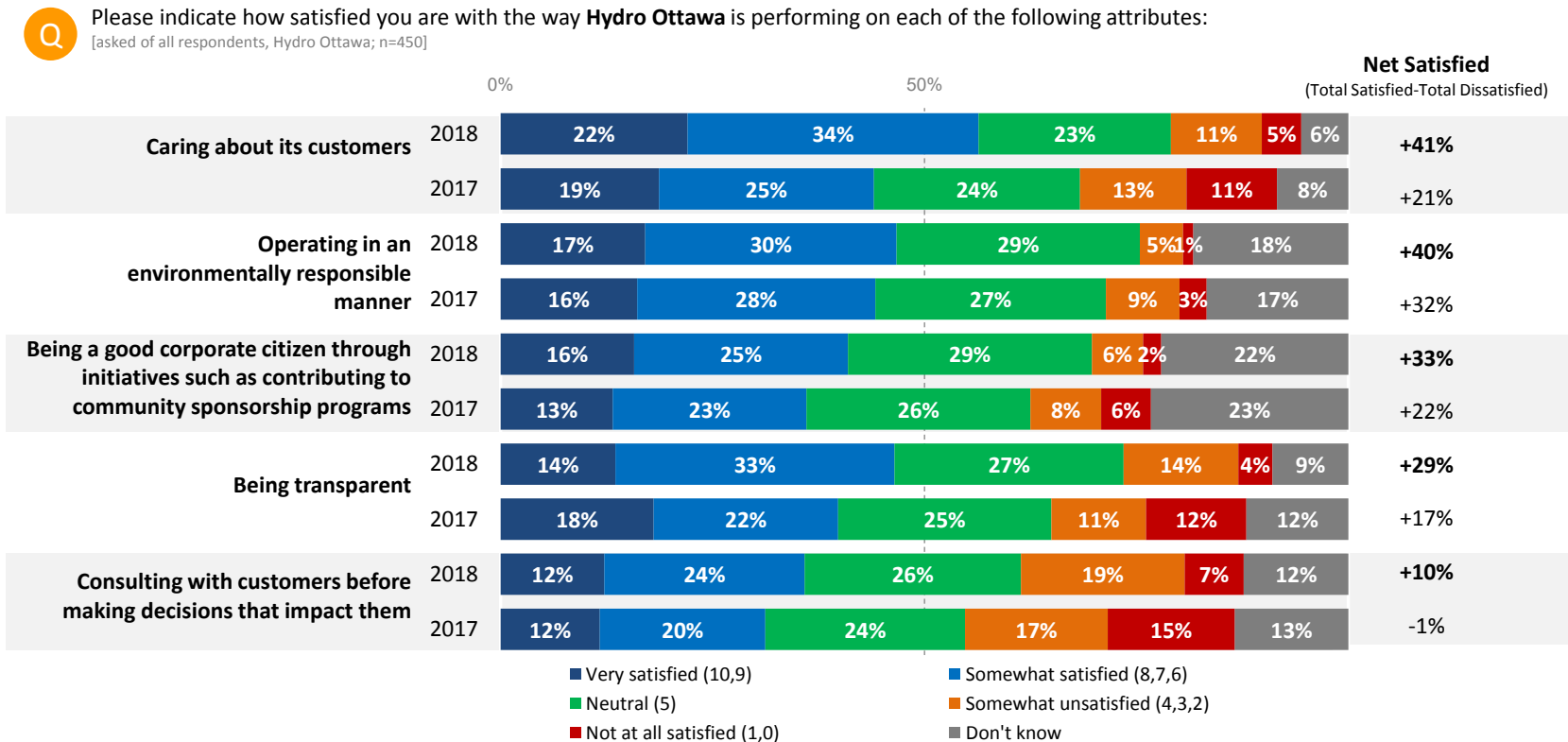
(Total Satisfied – Total Dissatisfied)



Tracking Brand Attributes: Satisfaction on the top five attributes has improved since 2017



Tracking Brand Attributes: All measures have improved; for caring about its customers, net satisfaction is up 20 points

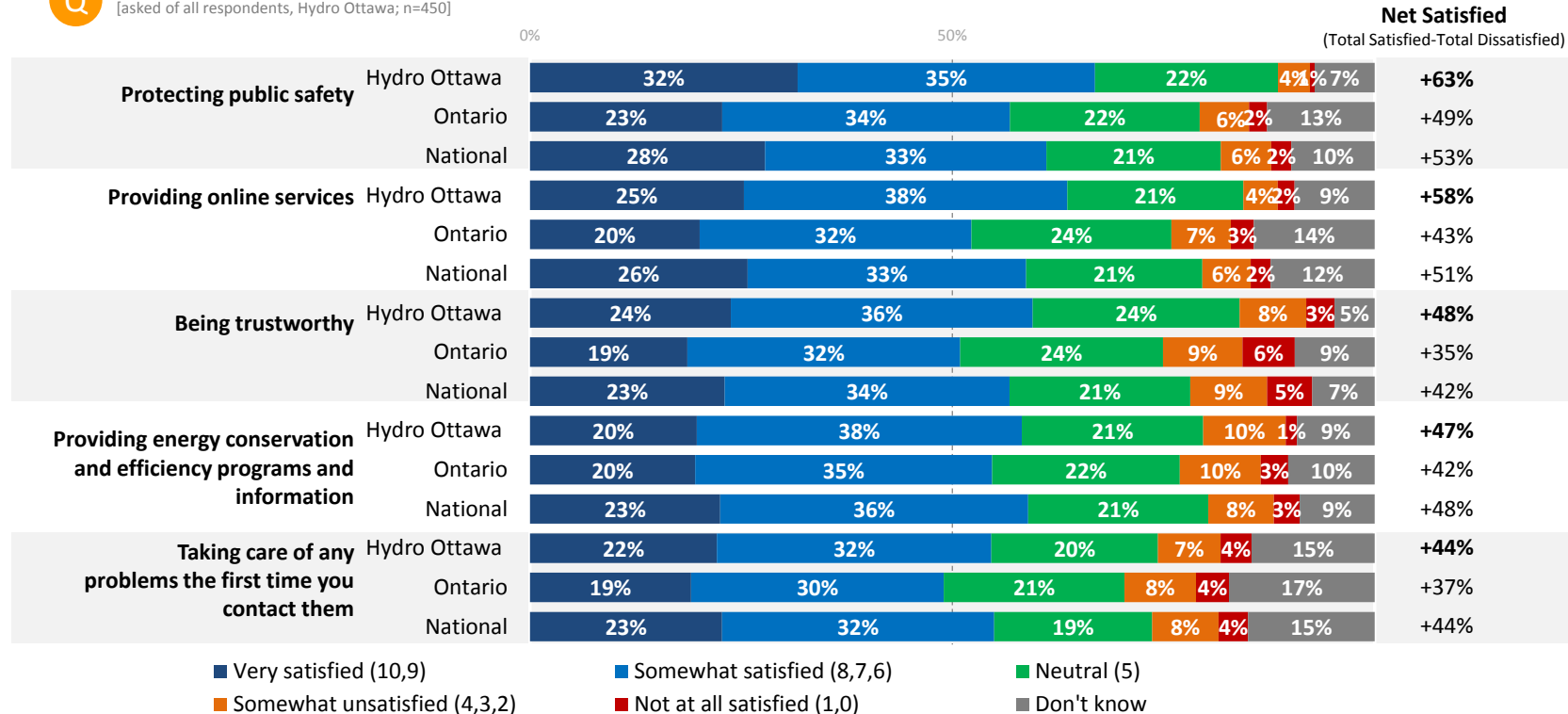


Provincial/National Comparison | Brand Attributes: Hydro Ottawa outperforms national average on public safety, online services, and trustworthiness



Please indicate how satisfied you are with the way **Hydro Ottawa** is performing on each of the following attributes:

[asked of all respondents, Hydro Ottawa; n=450]

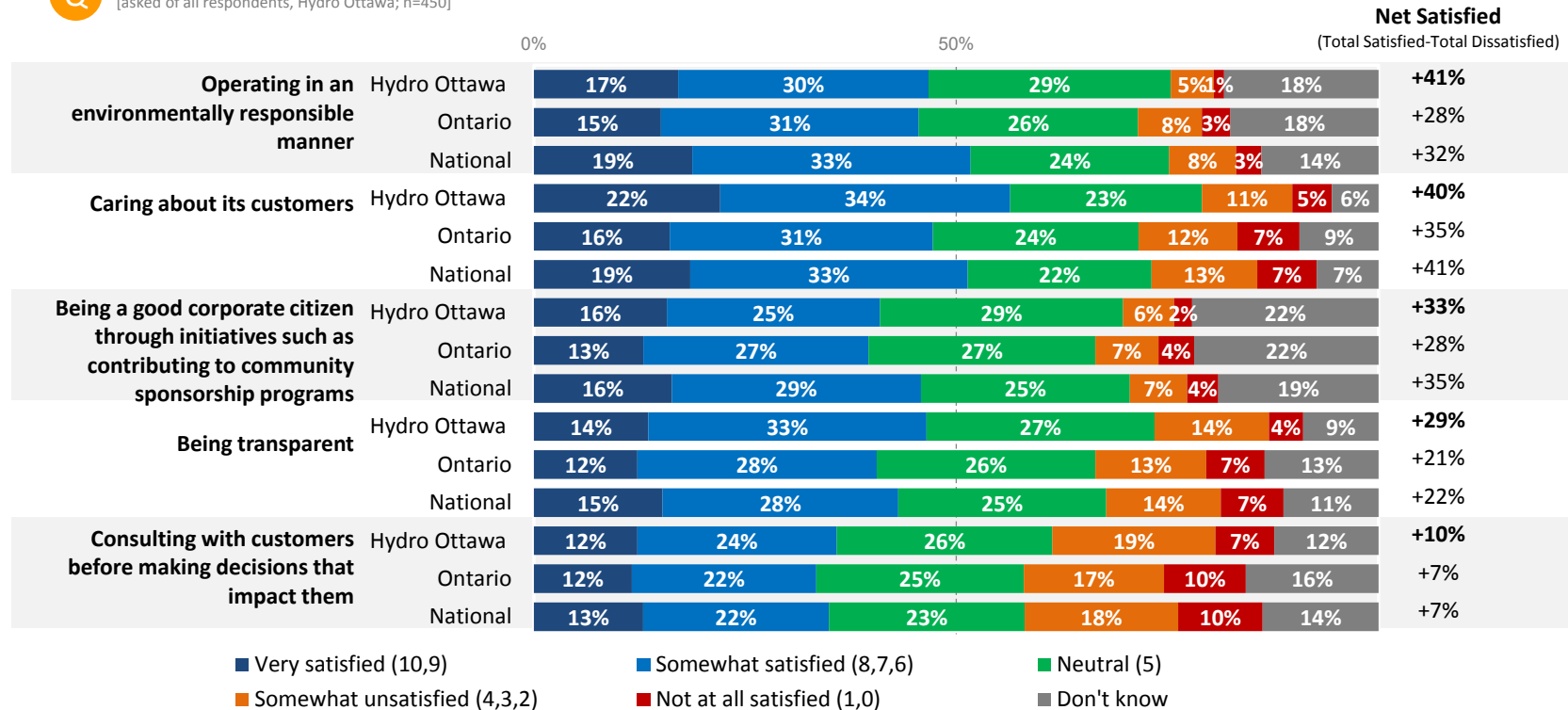


Provincial/National Comparison | Brand Attributes: Hydro Ottawa outperforming national average on all measures but conservation programs



Please indicate how satisfied you are with the way **Hydro Ottawa** is performing on each of the following attributes:

[asked of all respondents, Hydro Ottawa; n=450]

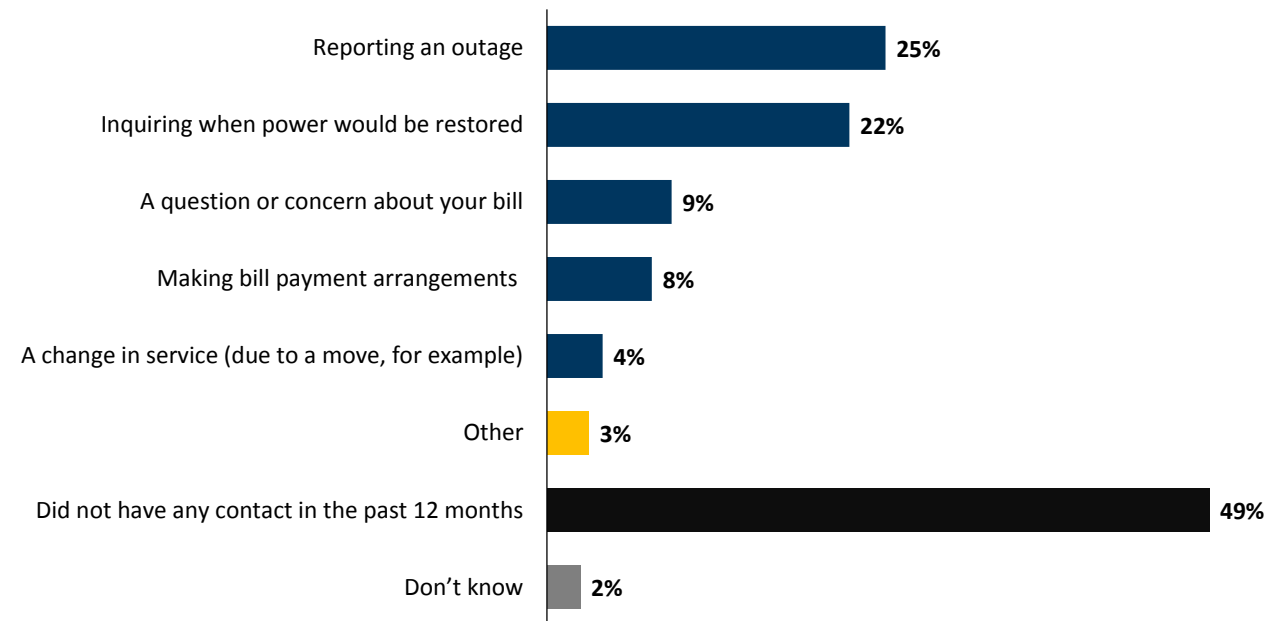


Distributor Contact: Nearly half (49%) did not have any contact with Hydro Ottawa in past year; 1-in-4 (25%) contacted the utility to report an outage



In the past 12 months, which (if any) of the following issues have you contacted Hydro Ottawa about? *Select all that apply.*

[asked of all respondents, Hydro Ottawa; n=450]



NOTES: Chart total is greater than 100% as multiple mentions were accepted



Reliability & Power Quality

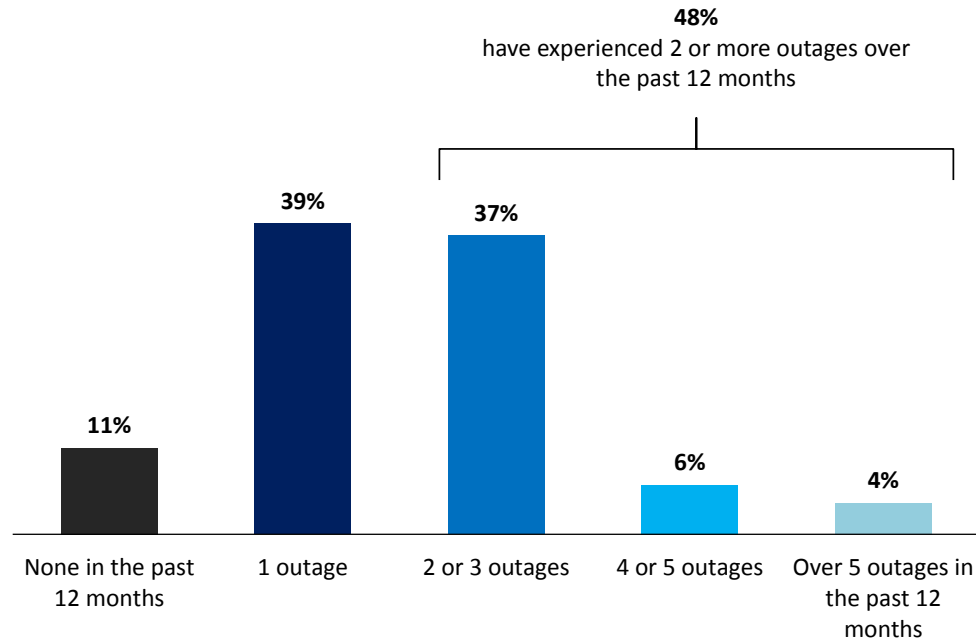


Summary: *Reliability & Power Quality*

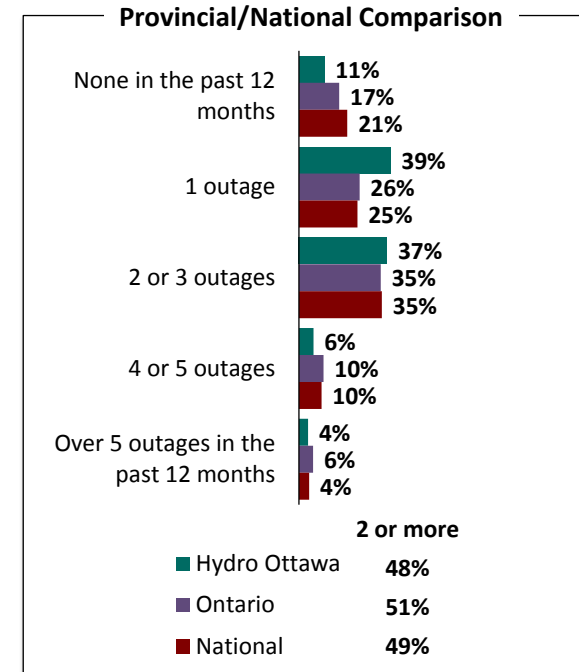
- The proportion of those who have experienced two or more outages in the past 12 months has increased seven points from 41% in 2017 to 48% this year.
- There have been substantial gains in net satisfaction on all reliability and quality measures:
 - Providing reliable electricity service (from +55% to +75%)
 - Quality of power delivered (from +54% to +74%)
 - Time to power restoration (from +49% to +62%)
 - Providing timely and accurate information about outages (from +9% to +47%)
 - Considering customers' needs when planning an outage (from +6% to +39%)
- Hydro Ottawa's net satisfaction score is above the provincial and national averages on all reliability and quality attributes. The top two attributes enjoy the widest gap.
 - Providing reliable electricity service (+75% vs +52% provincial vs +57% national)
 - Quality of power delivered (+74% vs +55% provincial vs +59% national)

Power Outages: In the past year, nearly half (48%) of Hydro Ottawa customers have experienced two or more outages

Q In the past 12 months, how many power outages do you recall experiencing at home?
[asked of all respondents, Hydro Ottawa; n=450]



NOTE: 'Don't know' (3%) not shown.

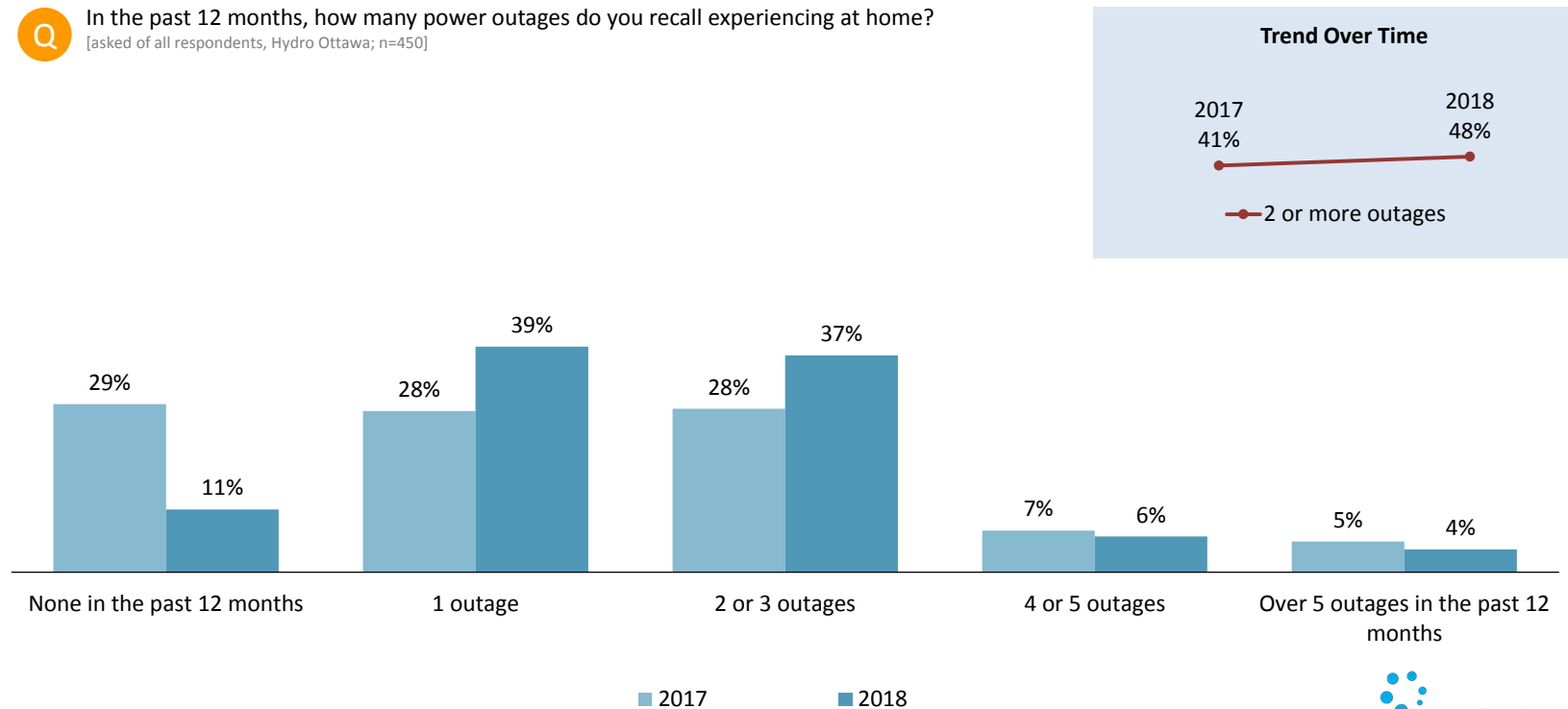


Power Outages: From a low of 41% in 2017, frequent outages have increased 7 points year-to-year; 'No outages' recall drops from 29% to 11% year-to-year



In the past 12 months, how many power outages do you recall experiencing at home?

[asked of all respondents, Hydro Ottawa; n=450]



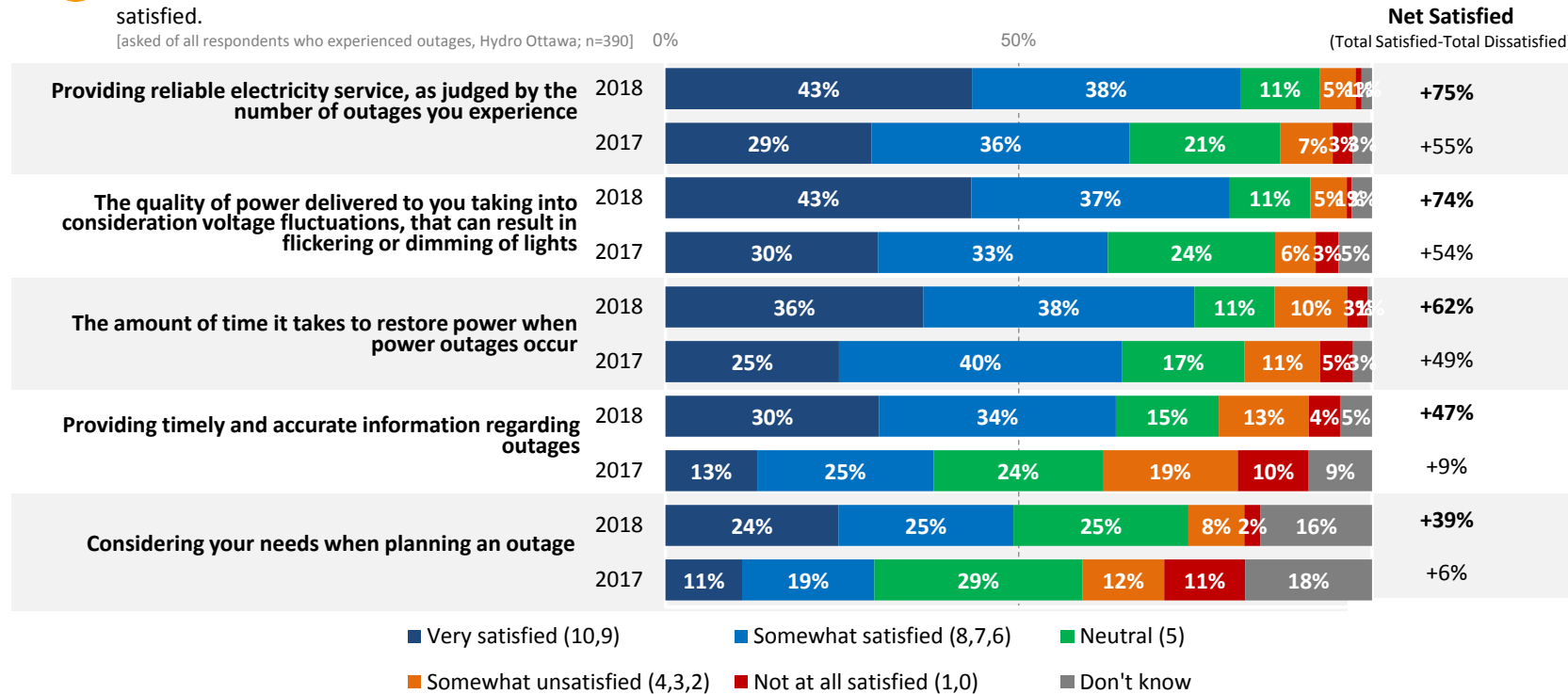
NOTE: 'Don't know' (3%) not shown.

Reliability & Quality Attributes | Tracking: Majority satisfied with reliability of Hydro Ottawa service, net satisfaction up 20 points year-to-year

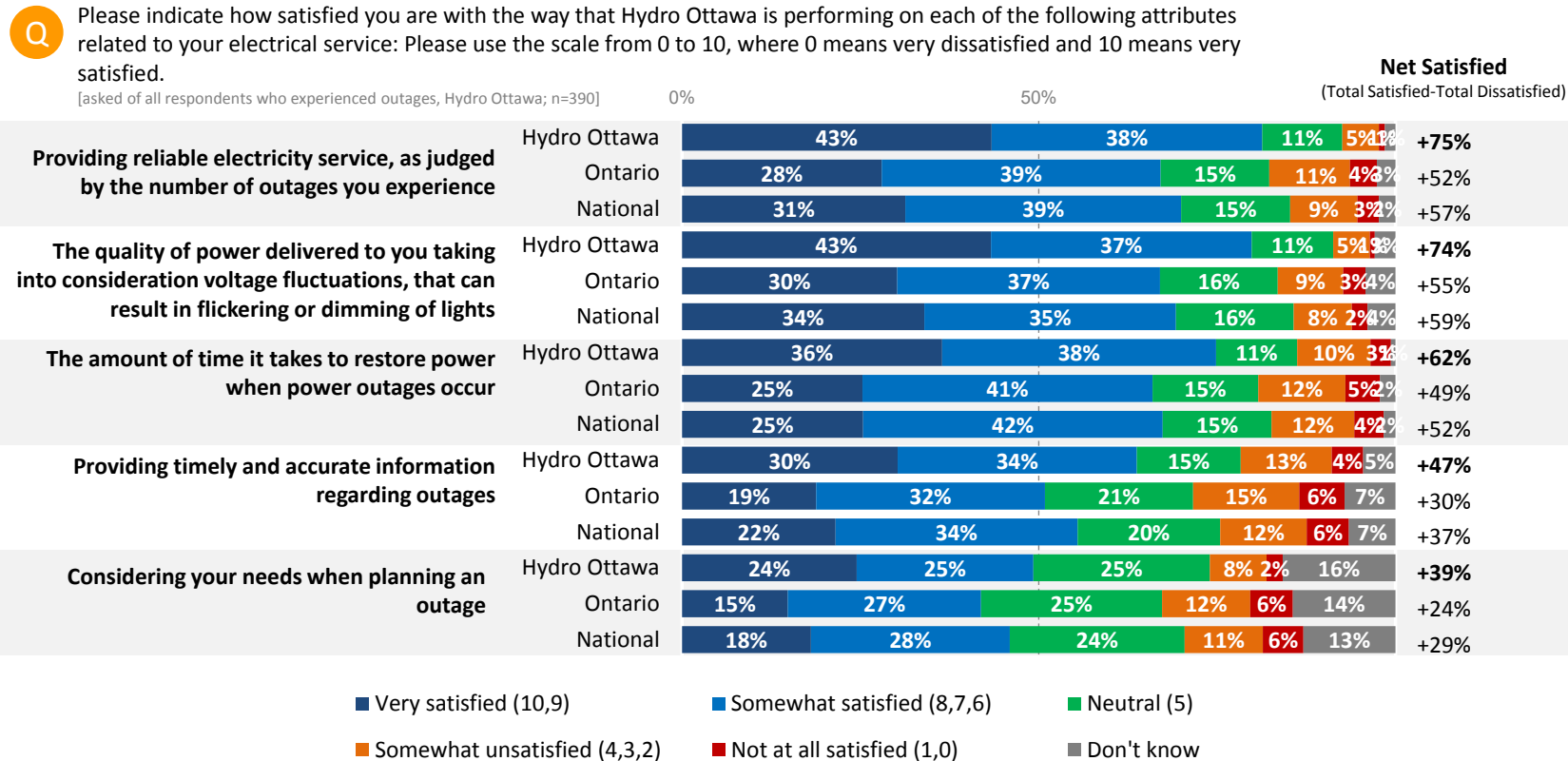


Please indicate how satisfied you are with the way that Hydro Ottawa is performing on each of the following attributes related to your electrical service: Please use the scale from 0 to 10, where 0 means very dissatisfied and 10 means very satisfied.

[asked of all respondents who experienced outages, Hydro Ottawa; n=390]



Reliability & Quality Attributes | Prov/National Comparison: Hydro Ottawa runs ahead of all national averages, 18 points ahead on net satisfaction with reliability



Planned Outages

(New in 2018)





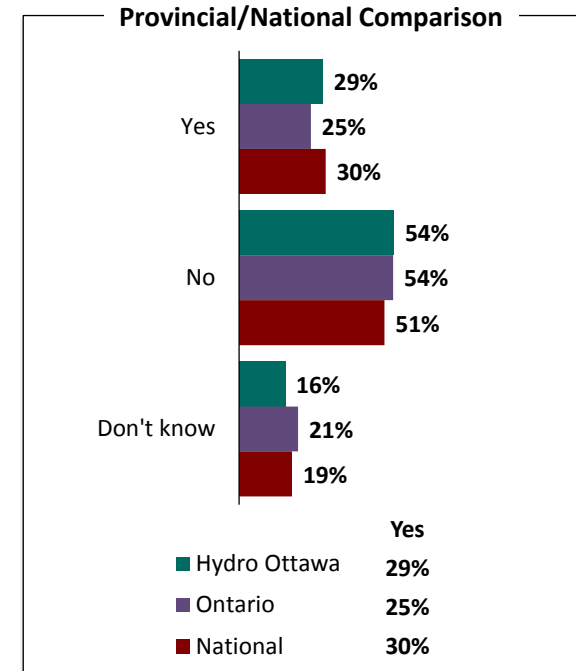
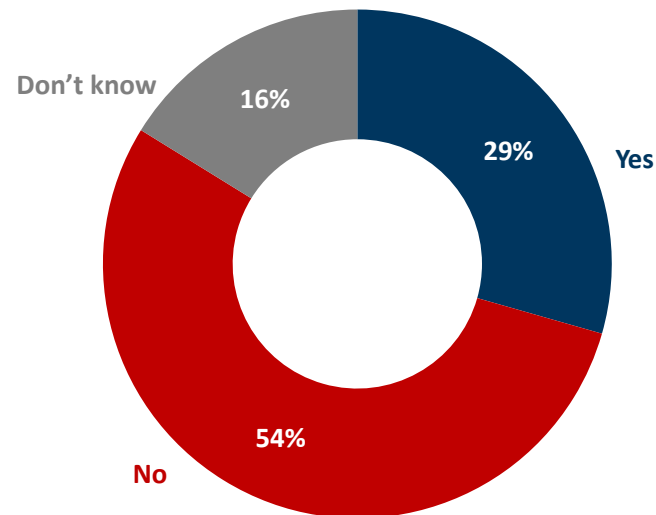
Summary: *Planned Outages*

2018 is the first time this survey asked questions about *planned* outages, specifically.

- Nearly 3-in-10 (29%) say they have been impacted by planned outages in the past two years. This is on par with the national average (30%) but marginally higher than the provincial average (25%).
- Among those who did experience a planned outage, most (76%) reported that Hydro Ottawa proactively communicated with them about the outage. This is on par with the national (75%) and provincial (74%) averages.
- Those who were able to recall communication from Hydro Ottawa about planned outages were generally satisfied with the communication (86%). The level of satisfaction is higher than both the provincial (77%) and national averages (80%). The level of intense satisfaction (51% very satisfied) is much higher than both averages (43% nationally and 41% provincially).
 - The difference is only directional due to the small sample size (Hydro Ottawa n=101).

Planned Outages: 3-in-10 (29%) say they have been impacted by planned outages in the past two years, on par with national average

Q From time to time, your local utility has to turn off the power to repair or replace equipment. This work is generally planned in advance and these outages are called planned outages. Over the past 2 years, have you been impacted by any planned outages?
[asked of all respondents, Hydro Ottawa; n=450]

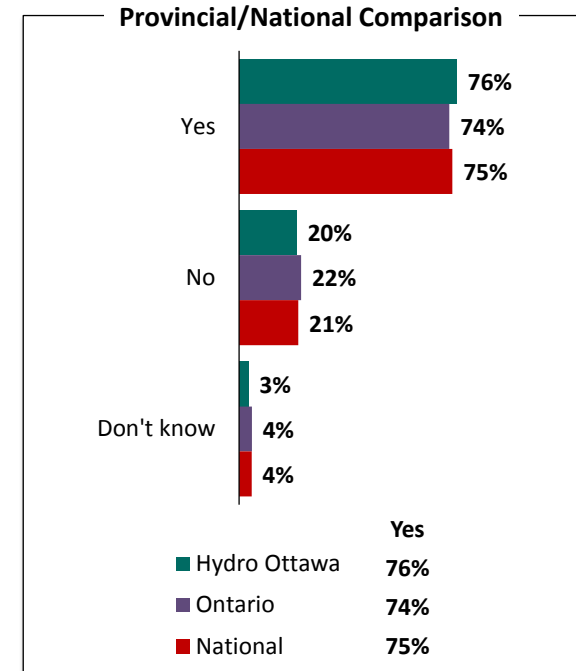
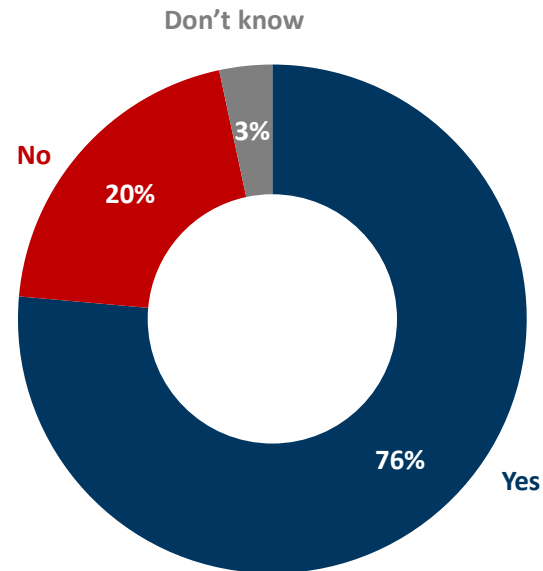


Proactive Communication: 3-in-4 (76%) of those experiencing planned outages were proactively contacted by Hydro Ottawa, on par with national average



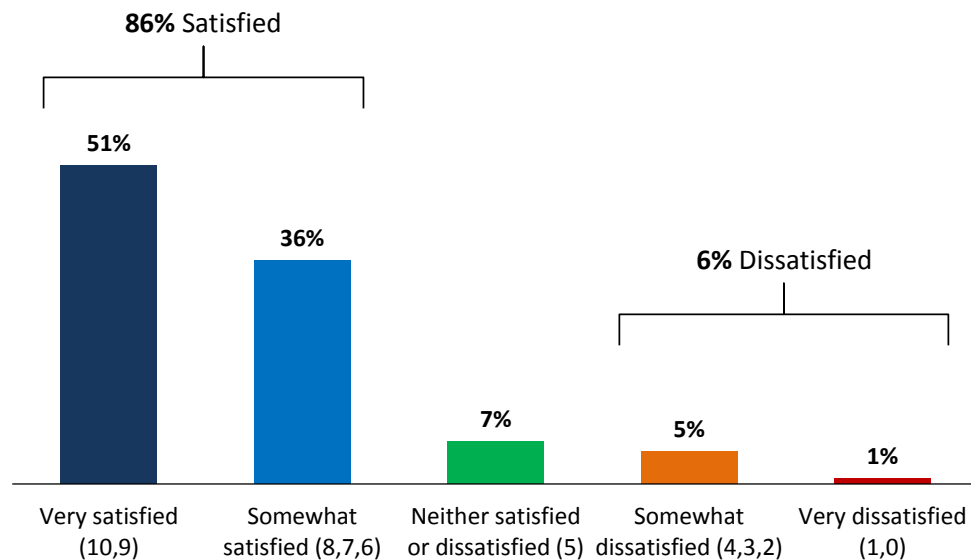
Did Hydro Ottawa proactively communicate with you about the most recent planned power outage that you experienced?

[asked of respondents who have been impacted by planned outages within the past 2 years; Hydro Ottawa; n=132]

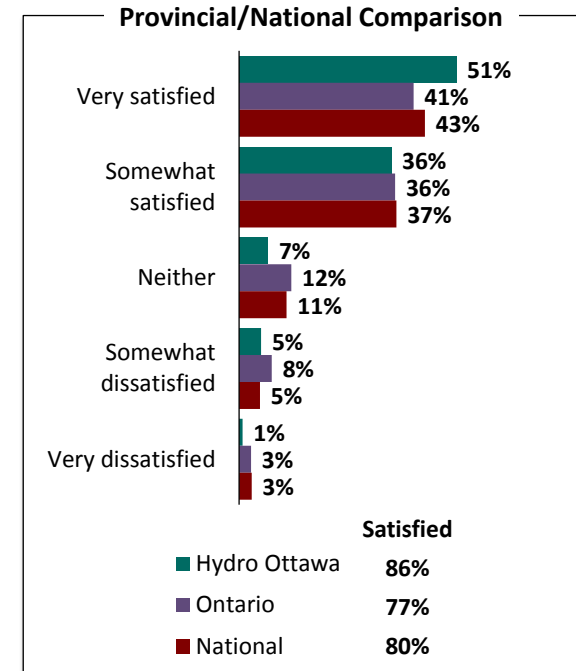


Satisfaction with Planned Outage Communication: Nearly 9-in-10 (86%) who received communication from Hydro Ottawa were satisfied

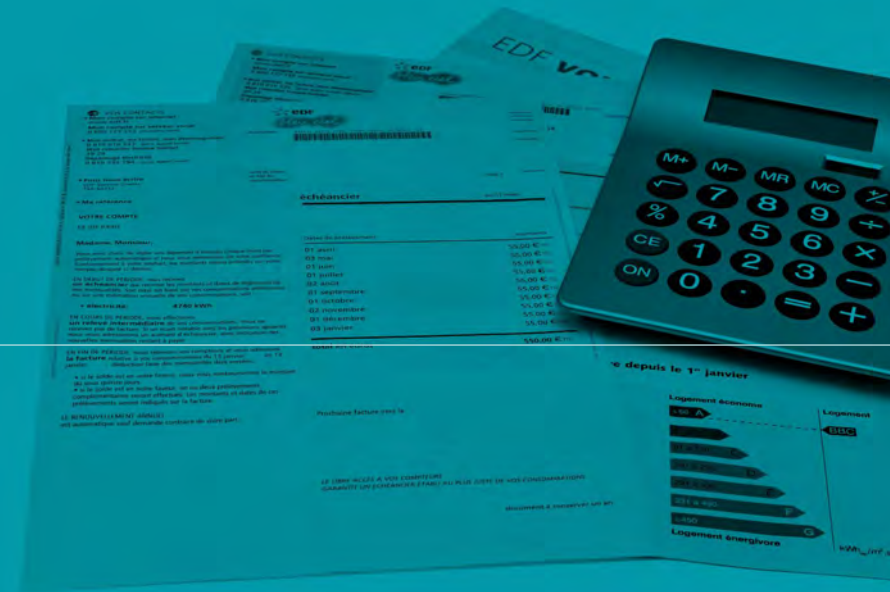
Q How satisfied are you with the way the company communicated with you about that planned outage? Please use the scale from 0 to 10, where 0 means very dissatisfied and 10 means very satisfied.
[asked of respondents who can recall being contacted by distributor during the most recent planned outage; Hydro Ottawa; n=101*]



* Caution: small sample size



Billing & Payment



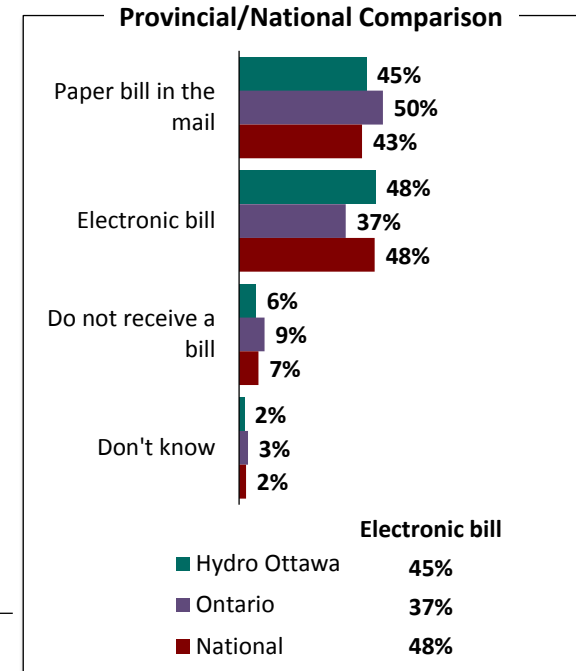
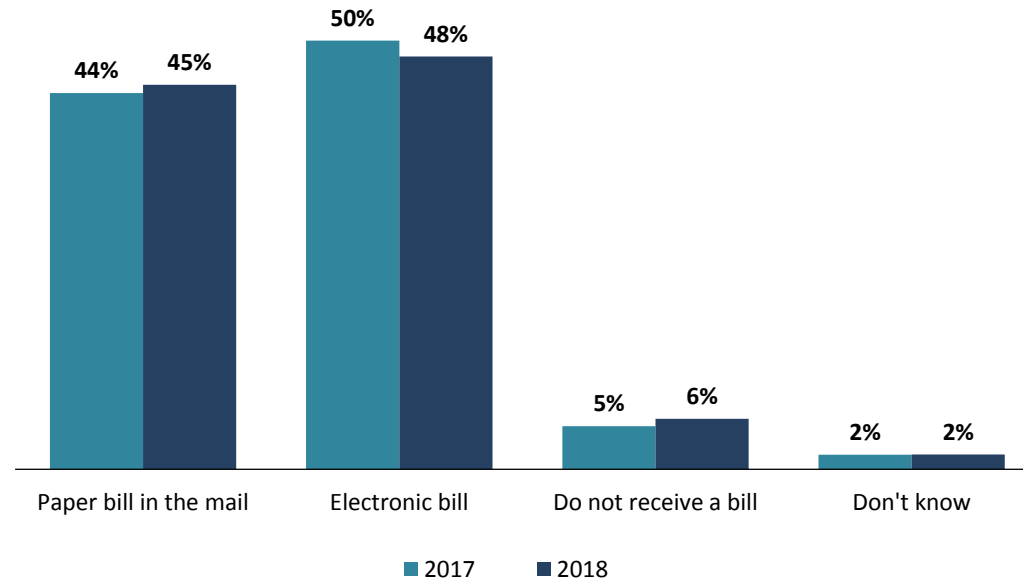


Summary: *Billing and Payment*

- About half (48%) report that they receive an electronic bill and another half (45%) report that they receive a paper bill in the mail from Hydro Ottawa.
- On e-billing, Hydro Ottawa is ahead of the provincial average (37%), but on par with the national average (48%).
- Hydro Ottawa has had at least seven-point gains on net satisfaction across all billing and payment attributes over last year, with an increase of at least six points in the intensity of satisfaction:
 - Providing convenient options to receive my bill (net satisfaction: from +73% to +80%)
 - Providing convenient options to pay my bill (from +65% to +74%)
 - Providing accurate bills (from +63% to +72%)
 - Providing bills that are easy to read and understand (from +53% to +70%)
- Hydro Ottawa is ahead of provincial average on all billing and payment attributes, with the biggest lead on “providing convenient options to pay my bill” (+80% vs +70% provincially).
- Hydro Ottawa’s net satisfaction score is on par with, or marginally ahead of, the national average on all those attributes.

Format of Electricity Bill: Hydro Ottawa (45%) is ahead of the provincial average (37%), but slightly behind the national average (48%) on e-billing

Q In what format do you receive your electricity bill?
[asked of all respondents, Hydro Ottawa; n=450]



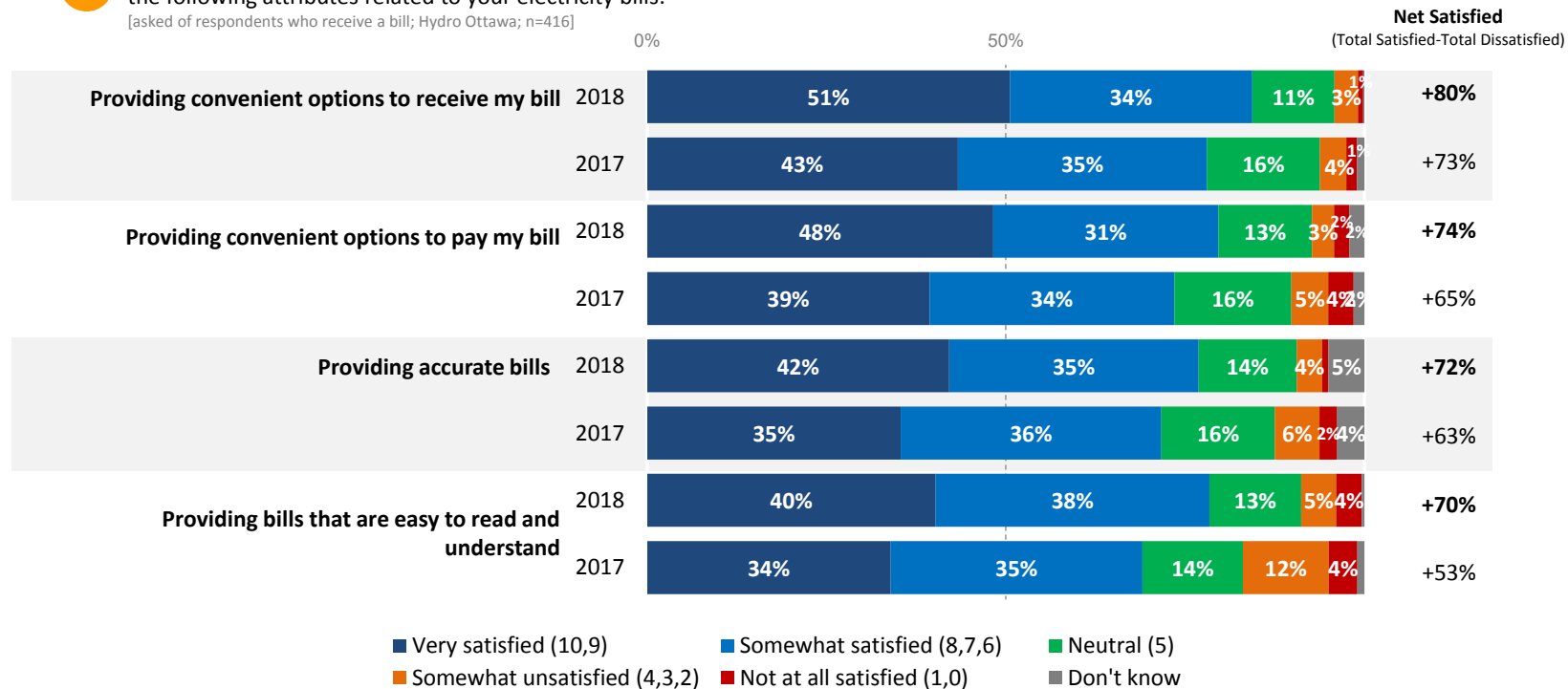
REMINDER: These results are from an online survey. As such, the proportion of customers who receive a paper bill may be under-represented

Billing & Payment Attributes | Tracking: Gains in total and net satisfaction on all attributes over 2017



For each item on the list, please indicate how satisfied you are with the way Hydro Ottawa is performing on each of the following attributes related to your electricity bills:

[asked of respondents who receive a bill; Hydro Ottawa; n=416]

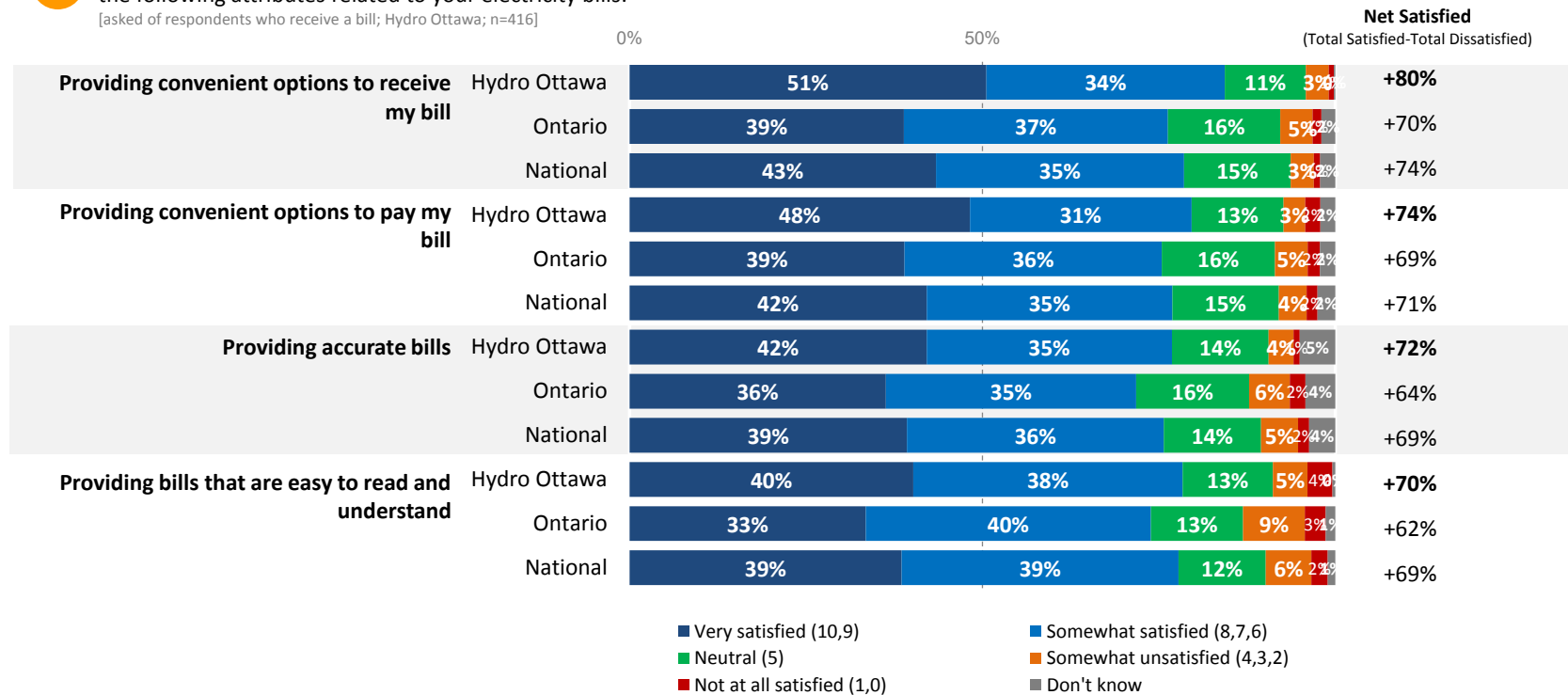


Billing & Payment Attributes | Tracking: Hydro Ottawa runs ahead of provincial average on all four measures



For each item on the list, please indicate how satisfied you are with the way Hydro Ottawa is performing on each of the following attributes related to your electricity bills:

[asked of respondents who receive a bill; Hydro Ottawa; n=416]



Communications



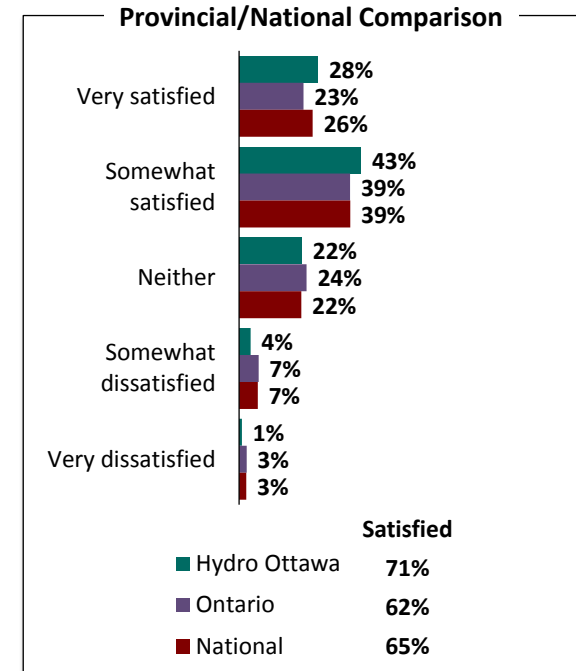
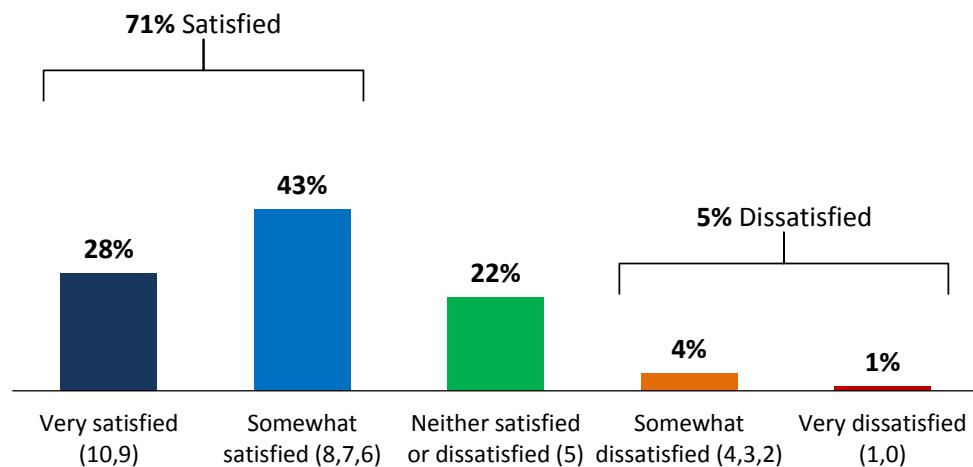


Summary: *Communications*

- At 7-in-10 (71%), satisfaction with the overall communications from Hydro Ottawa is ahead of both the provincial (62%) and national averages (65%).
- Satisfaction is 19 points higher than last year due to an 12-point gain in the proportion who are “*very satisfied*” (from 16% to 28%). Gains in satisfaction are primarily the result of a decrease in ambivalence (from 30% to 22%) and dissatisfied (from 13% to 5%).
- Net satisfaction with all forms of communication has increased since 2017, with the biggest gain on *outage notification* (from +8% to +39%).
- While net satisfaction is positive across all forms of communication, only *the website* and the *outage notification* have a level of total satisfaction that is greater than 50%.
- Net satisfaction for Hydro Ottawa’s forms of communication is either greater than or equal to the provincial average.
- Half (52%) feel their customer experience with Hydro Ottawa is similar to other companies, but a third (35%) say it is *better*. This is ahead of both the provincial (27%) and national (29%) averages.
- The proportion who say Hydro Ottawa provides a *better* customer experience has increased by 13 points since 2017 (from 22% to 35%).

Overall Communications: Above the provincial average, 7-in-10 (71%) are satisfied with Hydro Ottawa's communication

Q Please indicate how satisfied you are with overall communications from Hydro Ottawa. Please use the scale from 0 to 10, where 0 means very dissatisfied and 10 means very satisfied.
[asked of all respondents, Hydro Ottawa; n=450]



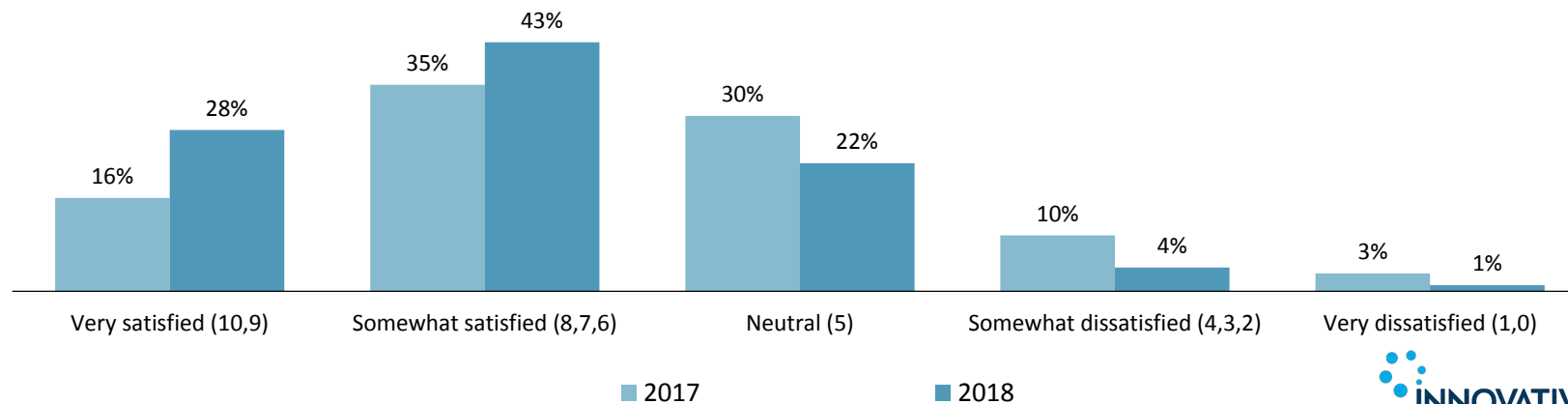
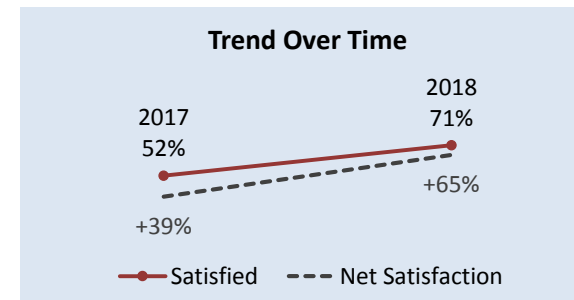
NOTE: 'Don't know' (2%) not shown.

Overall Communications | Tracking: Over the past year, satisfaction with overall communication from Hydro Ottawa has increased 19 points



Please indicate how satisfied you are with overall communications from Hydro Ottawa.
 Please use the scale from 0 to 10, where 0 means very dissatisfied and 10 means very satisfied.

[asked of all respondents, Hydro Ottawa; n=450]



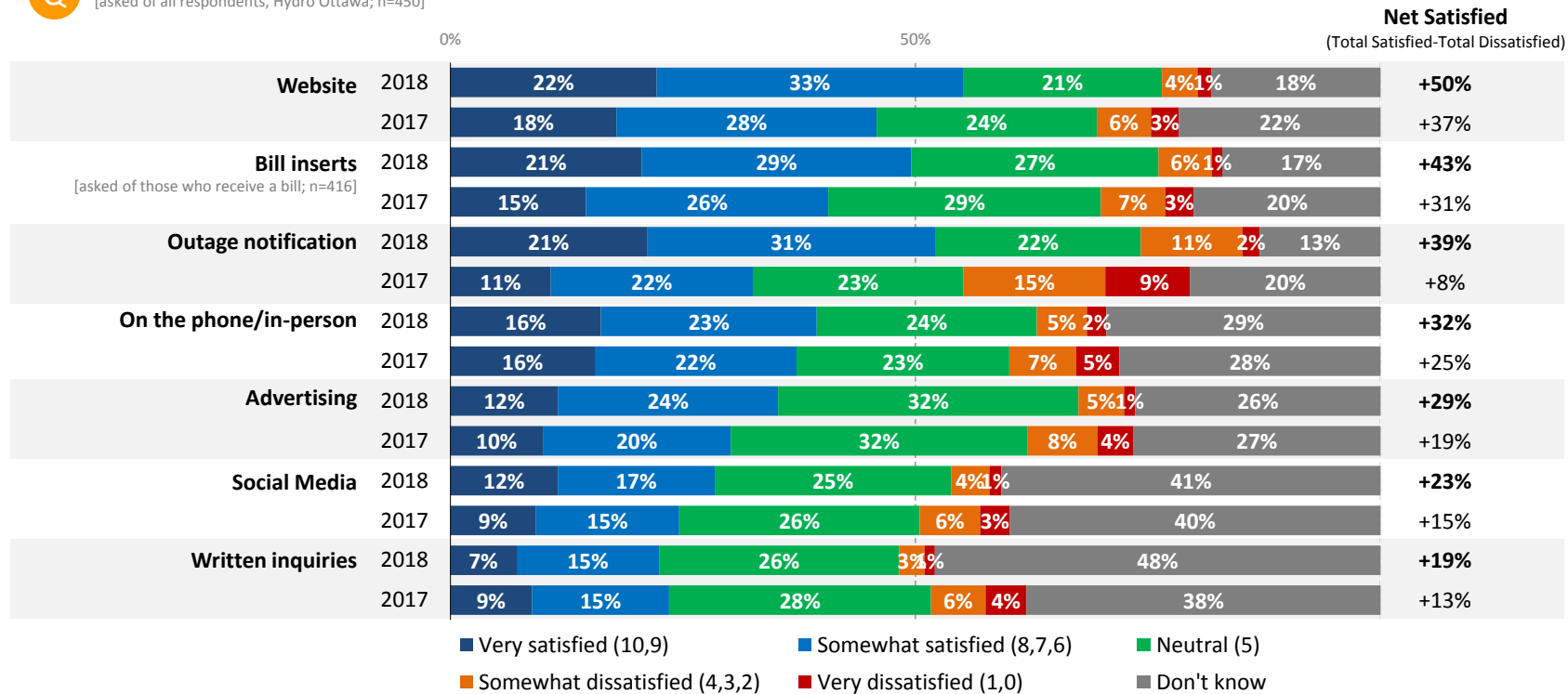
NOTE: 'Don't know' (2%) not shown.

Forms of Communication: Majority are satisfied with communications on bill inserts and website; net satisfaction has improved on all measures but written inquiries



Please indicate how satisfied you are with the way Hydro Ottawa is performing on each of the following forms of communication:

[asked of all respondents, Hydro Ottawa; n=450]

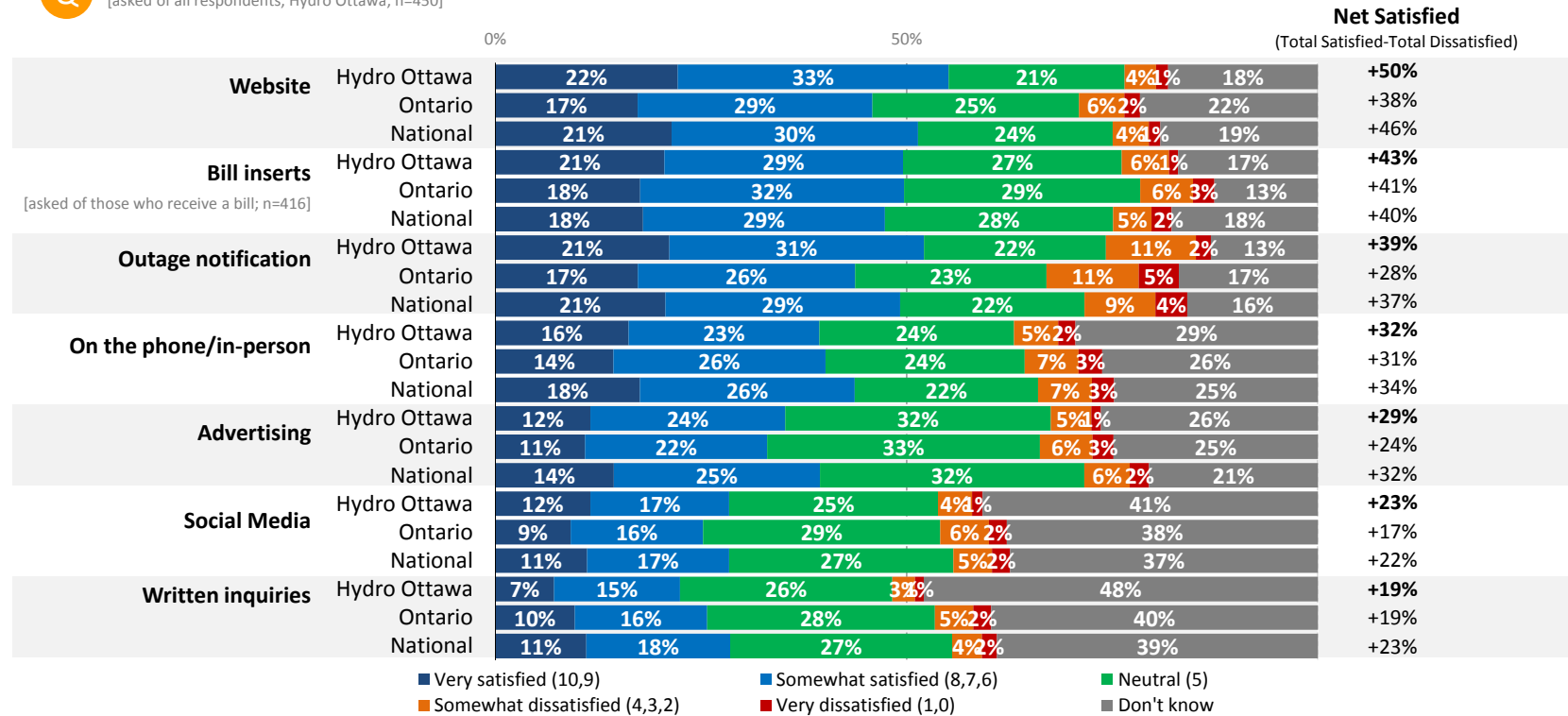


Forms of Communication: Hydro Ottawa outperforms Ontario-wide net satisfaction by 12 points on website, 11 points on outage notification



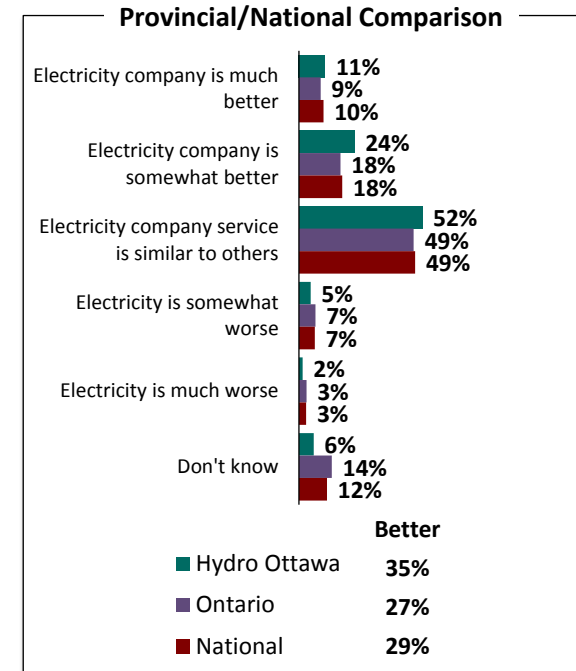
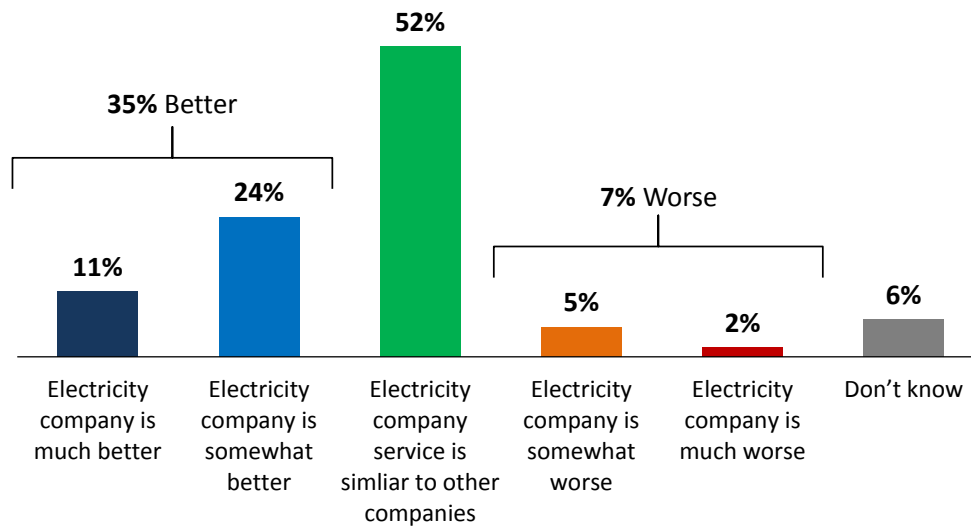
Please indicate how satisfied you are with the way Hydro Ottawa is performing on each of the following forms of communication:

[asked of all respondents, Hydro Ottawa; n=450]



Comparing Customer Experience: Most (52%) feel customer experience with Hydro Ottawa is on par with other service providers; 35% think it is better

Q How does your customer experience with Hydro Ottawa compare to that of other service providers you use (telephone, cable, TV/internet, natural gas, your bank)?
[asked of all respondents, Hydro Ottawa; n=450]

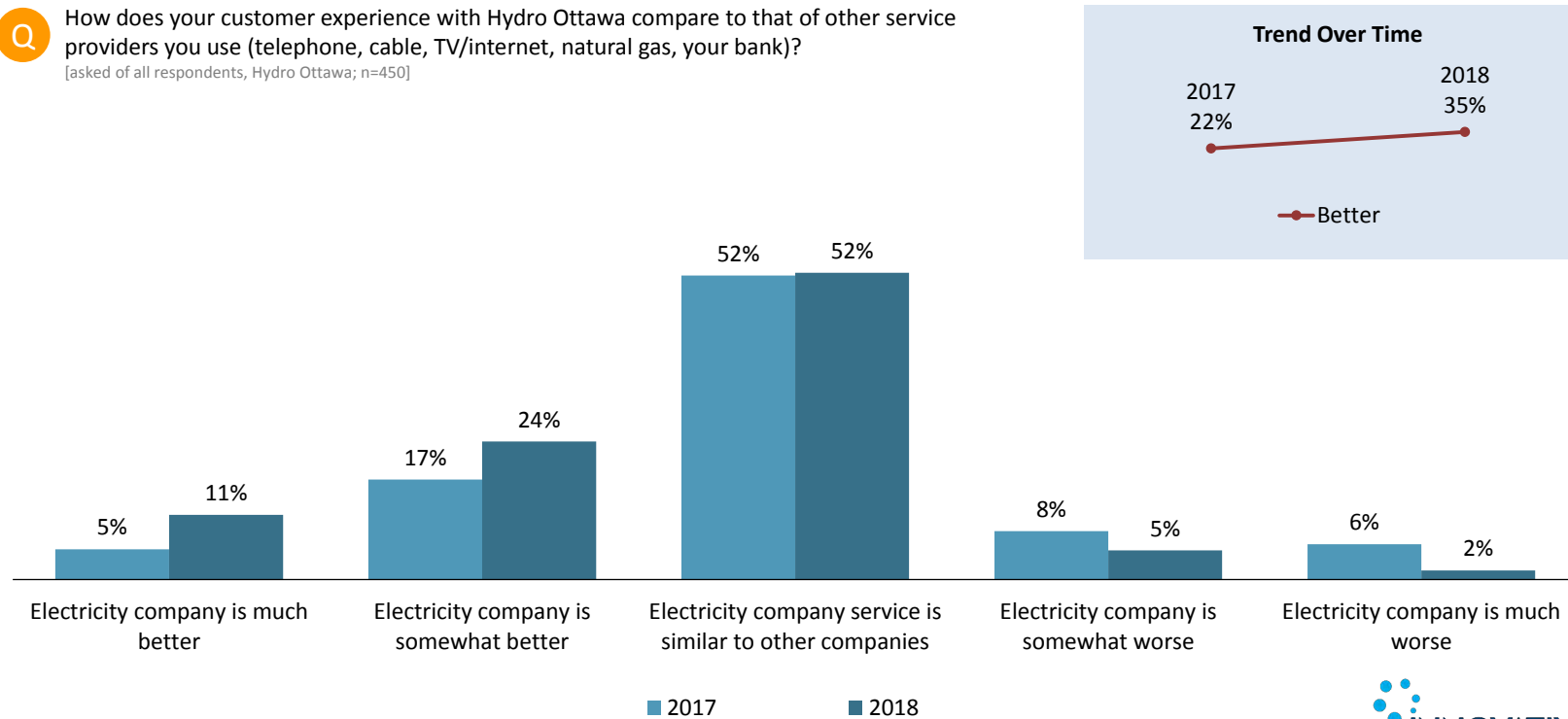


Comparing Customer Experience (Tracking): Opinion of customer experience with Hydro Ottawa has improved 12 points since 2017



How does your customer experience with Hydro Ottawa compare to that of other service providers you use (telephone, cable, TV/internet, natural gas, your bank)?

[asked of all respondents, Hydro Ottawa; n=450]



NOTE: 'Don't know' (15%) not shown.

Conservation

(New in 2018)



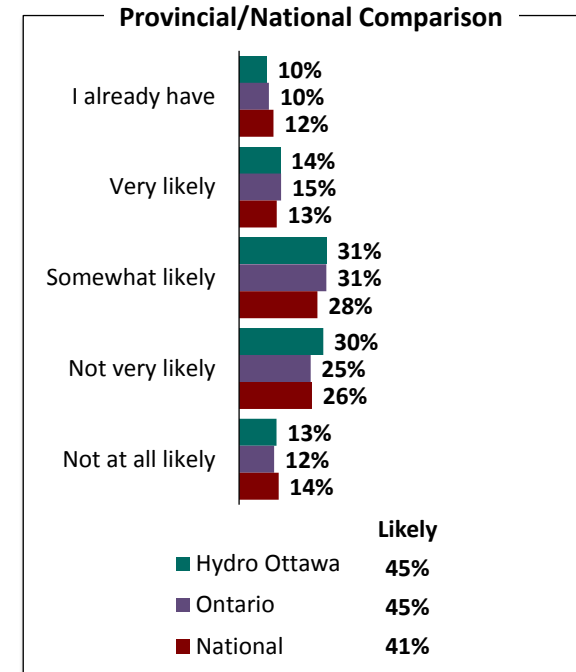
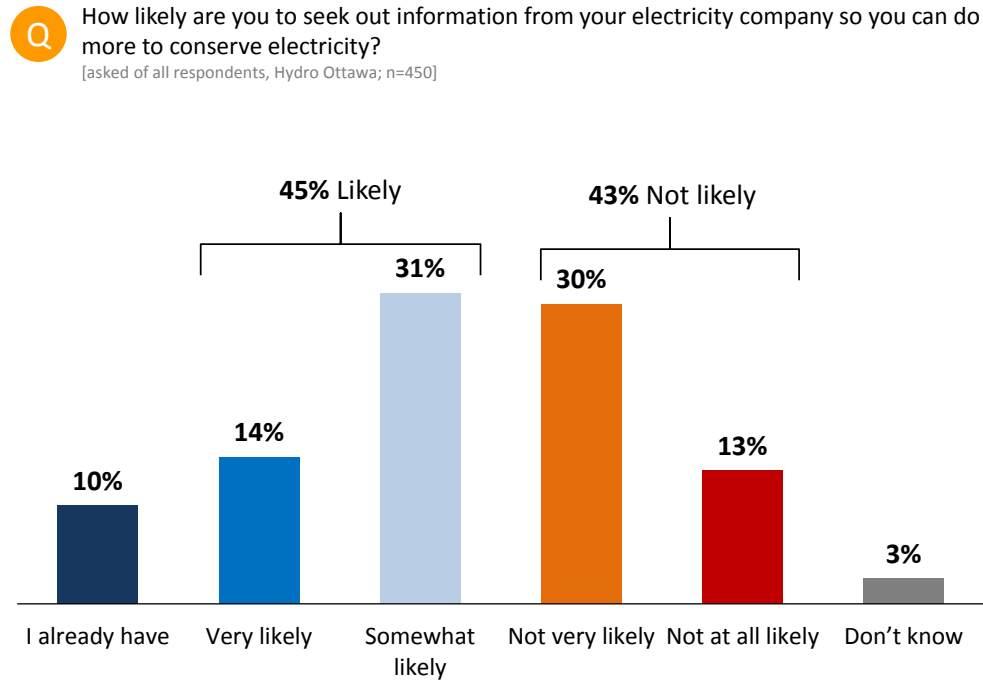


Summary: *Conservation*

The 2018 survey included some new questions about conservation. Specifically, questions probed the likelihood of seeking information from electricity companies about conserving energy, in addition to the type of information that is of greatest interest.

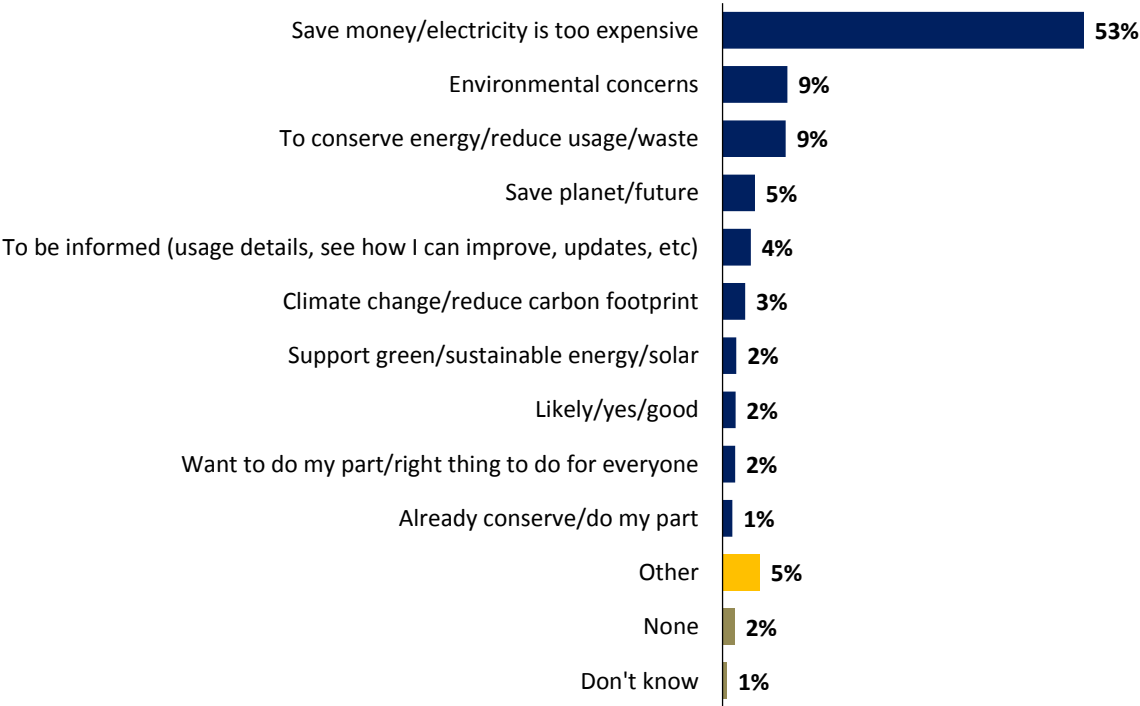
- One-in-ten (10%) say they have already sought information about conservation from their electricity company, and nearly half (45%) say they are either “very” (14%) or “somewhat” (31%) likely to do so.
- The likelihood is on par with the provincial average (45%) and marginally above the national average (41%).
- Saving money (53%) is the primary reason for seeking information on electricity conservation.
- Of those who are not likely to seek conservation information from their electricity company, 16% say they are already doing it, 11% say they already know how to do it, and 10% say they can find the information themselves.
- In total, over half (56%) say they are most interested in conservation programs that include an incentive, with incentives on heating and cooling (20%) being the most popular. Tips and tools are the most popular non-incentive program at 23%.

Seeking Conservation Info: Majority are likely to seek out information or already have; 'likely' for Hydro Ottawa 4 points above national average



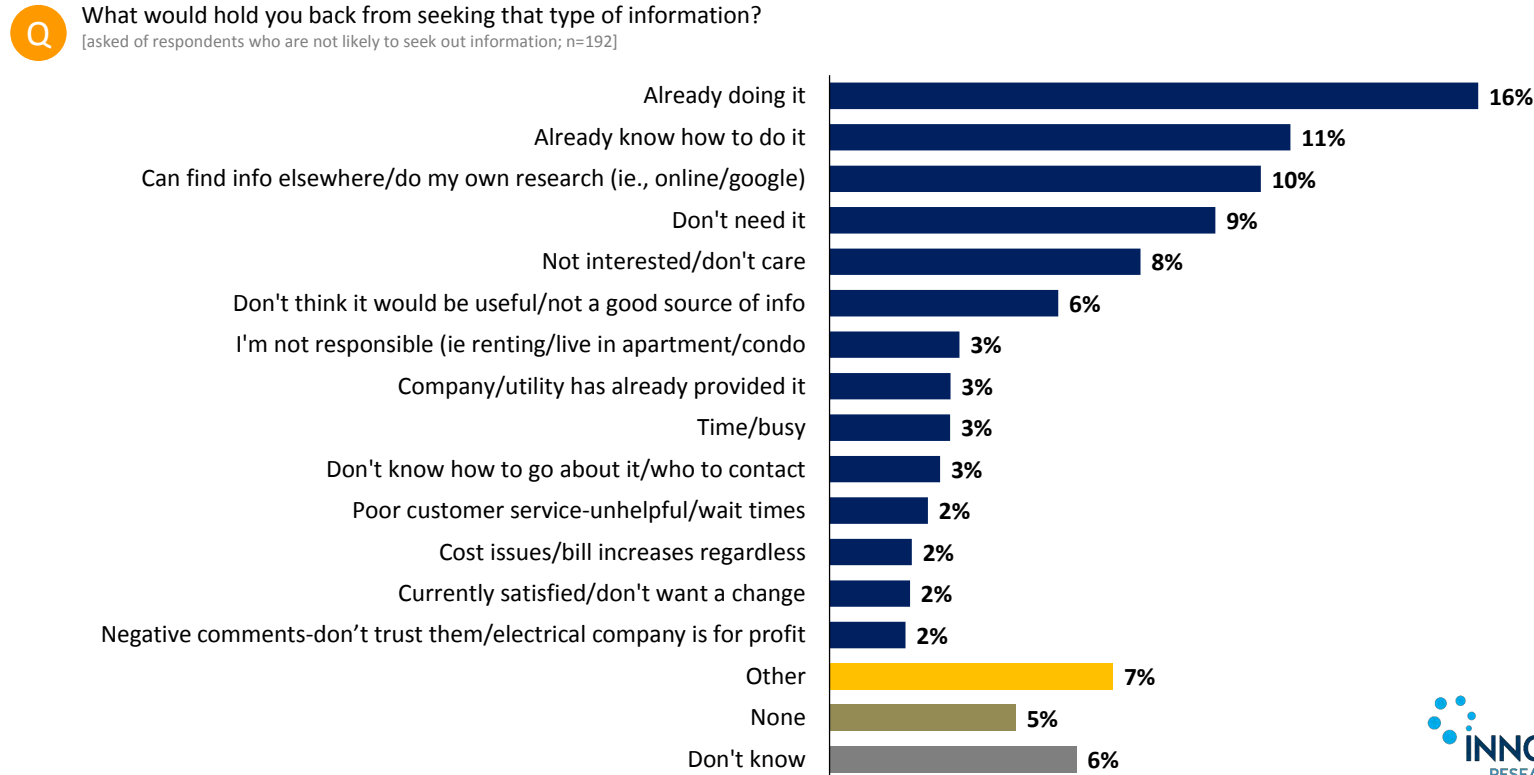
Reasons for Interest in Conservation: majority (53%) of interested would seek out conservation information to save money

Q Why are you interested in information on electricity conservation?
[asked of respondents who already have, or who are likely to seek out information; Hydro Ottawa; n=247]



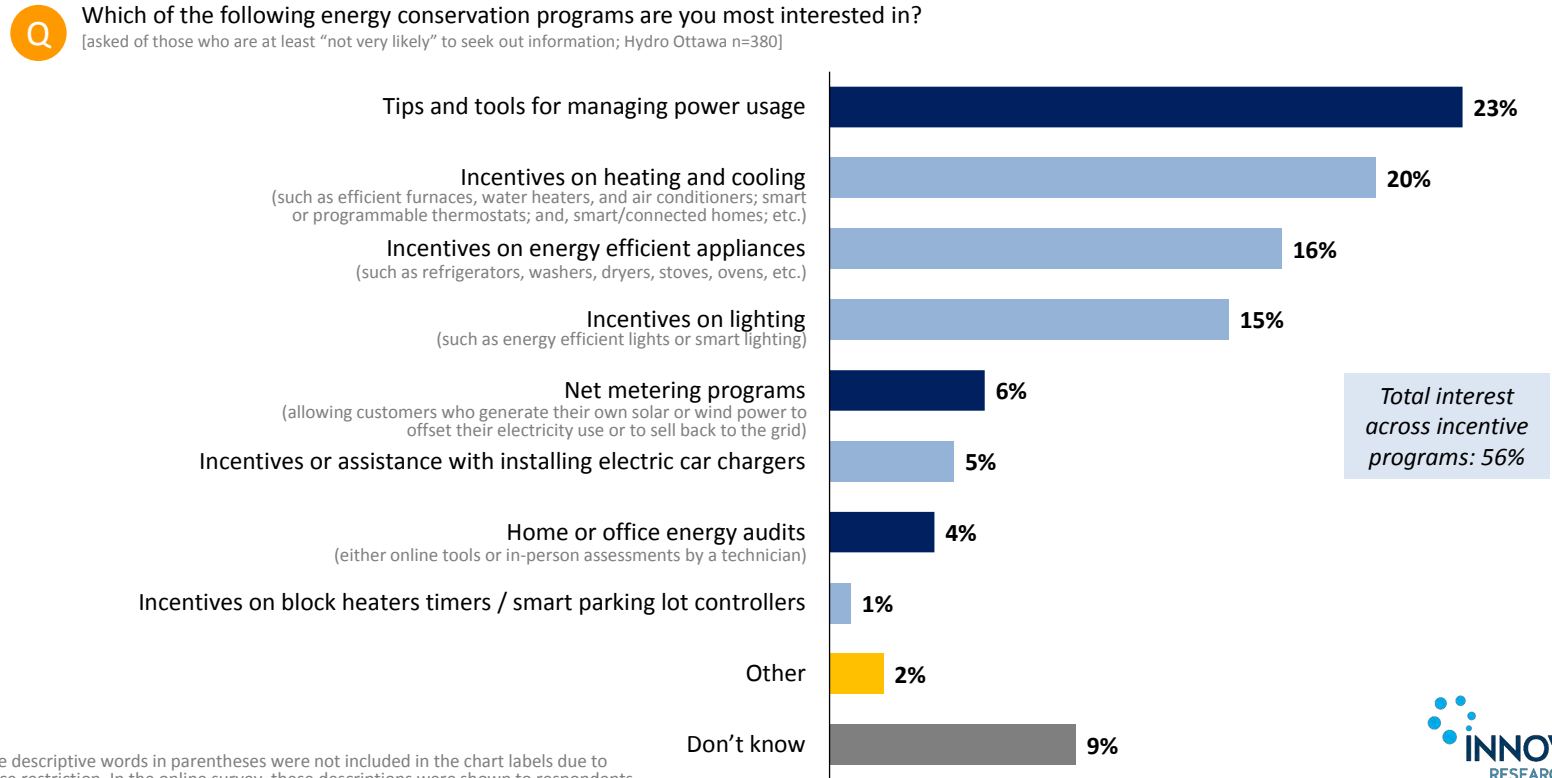
NOTE: 'Refused' (1%) not shown.

Reasons For Not Seeking Conservation Info: Top answers are ‘already doing it’ (16%), ‘know how’ (11%), and ‘can do my own research’ (10%)



NOTE: ‘Refused’ (3%) not shown.

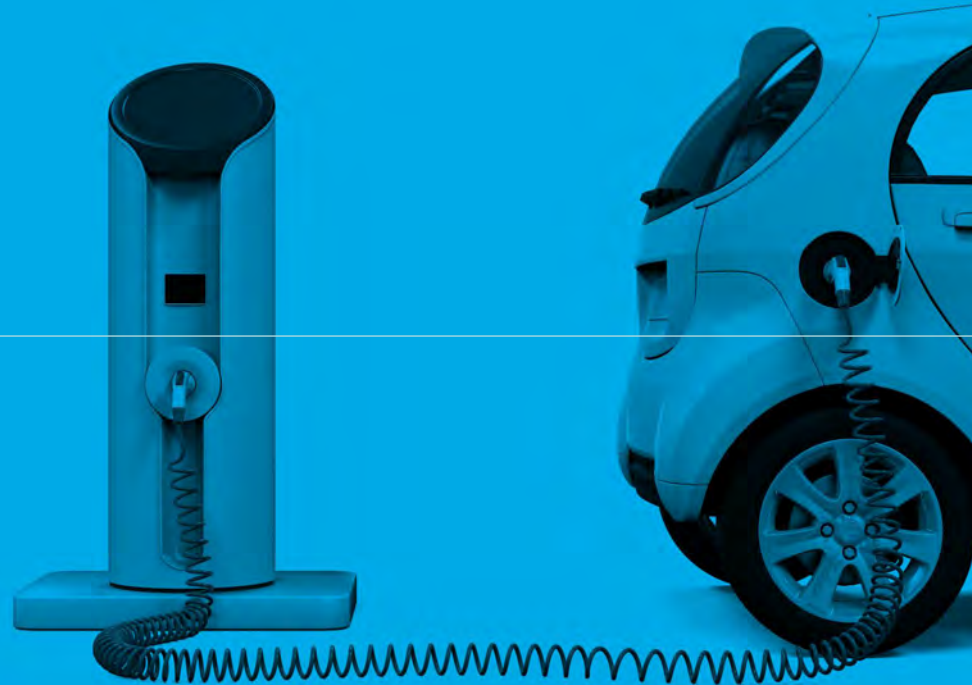
Conservation Programs: 56% of those likely to seek out information would be interested in a conservation program that involves incentives



(The descriptive words in parentheses were not included in the chart labels due to space restriction. In the online survey, these descriptions were shown to respondents in the same font colour and size as the summary tag.)

Technology

(New in 2018)





Summary: *Technology*

Technology is also a newly-added line of questioning in the 2018 survey. With all of the advances in technology, CEA members wanted to find out what people are willing to pay for, and what kind of technology they think electricity companies should make a priority.

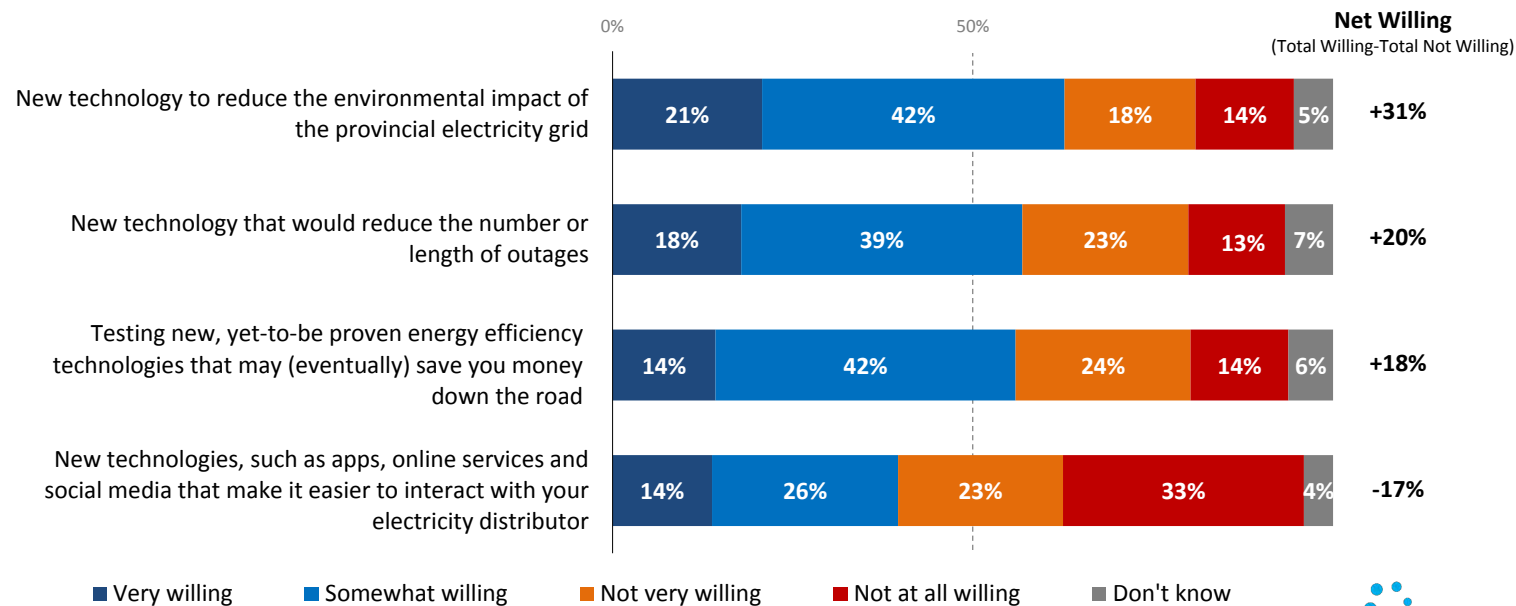
- Net willingness to pay more for technology is higher if there is a benefit that is tangible to the customer. Net willingness to pay more is negative and lowest (-17%) for technology that makes it easier to interact with their distributor, compared to a net score of +31% for technology what would reduce the grid's environmental impact.
- Hydro Ottawa customers are substantially more likely to prioritize potential future savings than either the provincial or national averages. Provincially and nationally, opinion is divided between the environment and potential future savings.
- The proportion who have already bought an EV is as low among Hydro Ottawa customers as it is across Ontario and across Canada (all between 2%-3%), but the proportion who say they are at least somewhat likely (39%) to do so is on par with the provincial (39%) and national (37%) averages.
- Environmental benefits (11 out of 35 of those who purchased an EV or plan to purchase one) are the primary reason for interest in an EV, whereas cost (29%) is the main barrier.

Paying for Tech Innovation: Most would be willing to pay for new tech to reduce environmental impact, number of outages, and potential future savings



Sometimes new technology can save money in electricity systems. Other times it can add costs. Now we would like to ask you about some ways that that electricity companies can improve services to you that would add some costs to your bills. Please indicate how willing you would be to pay more for the following technological innovations from Hydro Ottawa.

[asked of all respondents, Hydro Ottawa; n=450]

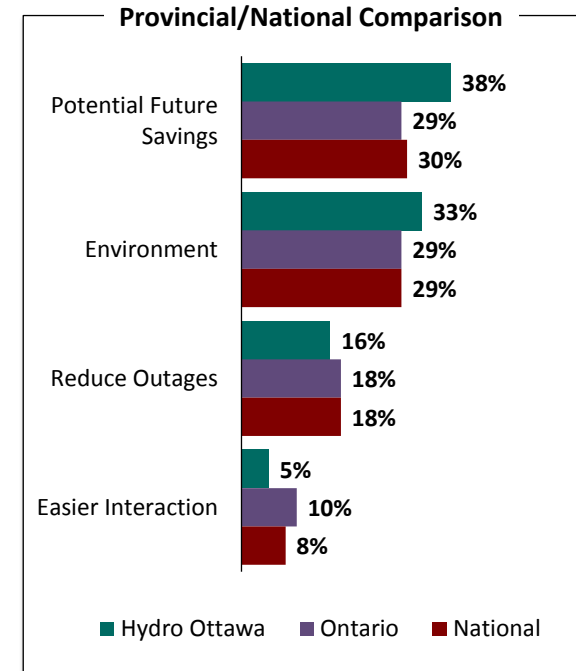
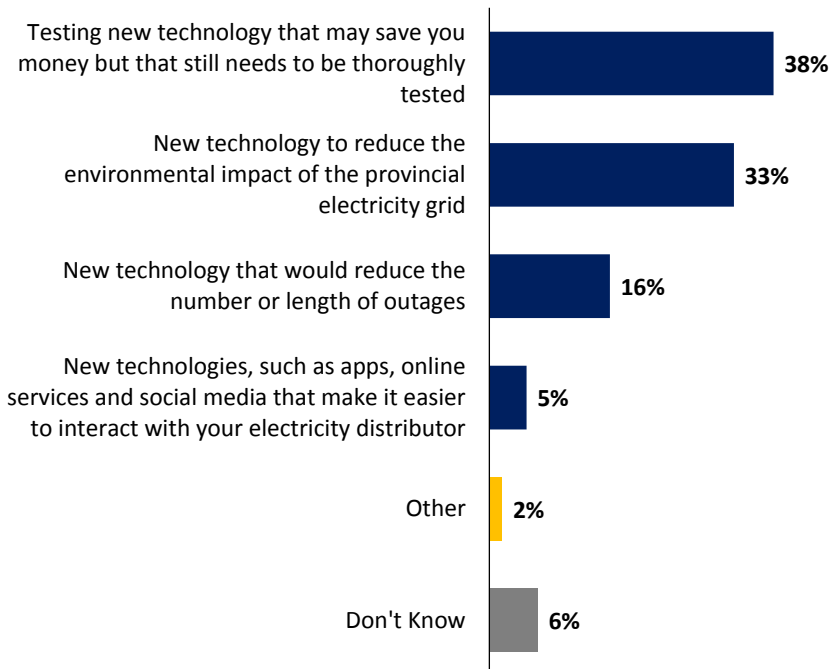


Technological Priorities: Top priority for over 1-in-3 (38%) is new tech that will save money, followed by reduced environmental impact of grid



When it comes to developing new technology, which of the following do you feel should be the main priority for your electricity distributor?

[asked of all respondents, Hydro Ottawa; n=450]



Technological Priorities: Millennials more likely to prefer new tech like apps to ease interaction; among those who struggle financially, cost savings is key



When it comes to developing new technology, which of the following do you feel should be the main priority for your electricity distributor?

[asked of all respondents, Hydro Ottawa; n=450]

	TOTAL	Age			Impact on Finances		
		18-34	35-54	55+	Impact	Neutral	No Impact
Testing new technology that may save you money but that still needs to be thoroughly tested	38%	32%	40%	39%	45%	39%	32%
New technology to reduce the environmental impact of the provincial electricity grid	33%	32%	31%	34%	23%	33%	44%
New technology that would reduce the number or length of outages	16%	17%	15%	16%	19%	13%	15%
New technologies, such as apps, online services and social media that make it easier to interact with your electricity distributor	5%	13%	6%	1%	7%	4%	3%

Technological Priorities: Those with most outages prefer cost savings tech by nearly 2-1 over environment, 50% of dissatisfied prefer cost savings tech

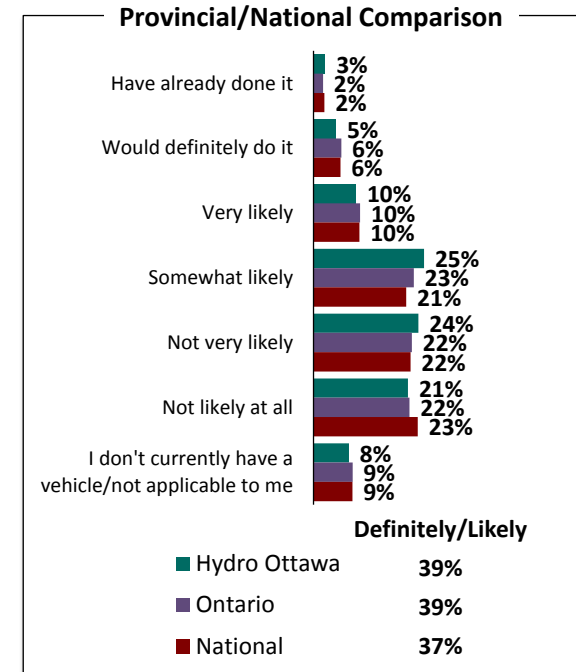
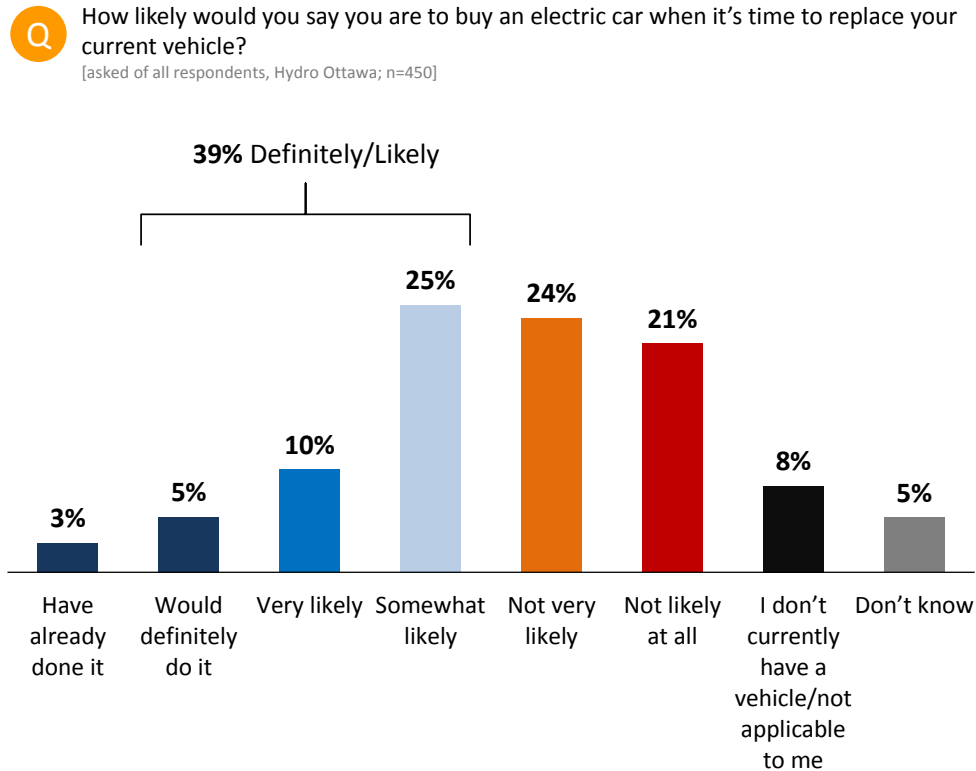


When it comes to developing new technology, which of the following do you feel should be the main priority for your electricity distributor?

[asked of all respondents, Hydro Ottawa; n=450]

	TOTAL	# of Outages (Past 12 Months)			Satisfaction with Hydro Ottawa		
		Less than 2	2 or 3	3+	Satisfied	Neutral/DK	Dissatisfied
Testing new technology that may save you money but that still needs to be thoroughly tested	38%	43%	32%	45%	39%	29%	50%
New technology to reduce the environmental impact of the provincial electricity grid	33%	42%	42%	24%	33%	34%	25%
New technology that would reduce the number or length of outages	16%	9%	16%	17%	17%	17%	7%
New technologies, such as apps, online services and social media that make it easier to interact with your electricity distributor	5%	4%	5%	6%	4%	7%	8%

Buying Electric Vehicles: Only 3% have actually done so, but 4-in-10 (39%) say they are likely to buy an EV, on par with the provincial average

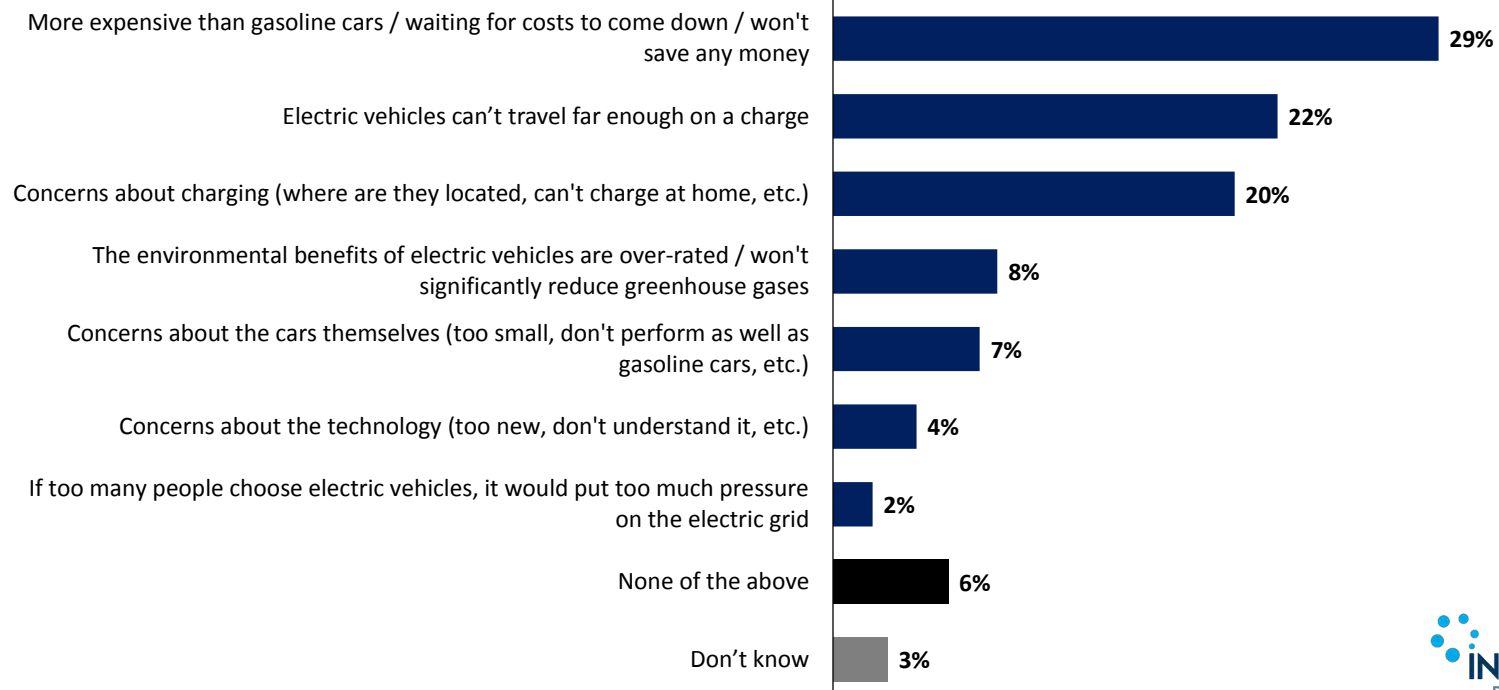


Reasons Against Purchasing an EV: 3-in-1 (29%) cite cost as a reason not to purchase an electric car



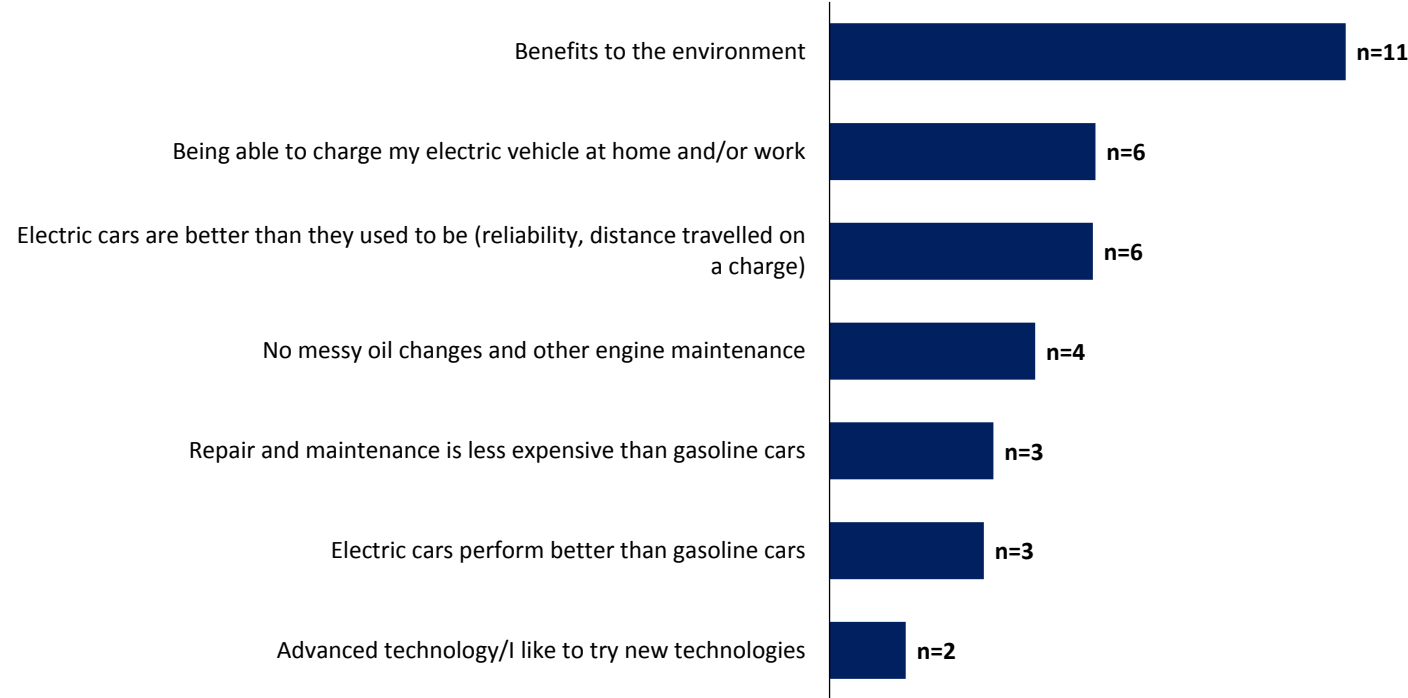
Which of the following best describes why you might not purchase an electric car? [RESPONSES CHOSEN FROM LIST]

[asked of respondents who are not likely to purchase an electric car; Hydro Ottawa; n=356]



Why Purchased/Plan to Purchase an EV: A plurality (31%) of those who have purchased/plan to purchase EV cite benefits to the environment

Q Which of the following best describes why you have purchased or plan on purchasing an electric car? [RESPONSES CHOSEN FROM LIST]
[asked of respondents who have purchased or plan on purchasing an electric car; Hydro Ottawa; n=35]



Net Promoter Score (NPS)

(This metric was last asked on the 2016 survey)

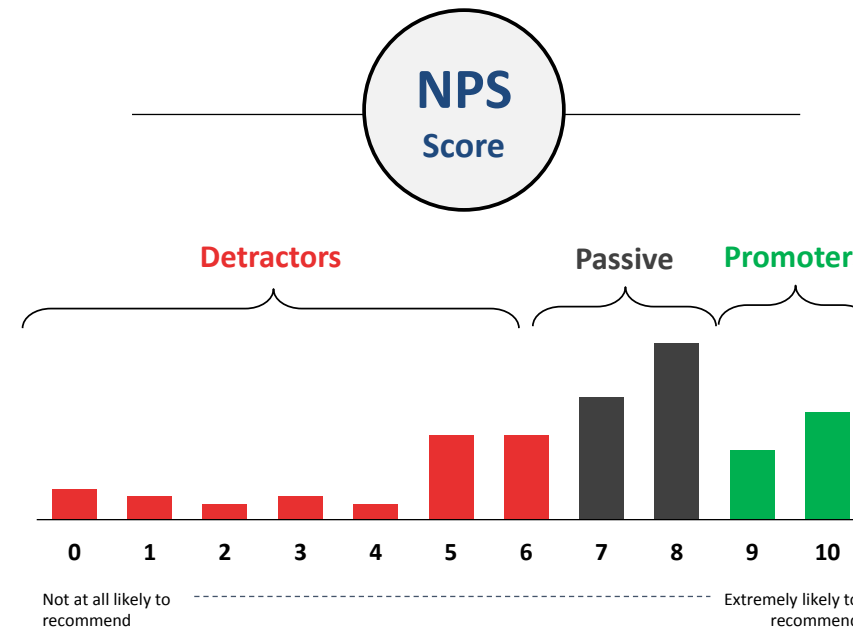
Endorsement: Calculating “Net Promoter Scores” (NPS)

A *Net Promoter Score* (NPS) is based on the fundamental perspective that every organization’s clientele can be divided into three categories: Promoters, Passives, and Detractors.

By asking one simple question — *If you had a choice between several possible providers of electricity, how likely would you be to recommend Hydro Ottawa to your friends, family and others as the preferred electricity distributor?* — you can track these groups and get a clear measure of the customer’s experience with your organization. Customers respond on a 0-to-10 point rating scale and are categorized as follows:

- **Promoters** (score 9-10) are loyal enthusiasts who would refer others to your organization if they had that option. These customers are an important source of strength for the brand. An estimated 80-90% of positive word-of-mouth come from *Promoters*.
- **Passives** (score 7-8) are satisfied but unenthusiastic customers who would be vulnerable to offerings from competitors, given the option of a choice.
- **Detractors** (score 0-6) are unhappy customers who can damage your brand and impede growth through negative word-of-mouth. Detractors are responsible for an estimated 80-90% of all the negative word-of-mouth. Furthermore, this group of customers complain more frequently, thereby consuming service resources at a much higher rate than other customers.

NOTE: ‘Don’t know’ removed from calculation



Comparing NPS Across Industries (US Data)

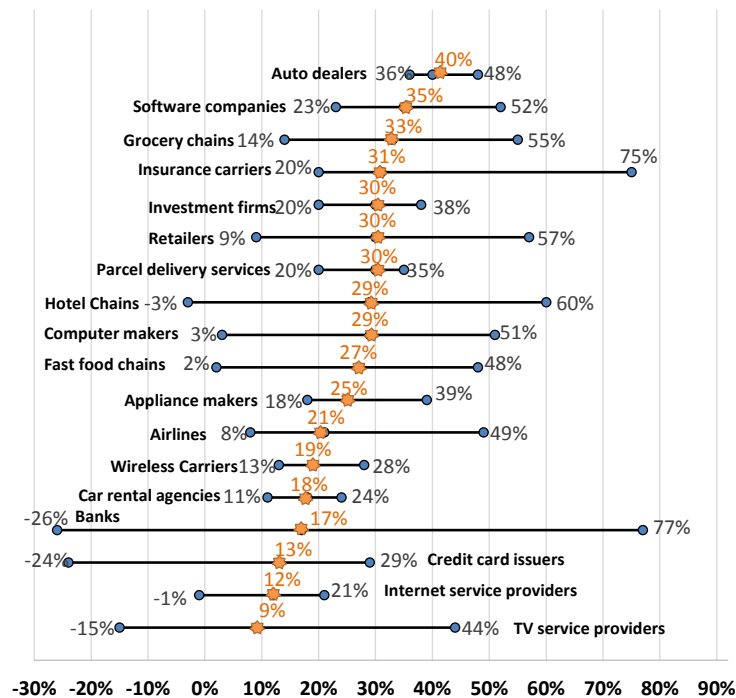
The Net Promoter Score (NPS) was created in the 90's to evaluate the growth potential of companies that operate in competitive markets. Typically, organizations with scores higher than their competitors tend to grow faster.

Because almost all CEA members operate primarily in regulated monopoly markets, NPS should only be considered a “rough proxy” for customer satisfaction.

To put NPS in context, this chart shows the average NPS for several industries in the U.S. This data was taken from a 2012 study surveying 5,000 U.S. consumers evaluating multiple companies that compete in various industries.

As the chart shows, it is not uncommon for organizations in various sectors to have a negative NPS.

Range of Net Promoter Scores (NPS) Across US Industries

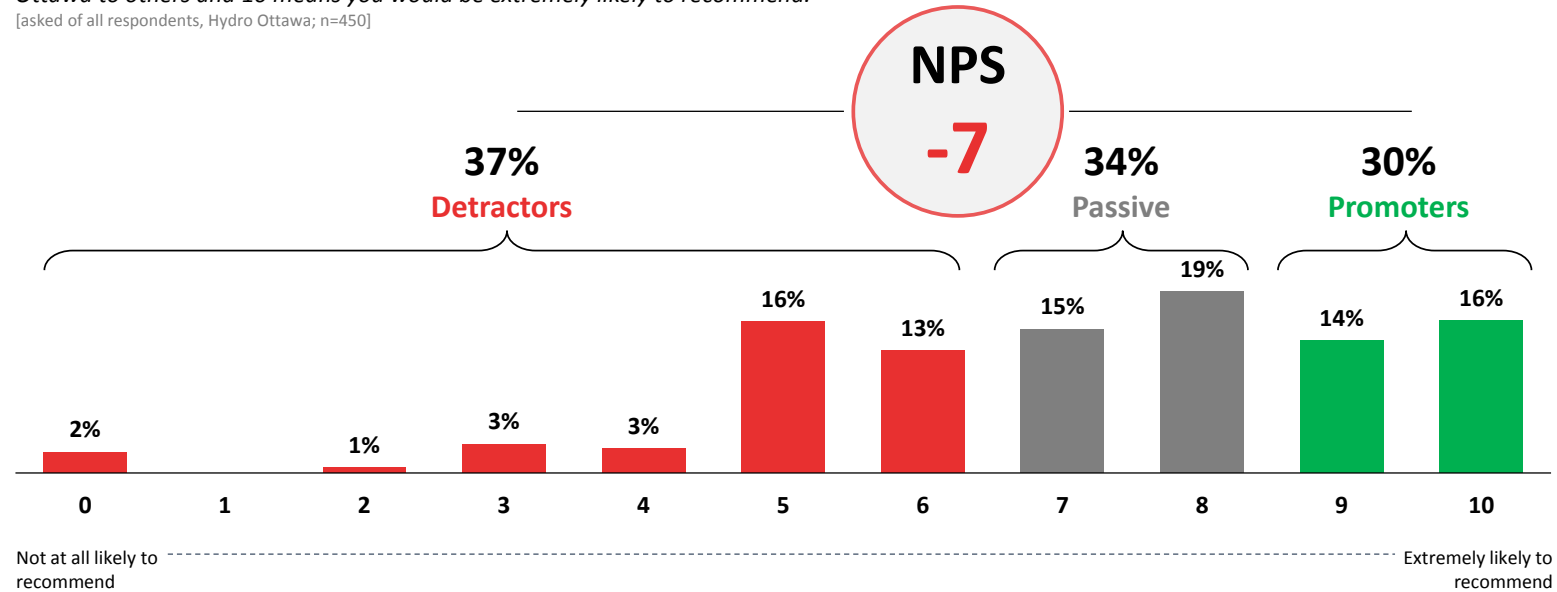


Source: Temkin Group Q3 2012 Survey

Net Promoter Score: Negative NPS as respondents are slightly more likely to be detractors than promoters; 1-in-3 (34%) are passive

Q If you had a choice between several possible providers of electricity, how likely would you be to recommend Hydro Ottawa to your friends, family and others as the preferred electricity distributor? Please use a scale from 0 to 10, where 0 means you would not be at all likely to recommend Hydro Ottawa to others and 10 means you would be extremely likely to recommend.

[asked of all respondents, Hydro Ottawa; n=450]



NOTE: 'Don't know' (4%) removed from calculation

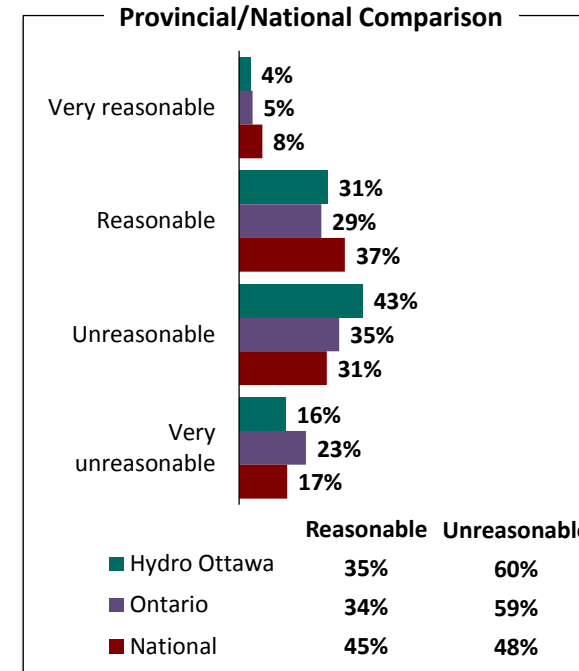
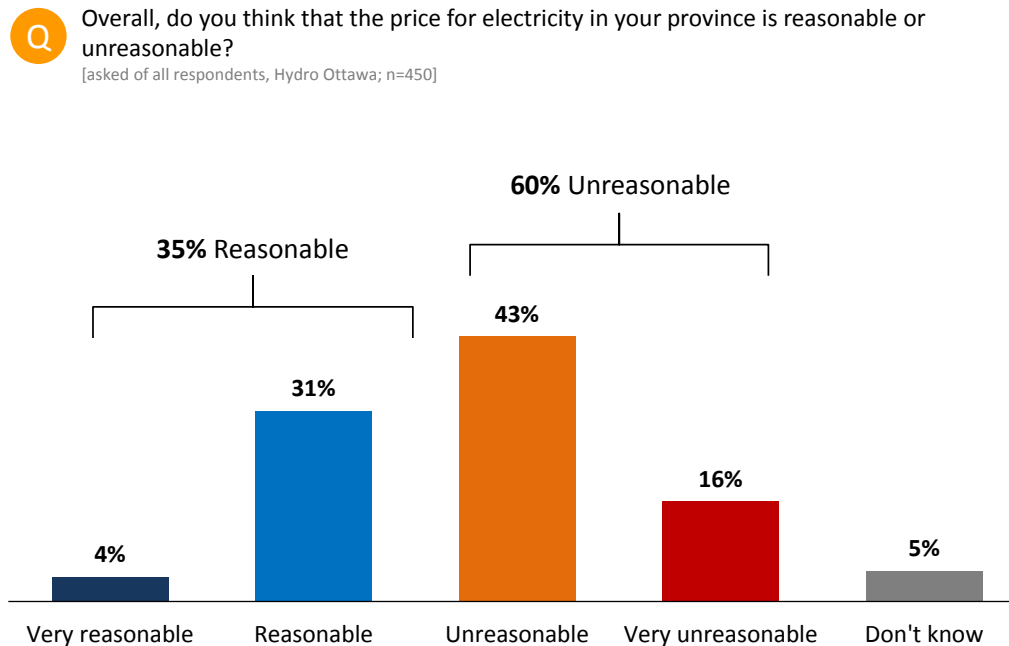
Price



Summary: *Price*

- Perception of electricity prices in Ontario is unchanged since 2017, with 35% deeming prices reasonable. However, 6-in-10 (60%) feel the price is unreasonable, on par with last year's figure (59%).
- Hydro Ottawa respondents are consistent with provincial averages in perceptions of prices being reasonable (34%) and unreasonable (59%).
- Nationally, survey respondents are 10 points more likely to say the price is reasonable (45%) and less likely to say it is unreasonable (48%).
- Those who struggle financially with their electricity bill are much more likely to feel electricity prices are unreasonable than those who do not struggle (-48% vs +14% net reasonable).
- Perception of value for money has also remained steady, with 33% agreeing that they get good value. Hydro Ottawa is slightly ahead of the provincial average (28%) but marginally below the national average (37%).

Reasonable Price?: 6-in-10 (60%) feel electricity price in province is unreasonable; on par with provincial average, but 12 points higher than national

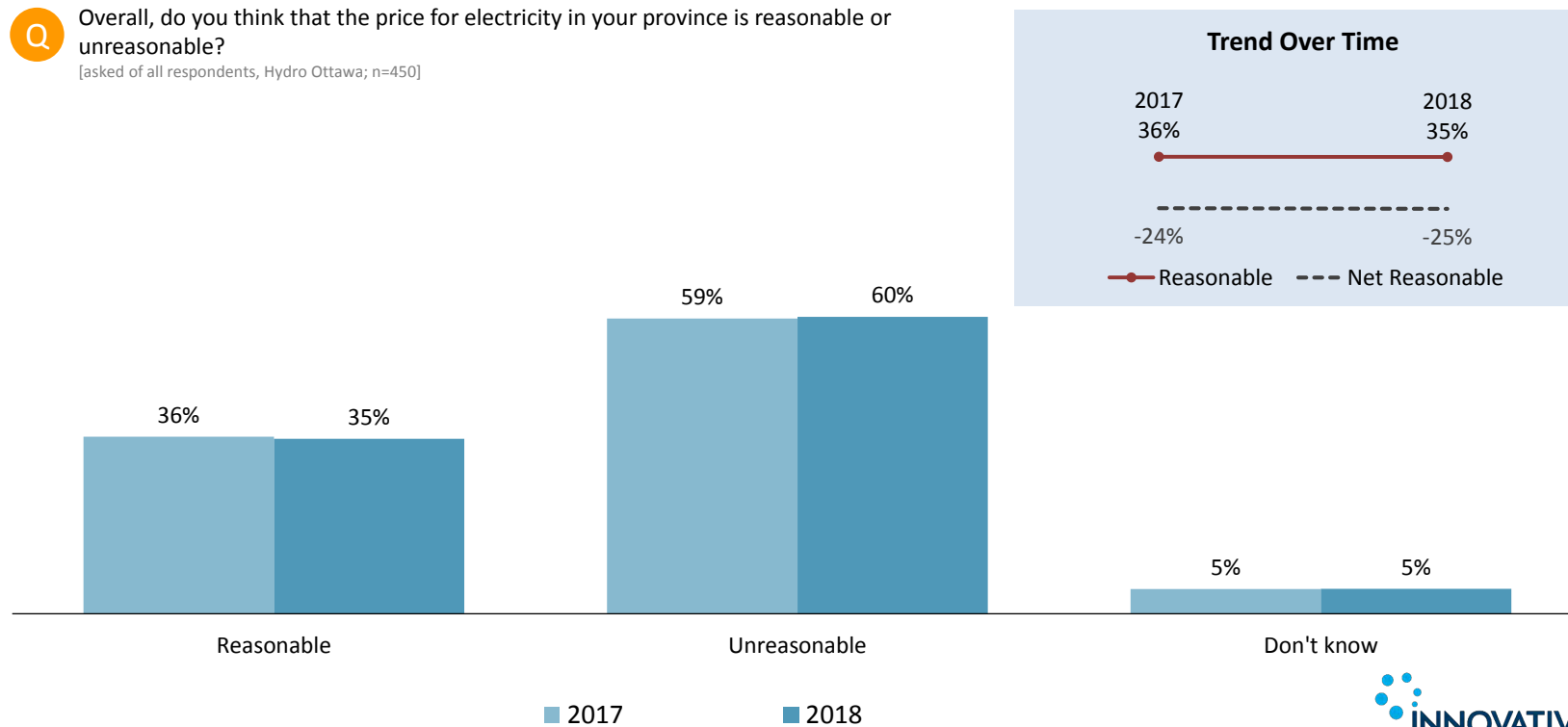


Reasonable Price? | Tracking: The proportion who say the electricity price in Ontario is reasonable remains steady year-to-year (36%)



Overall, do you think that the price for electricity in your province is reasonable or unreasonable?

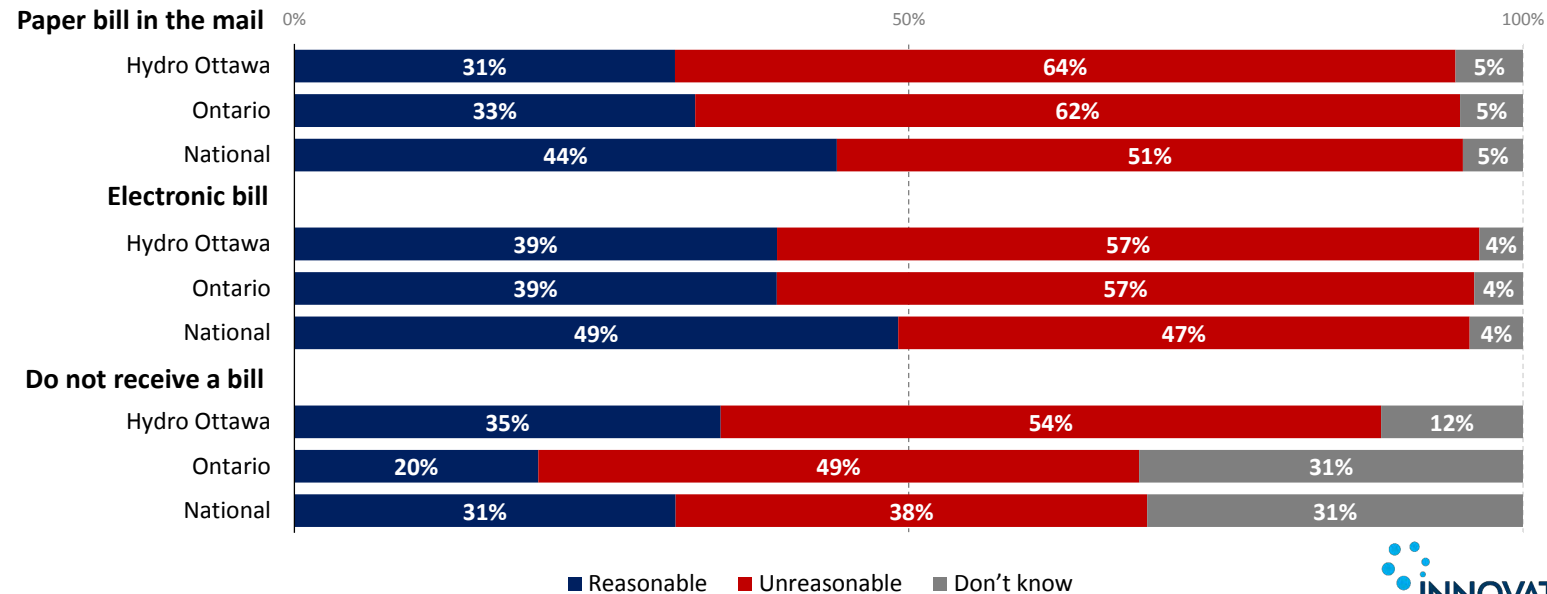
[asked of all respondents, Hydro Ottawa; n=450]



NOTE: 'Don't know' (6%) not shown.

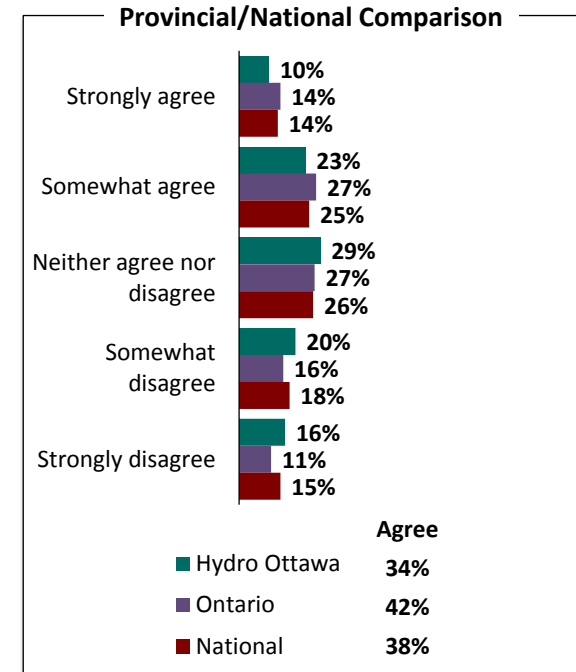
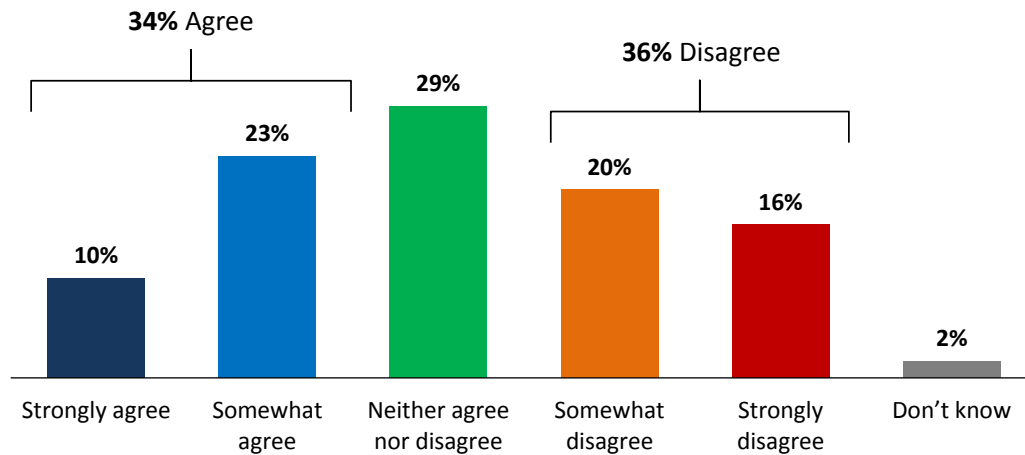
Price Assessment by Bill Format: Hydro Ottawa customers who receive an e-bill are slightly more likely to think the price of their electricity is ‘reasonable’

Q Overall, do you think that the price for electricity in your province is very reasonable, reasonable, unreasonable, or very unreasonable?
 BY
 Bill format
 [asked of all respondents, Hydro Ottawa; n=450]



Financial Impact: 1-in-3 (34%) feel an impact on their finances from electricity costs, 8 points below the provincial average

Q Do you agree or disagree with the following statements?
My electricity bill has major impact on my finances and requires I do without other important priorities.
[asked of all respondents, Hydro Ottawa; n=450]

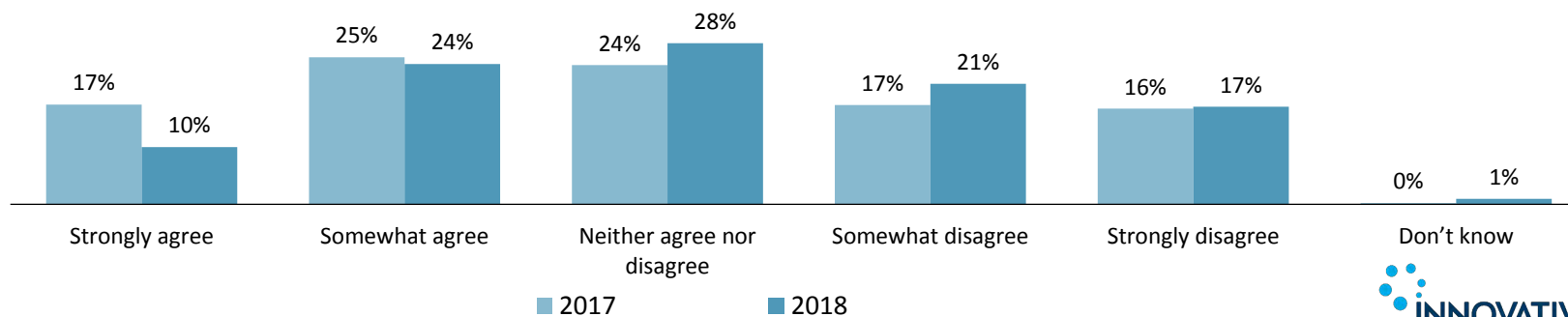
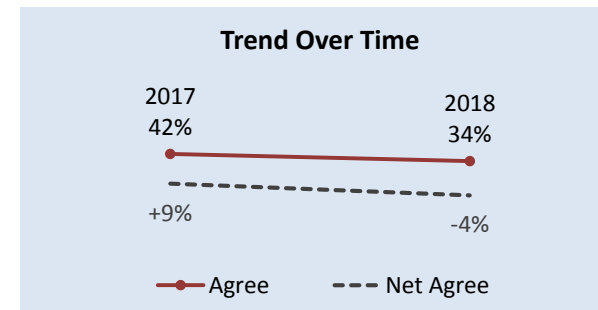


Financial Impact | Tracking: 34% of those who receive a bill say it has an impact on their finances; down 8 points year-to-year



Do you agree or disagree with the following statements?
My electricity bill has major impact on my finances and requires I do without other important priorities.

[asked of all respondents; for tracking purposes, data filtered to show only those who receive a bill; Hydro Ottawa;
 n=416]



Perception of Price by Bill Impact: Perception of price improves as financial impact of electricity bill lessens

Q Overall, do you think that the price for electricity in your province is very reasonable, reasonable, unreasonable, or very unreasonable?
BY
My electricity bill has a major impact on my finances and requires I do without some other important priorities.
[asked of all respondents, Hydro Ottawa; n=450]

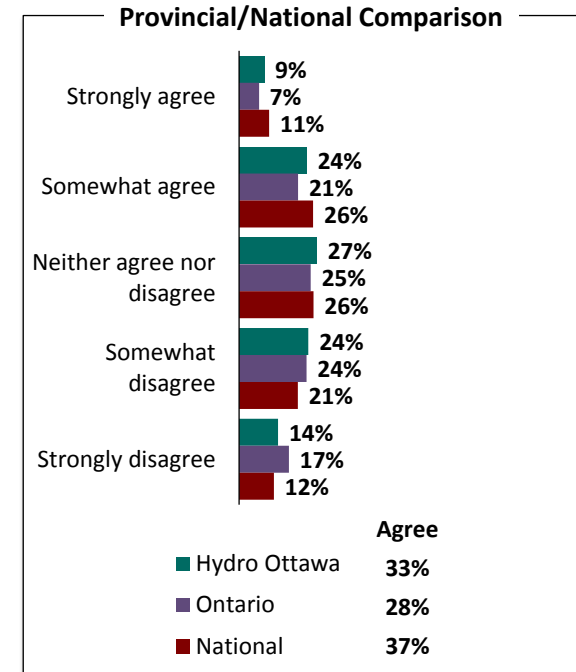
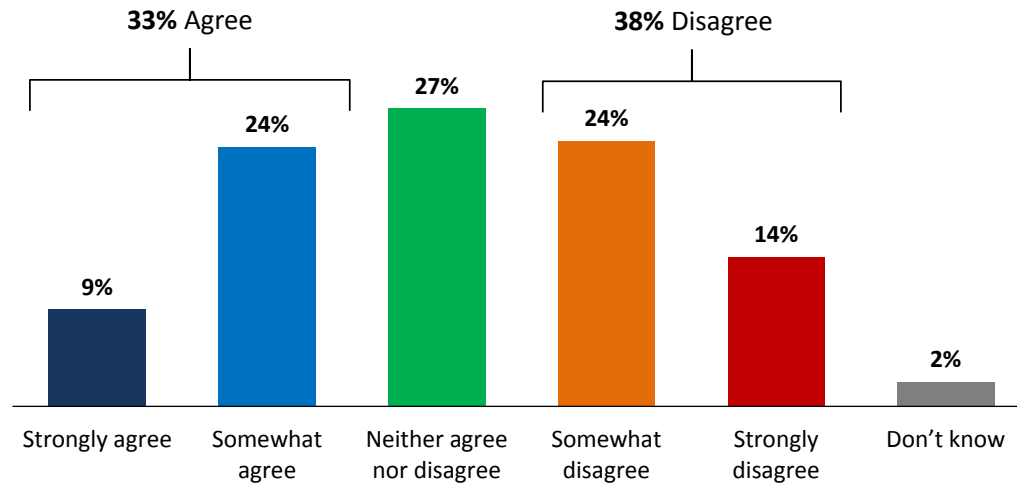
Do you agree or disagree with the following statement:
My electricity bill has a major impact on my finances and requires I do without some other important priorities.

	Strongly agree	Somewhat agree	Neither	Somewhat disagree	Strongly disagree	Overall
Very reasonable	13%	1%	3%	1%	7%	4%
Reasonable	13%	27%	28%	39%	48%	31%
Unreasonable	23%	56%	48%	44%	33%	43%
Very unreasonable	51%	15%	16%	9%	8%	16%
Net Reasonable	-48%	-43%	-33%	-13%	+14%	-25%

NOTE: 'Don't know' not shown

Value for Money: Opinion split on perception of value for money; total agreement (33%) is higher than the Ontario average (28%)

Q Do you agree or disagree with the following statements?
Thinking of all regular household bills, I receive good value for the price I pay for electricity.
[asked of all respondents, Hydro Ottawa; n=450]



Value for Money | Tracking: Perception of value for money is steady year-to-year

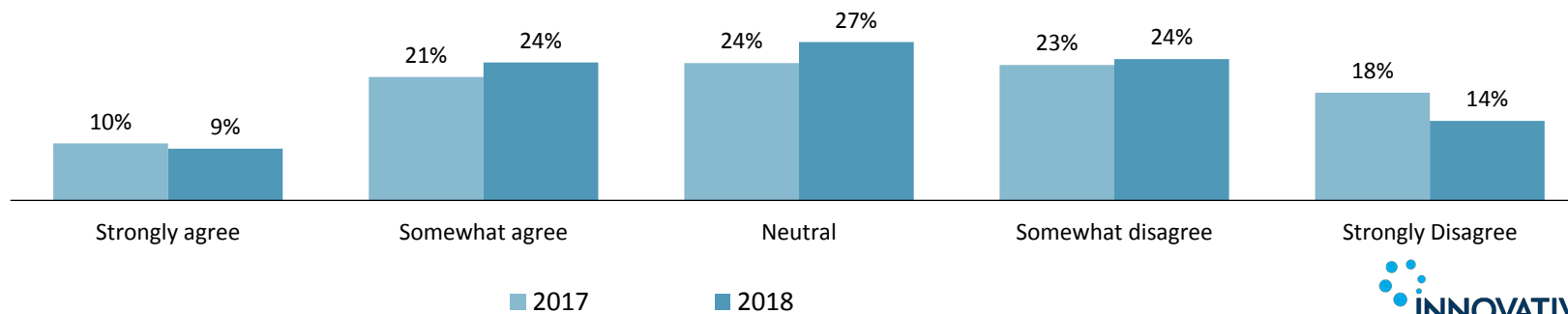
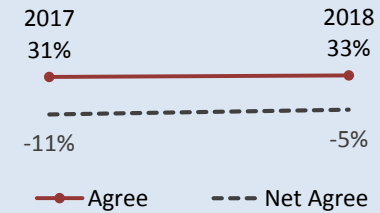


Do you agree or disagree with the following statements?

Thinking of all regular household bills, I receive good value for the price I pay for electricity.

[asked of all respondents, Hydro Ottawa; n=450]

Trend Over Time



NOTE: 'Don't know' (3%) not shown.

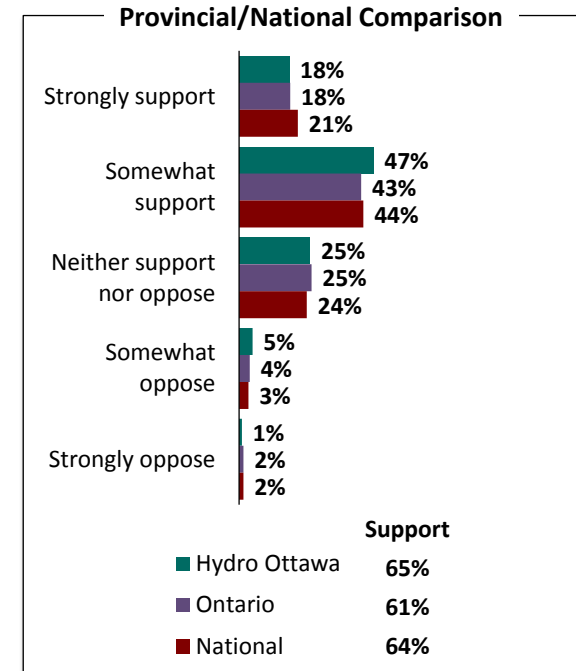
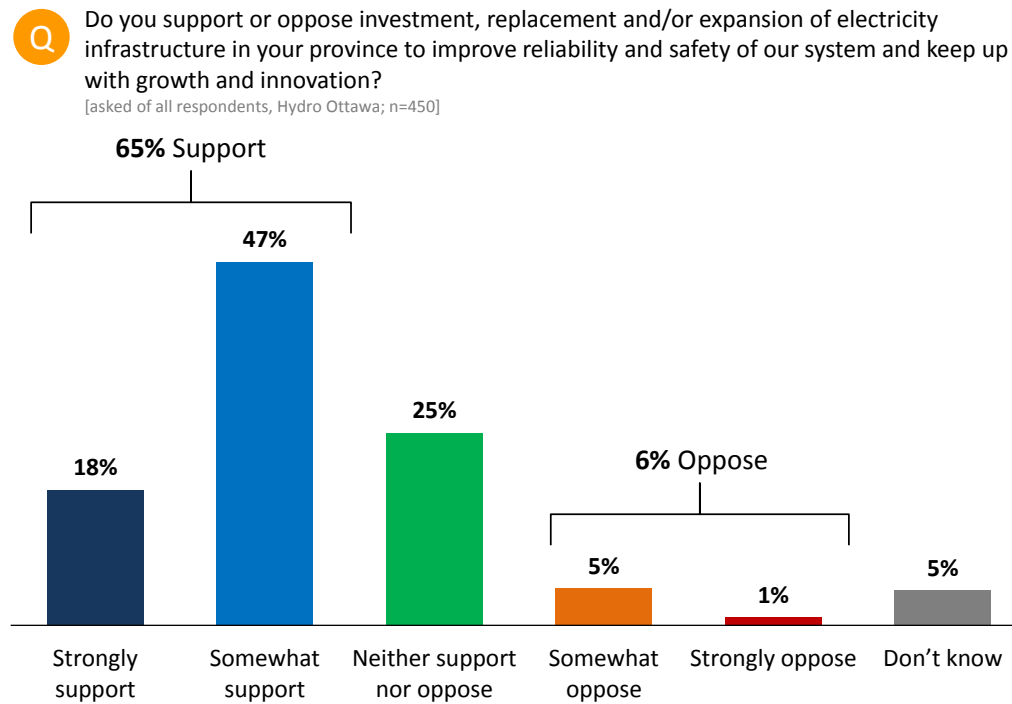
General Attitudes



Summary: General Attitudes

- Two-in-three (65%) Hydro Ottawa customers support investment in electricity infrastructure, which is higher than the provincial average (61%) and on par with the national average (64%).
- Support for investment is marginally higher than it was in 2017 (65% vs 60%), mainly a result of an increase in the portion saying “*somewhat support*” (from 41% to 47%).
- Overall, social permission for a price increase to invest in the provincial system increases from 47% in 2017 to 52% this year. This is largely a result of those saying “*A bad idea that I oppose*” decreases (from 47% to 40%).
- Social permission for a price increase is highest (73%) among those who strongly support infrastructure investment.
- Hydro Ottawa customers (32%) are on par with the provincial average (30%) on satisfaction with provincial government management of the electricity system. Hydro Ottawa’s level of satisfaction is marginally lower than the national average (36%).
- The satisfaction with government management is higher than in 2017 (32% vs 26% in 2017). Those who say they are dissatisfied dropped drastically from 52% to 35%.

Infrastructure Investment: 2-in-3 (65%) support infrastructure investment, on par with national average

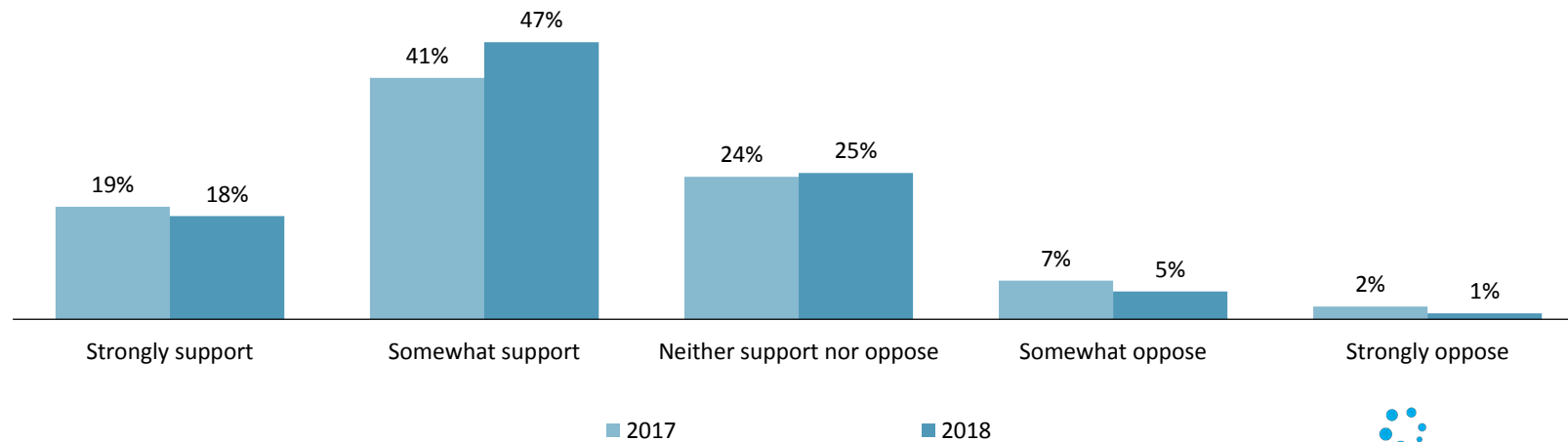
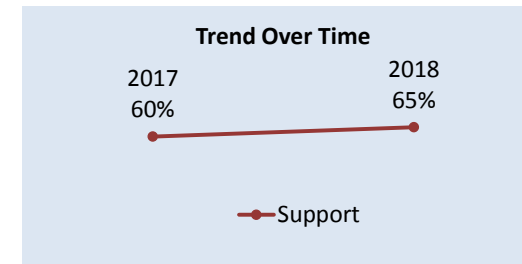


Infrastructure Investment | Tracking: Support (65%) for infrastructure has increased five points year-to-year



Do you support or oppose investment, replacement and/or expansion of electricity infrastructure in your province to improve reliability and safety of our system and keep up with growth and innovation?
 (2014-2016: Given everything you have read, seen or heard ...
 Do you support or oppose investment in and expansion of the generation, transmission and distribution of electrical power in your province?)

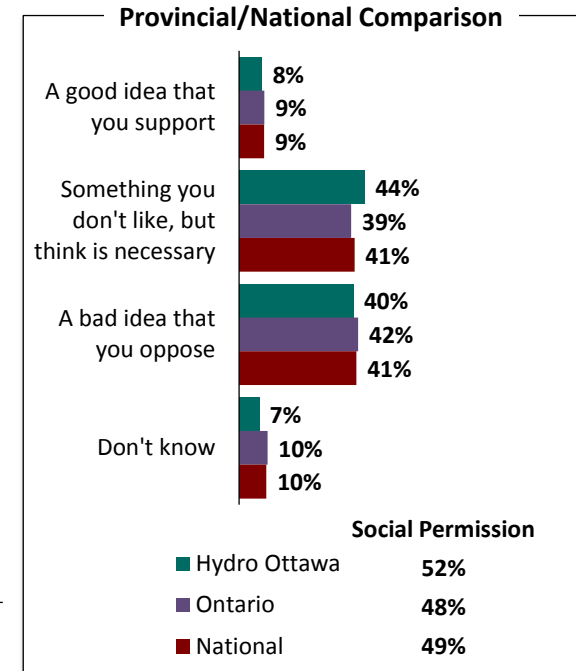
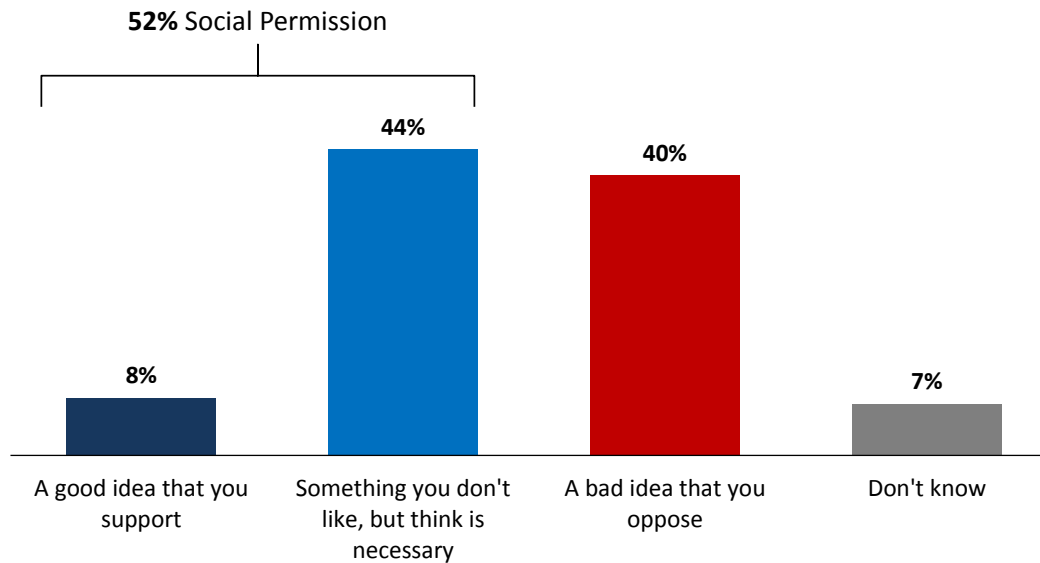
[asked of all respondents, Hydro Ottawa; n=450]



NOTE: 'Don't know' (4%) not shown.

Permission on Price Increase: Majority (52%) would permit increase to the price of electricity for investments; higher than the Ontario and national averages

Q Do you think increasing the price of electricity to invest in our province's electric system is...
[asked of all respondents, Hydro Ottawa; n=450]

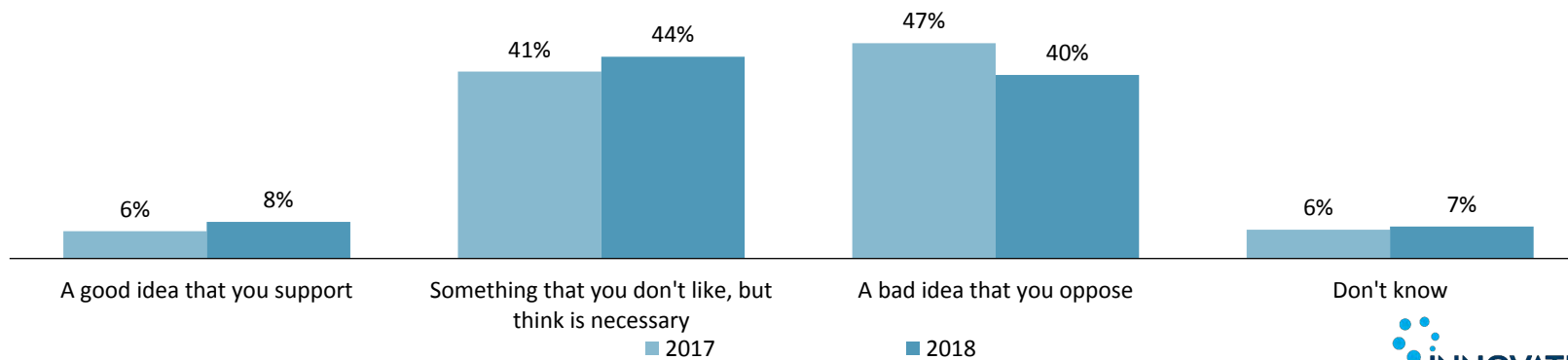
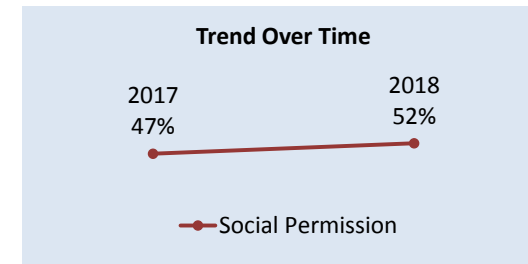


Social Permission on Price Increase | Tracking: Social permission on price has increased five points to a majority (52%) in 2018



Do you think increasing the price of electricity to invest in our province's electric system is...

[asked of all respondents, Hydro Ottawa; n=450]



NOTE: 'Don't know' (7%) not shown.

Social Permission by Support for Infrastructure Investment: Social permission for price increase grows as support for infrastructure investment increases

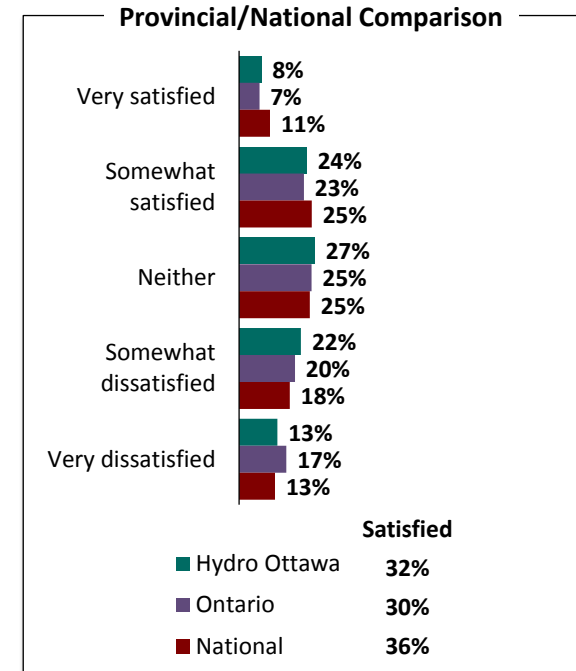
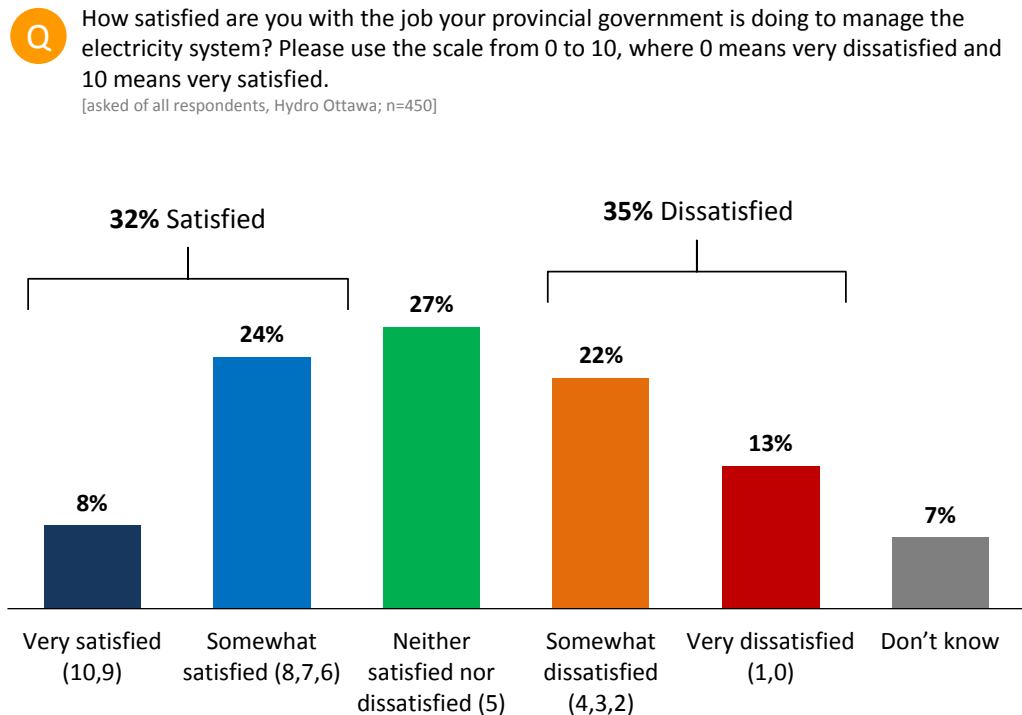
Q Do you think increasing the price of electricity to invest in our province’s electric system is...
BY
Do you support or oppose investment, replacement and/or expansion of electricity infrastructure in your province to improve reliability and safety of our system and keep up with growth and innovation?
[asked of all respondents, Hydro Ottawa; n=450]

Do you support or oppose investment, replacement and/or expansion of electricity infrastructure in your province to improve reliability and safety of our system and keep up with growth and innovation?

	Strongly support	Somewhat support	Neither	Somewhat/Strongly oppose *	Overall
A good idea that you support	19%	8%	4%	7%	8%
Something you don’t like, but think it is necessary	54%	49%	38%	22%	44%
A bad idea that you oppose	23%	37%	53%	67%	40%
Social Permission	73%	56%	42%	30%	52%

NOTE: ‘Don’t know’ not shown.
* Due to small sample size (n=27), results should be interpreted with caution.

Provincial Gov't: Opinion split on government management, but intense dissatisfaction (13%) higher than intense satisfaction (8%)

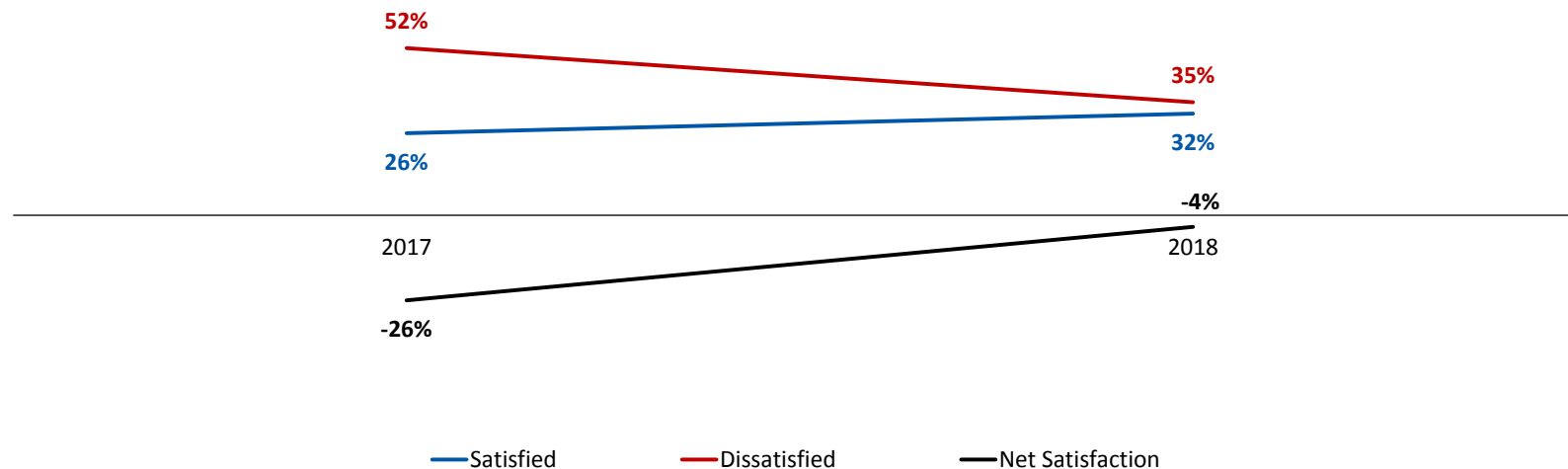


Gov't Performance (Tracking): Net and total satisfaction with provincial government management have improved markedly since 2017



How satisfied are you with the job your provincial government is doing to manage the electricity system? Please use the scale from 0 to 10, where 0 means very dissatisfied and 10 means very satisfied.

[asked of all respondents, Hydro Ottawa; n=450]



Regression Analysis

What drives general satisfaction and NPS?

Using Regression Analysis

What is Regression Analysis?

Regressions are another means of determining importance.

- A regression allows us to take all the questions that may explain the key question we are interested in and see which of these is the most important. Regressions do this by holding all the likely suspects constant and varying one question at a time to see which questions (explanatory variables) have the greatest impact on the key question (dependent variable).

Satisfaction Regression Analysis ►►

- In this study what aspects of respondents' demographics and public opinion drive their overall satisfaction with their electricity company?
- We use the factors that fed into the CSI but also add respondents' demographics, attitudes, and experiences to the model to see what matters most when everything else is held constant
- When respondents were asked about their overall satisfaction they were asked *specifically* about Hydro Ottawa.

Attitudes and Brand Attributes Factored ►►

- In addition to the factor analysis of company attributes previously described, key attitudes about the electricity system, price, and the environment were again factored to reduce overlap in the regression models.
- The following slides describes the result of this analysis.

Regression Analysis: *The Full Model*

Customer Focus

- Consulting with customers before making decisions
- Being transparent
- Caring about its customers
- Being trustworthy

Public Good

- Operating in an environmentally responsible manner
- Providing energy conservation and efficiency programs
- Protecting public safety
- Being a good corporate citizen

Quality & Reliability

- Providing reliable electricity service
- The amount of time it takes to restore power
- The quality of power delivered to you
- Providing timely and accurate information re: outages
- Considering your needs when planning an outage

This **Quality & Reliability** factor includes the variables from the **Outage Preparation** factor from the previous analysis.

Billing Practices

- Providing convenient options to pay my bill
- Providing convenient options to receive my bill
- Providing bills that are easy to read and understand
- Providing accurate bills

Outage Communication

- Recall experiencing a planned outage P12M
- Communications during planned outage were proactive
- Satisfaction with planned outage communication

Standalones

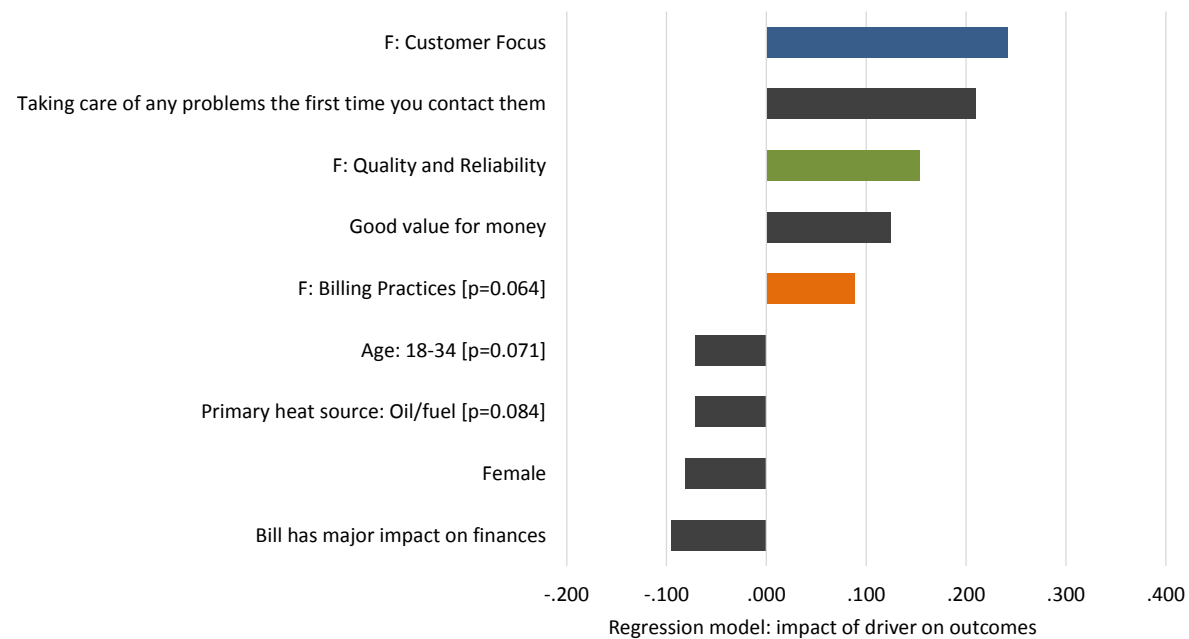
- Taking care of problems the first time you contact them
- Overall communication
- Providing online services
- Number of power outages experienced in the last 12 months
- Price reasonable for electricity in province
- Good value for money

Controls

- Basic demos (age, gender, education, income)
- Primary heat source
- Hydro Ottawa better than other companies
- Bill has major impact on finances
- Satisfaction with provincial government's management of electricity system

Regression Analysis: *General Satisfaction*

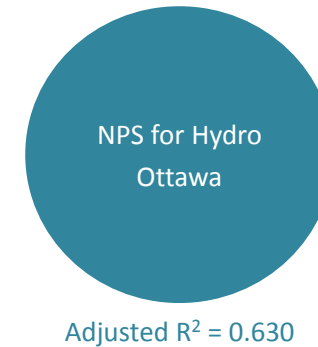
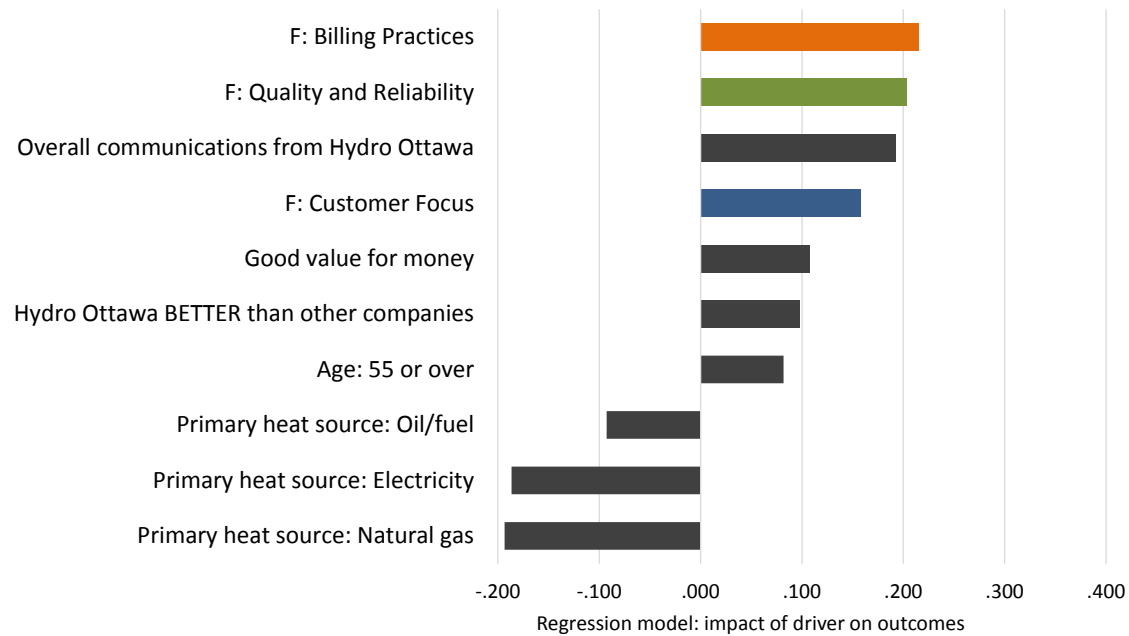
Customer Focus is, by far, the largest driver of satisfaction, followed by the perception of having problems taken care of the first time customers contact Hydro Ottawa, and *Quality and Reliability*. Struggling to pay electricity bills has a small negative effect.



NOTE: Chart shows standardized beta scores. All drivers significant at a 95% confidence interval unless indicated otherwise.

Regression Analysis: Net Promoter Score (NPS)

The strongest drivers of NPS are *Billing Practices*, *Quality and Reliability*, and overall communications. Having electricity and natural gas as a primary heat source has a negative effect on the NPS.



NOTE: Chart shows standardized beta scores. All drivers significant at a 95% confidence interval unless indicated otherwise.



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Appendix: Environmental Controls

A closer look

Environmental Controls: *Uncontrollable External Factors*

It is important to distinguish between what is within, and what is outside of an electrical utility's influence or control when it comes to drivers of satisfaction.

Perceptions of electricity companies often tend to move with general perceptions of ***provincial government performance in the sector*** rather than in response to the utility itself.

In addition, perceptions of utilities are strongly correlated with **financial circumstances**. In tough times, perception and preference can change because customers are struggling with their bills, not because of anything the company has – or as not – done.

Control questions help distributors distinguish between two factors that impact public perception:

- a) utility-driven programs; and
- b) uncontrollable external factors.

In this survey, we include two environmental control questions to help capture external phenomena:



Government Performance: *How satisfied are you with the job your provincial government is doing to manage the electricity system?*



Financial Circumstances: *The cost of my electricity bill has major impact on my finances and requires I do without some other important priorities.*

Summary: *Change Outside Controls*

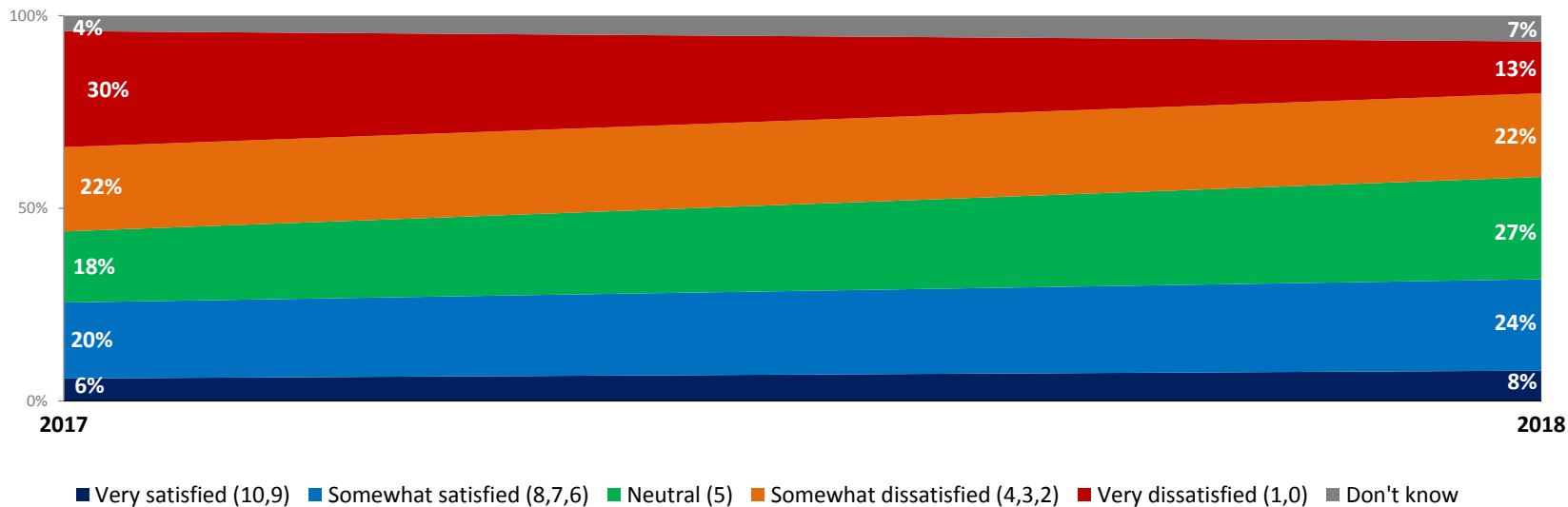
- The satisfaction with government management increases from 26% in 2017 to 37% this year. Those who say they are dissatisfied dropped drastically from 52% to 35%.
- The perception of Hydro Ottawa among those who are happy with the government is steady year-to-year. Those who are dissatisfied with the government are more satisfied and less dissatisfied with Hydro Ottawa than in 2017.
- With a continuing upward trend on utility satisfaction among those unhappy with government management, it appears that Hydro Ottawa is not only keeping happy people happy, but they are also overcoming dissatisfaction with government management.
- Perceived impact of electricity bills on financial circumstances has diminished. Regardless of whether the bills have an impact on their financial circumstances, utility satisfaction has increased (and dissatisfaction has decreased).
- As such, the increase in general satisfaction is not a result of external factors. The actions of the utilities are also contributing to the higher levels of satisfaction.

Gov't Performance | Tracking: While the level of satisfaction with government management is largely steady, the portion saying dissatisfied decreases



How satisfied are you with the job your provincial government is doing to manage the electricity system? Please use the scale from 0 to 10, where 0 means very dissatisfied and 10 means very satisfied.

[asked of all respondents, Hydro Ottawa; n=450]



Government Performance: Those who are dissatisfied with government management are more satisfied with Hydro Ottawa than they were last year

% Satisfied with Electricity Company

Satisfaction with provincial gov't management of electricity system	2017	2018
Very satisfied (10,9)	99%	95%
Somewhat satisfied (8,7,6)	87%	80%
Neutral (5)	46%	59%
Somewhat dissatisfied (4,3,2)	57%	64%
Very dissatisfied (1,0)	35%	62%

% Dissatisfied with Electricity Company

Satisfaction with provincial gov't management of electricity system	2017	2018
Very satisfied (10,9)	0%	0%
Somewhat satisfied (8,7,6)	5%	5%
Neutral (5)	9%	8%
Somewhat dissatisfied (4,3,2)	15%	14%
Very dissatisfied (1,0)	30%	24%



Significantly different from previous year at 95% confidence level



Significantly different from previous year at 90% confidence level

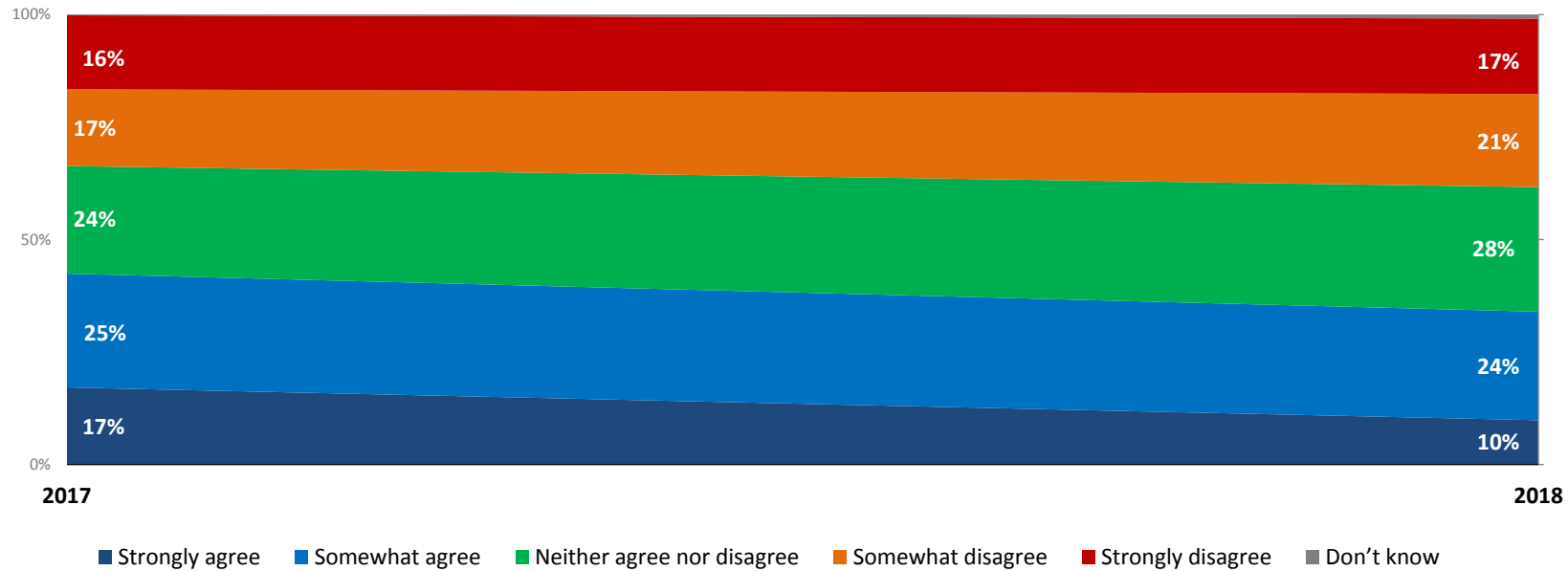
Financial Circumstances | Tracking: A third (34%) feel their bill impacts their finances, down from 42% last year



Do you agree or disagree with the following statement:

My electricity bill has major impact on my finances and requires I do without other important priorities.

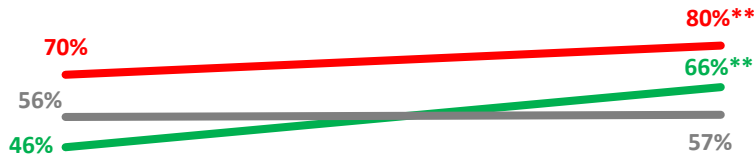
[for tracking purposes, data filtered to show only those who receive a bill; Hydro Ottawa; n=416]



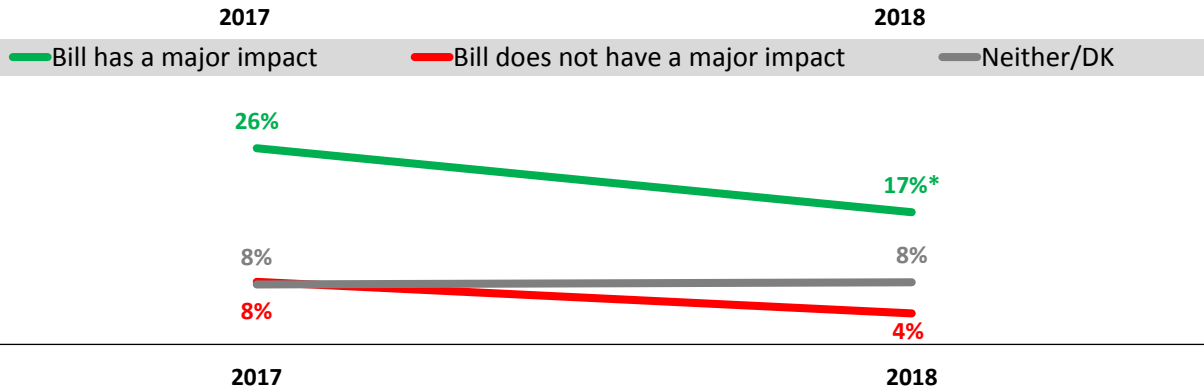
Financial Circumstances: Gains in satisfaction among those who struggle financially, as well as those who don't



% Satisfied with Electricity Company



% Dissatisfied with Electricity Company



* Significantly different from the wave prior at 90% confidence level
** Significantly different from the wave prior at 95% confidence level

Financial Circumstances: Significant gains in satisfaction among those who struggle financially, as well as directionally for those who don't

% Satisfied with Electricity Company

Electricity bill has major impact on finances	2017	2018
Strongly agree	35%	52%
Somewhat agree	53%	73%
Neither agree nor disagree	57%	57%
Somewhat disagree	70%	80%
Strongly disagree	71%	81%

% Dissatisfied with Electricity Company

Electricity bill has major impact on finances	2017	2018
Strongly agree	35%	32%
Somewhat agree	19%	11%
Neither agree nor disagree	8%	8%
Somewhat disagree	10%	4%
Strongly disagree	7%	4%

○ Significantly different from previous year at 95% confidence level ○ Significantly different from previous year at 90% confidence level

CUSTOMER ENGAGEMENT ON THE 2021-2025 APPLICATION

1. INTRODUCTION

In accordance with the Customer Focus outcome that anchors the OEB's Renewed Regulatory Framework ("RRF"), Hydro Ottawa conducted a customer engagement process to gather customer opinion on planned expenditures and outcomes for the utility's 2021-2025 Custom Incentive Rate-setting ("Custom IR") Application. This process resulted in the identification of customers' needs and preferences. These results, and the analysis thereof, have been used by Hydro Ottawa to inform the plans and proposals set forth in this Application.

2. CUSTOMER CONSULTATION ON CUSTOM IR APPLICATION

Detailed results of Hydro Ottawa's consultation are provided in the consolidated Customer Engagement Overview report produced by Innovative Research Group Inc. ("Innovative"). Innovative is a national consulting firm with expertise in public opinion research and experience in energy policy. Hydro Ottawa retained Innovative to assist with the design and execution of the customer consultation process. The consolidated report prepared by Innovative (hereafter referred to as the "Customer Engagement Report") is appended to this Schedule as Attachment 1-2-2(A).

Beginning in January 2019, Hydro Ottawa and Innovative collaboratively tested and implemented a customer engagement strategy for this Application. In order to maximize the effectiveness of the customer engagement process, Hydro Ottawa set out to achieve the following:

- Ensure all Hydro Ottawa customers, regardless of where they live or operate, or how much electricity they use, had an equal opportunity to participate;
- Ensure a representative sample of customers were engaged;
- Inform customers about the distribution system and electricity industry;
- In addition to random sampling, provide a voluntary process to allow any customer the opportunity to provide comment; and

- Gather meaningful feedback from customers, specifically when it comes to their needs, the outcomes that are important to them, and their preferences regarding the pacing and prioritization of specific investments.

In order to facilitate feedback, a two-phased approach was developed that was both iterative and responsive to each stage of feedback. Undertaking a two-phased approach provided Hydro Ottawa with an opportunity to demonstrate how customer feedback was incorporated into the utility's draft plans, and then clearly respond to actionable feedback gathered during the second phase. Incorporating customer feedback into Hydro Ottawa's plans was a key objective of this customer engagement, and this two-phased approach helped facilitate its achievement.

Between January and October 2019, Hydro Ottawa gathered feedback from more than 20,000 customers through its customer engagement efforts. In context, this means that Hydro Ottawa engaged with nearly 6% of its entire customer base, which represents the largest engagement exercise in the utility's history. Moreover, according to Innovative, Hydro Ottawa's consultation represented the single largest proportion of customers ever engaged by an electricity distributor in Ontario for the purpose of informing the development of a rate application.¹

2.1. PHASE I

The purpose of Phase I was to solicit customers' input on their needs and preferences in relation to the outcomes and goals that the utility should focus on over the 2021-2025 period. This initial phase of engagement was conducted in early 2019 at the beginning of Hydro Ottawa's planning cycle in order to ensure that the draft plan took into consideration the views of customers.

Phase I was an iterative process, wherein each activity informed the next. An initial round of exploratory focus groups was conducted amongst residential and small business customers. The primary objective of these groups was to obtain insights into what customers expect of Hydro Ottawa and what customer priorities are, both in the context of valued outcomes and the

¹ Customer Engagement Report, page 1.

1 choices impacting customers that the utility will need to make. For more details on these focus
2 groups, please see pages 15-26 of the Customer Engagement Report.

3
4 In turn, the results of these exploratory focus groups informed the questions that were asked of
5 residential and small business customers in a subsequent series of telephone and online
6 surveys. Running parallel telephone and online surveys served two primary purposes:

- 7
8 1. To gather feedback and insights on priorities, preferences, and needs from low-volume
9 customers.

10
11 Feedback from these surveys helped Hydro Ottawa's planners and engineers inform the
12 design of its Distribution System Plan² ("DSP") and Business Plan,³ which were shared
13 in draft outline form with customers during Phase II of this engagement.

- 14
15 2. To establish baselines and develop weights that allowed Hydro Ottawa to move to an
16 online methodology for its low-volume customer engagement program.

17
18 Establishing a baseline and understanding the difference between customers with
19 known email addresses (i.e. the email sample) and the broader customer base is a
20 critical step for utilities that wish to migrate to representative online survey
21 methodologies in the second phase of their customer engagement. Where significant
22 differences exist between the email sample and the broader customer base (e.g.
23 demographics, firmographics, attitudes, and opinions), the insights gained from these
24 parallel surveys can be used to develop weights, which can minimize these differences.

25
26 The Phase I sample validation process included comparing known variables (e.g. region and
27 electricity consumption) across the overall population to the sample of the population with email
28 addresses. Through this process, Innovative was able to conclude that no "group" was
29 substantially underrepresented in the email sample.

² See Exhibit 2-4-3.

³ See Exhibit 1-1-9.

1 Key findings from Phase I of the customer engagement were the following:

- 2
- 3 • The clear majority of residential and small business customers are satisfied with the
- 4 current service they receive from Hydro Ottawa.
- 5 • Despite being the top priorities, customers do not simply expect Hydro Ottawa to focus
- 6 exclusively on price and reliability.
- 7 • Among competing priorities, price, reliability, and investing in new technology are the top
- 8 three priorities for both residential and small business customers.
- 9

10 With regards to expenditure trade-offs that customers value most, generally residential and
11 small business customers were willing to consider paying more to enable Hydro Ottawa to do
12 the following: invest in aging infrastructure; equip employees with the tools they need to do their
13 job safely and efficiently; proactively invest in system capacity; and modernize the grid. This
14 willingness on the part of customers was accompanied by an understanding that, while
15 investments in these areas will result in costs being incurred, they may eventually save money
16 down the line. For example, both residential and small business customers are strongly
17 supportive of investments to replace the system's aging infrastructure in order to maintain
18 system reliability, even if such investments result in increases to electricity bills by a few dollars
19 over the next few years.

20

21 The residential and small business (low-volume) customer preferences from Phase I are
22 summarized in the "Customer Engagement: Needs and Preferences Planning Placemat" of the
23 Customer Engagement Report (see page 73). The priorities identified by customers guided
24 Hydro Ottawa planners, to ensure that customer feedback was brought into the planning
25 process in the early stages. Utilizing the input from Phase I, Hydro Ottawa planners developed a
26 draft plan that included an estimated baseline cost, and identified a number of investment areas
27 where spending could be increased, or in some cases decreased, in order to align with
28 customer needs and expectations.

Further details of the Phase I residential and small business engagement are provided on pages 29-36 of the Customer Engagement Report.

2.2. PHASE II

Phase II of the customer engagement focused on presenting investment trade-offs to customers and gathering feedback on Hydro Ottawa's draft plan. The primary goals of this phase were threefold:

- To confirm customer needs, preferences, and priorities, as identified in Phase I;
- To solicit customer feedback on the substance of Hydro Ottawa's proposed plans and the subsequent rate impacts, including customer preferences where trade-offs existed; and
- To solicit customer feedback on Hydro Ottawa's planning development process, including the customer engagement process.

To achieve these goals, Hydro Ottawa and Innovative developed a series of "workbooks" to serve as the primary engagement tool to gather additional insight about customers' needs and preferences prior to the completion of the utility's DSP and Business Plan.

The workbooks were intended to both provide customers with adequate background information on Hydro Ottawa and its draft business and investment plans, as well as to gather feedback on trade-offs between specific expenditures and their associated costs. The trade-off questions were presented as a choice between approach-options – i.e. accelerated approach, proposed baseline approach, or decelerated approach. These options included the estimated impact that each approach would have on electricity bills.

Workbooks were designed for residential, small business, mid-market, and large commercial customers. The workbooks were hosted online and, with the exception of the large commercial segment, made available to customers in both English and French. The workbooks can be viewed in their entirety in the Customer Engagement Report.

1 Use of the workbook was driven, in part, by the preferred choice of methodology for Phase II of
2 the engagement. For the purpose of Phase II, Hydro Ottawa migrated from the generalizable,
3 pure-telephone methodology that was deployed in Phase I to a generalizable, pure-online
4 methodology. This shift in approach was attributable to and enabled by the robust email
5 coverage that Hydro Ottawa enjoys amongst residential and small business customers (i.e. the
6 utility has email addresses on file for over 60% of these customers).

7
8 The use of an interactive workbook format and a purely online methodology helped to achieve
9 several important benefits:

- 10
11 • Better presentation of information through the use of visuals, such as diagrams and
12 pictures;
- 13 • Ability to ask more questions, as respondents are more likely to spend a longer time
14 participating in an online survey than on the phone; and
- 15 • Reduced costs, as online surveys are less costly to administer than telephone surveys.

16 17 **2.2.1. Low-Volume (Residential and GS <50 kW) Customer Workbook**

18 Hydro Ottawa's low-volume (residential and small business) customer engagement workbook
19 featured two streams: representative and voluntary. In the representative stream, each
20 customer received a unique URL that could be linked back to their annual consumption, region,
21 and rate class. In total, the workbook was sent to approximately 183,000 residential customers
22 and 9,300 small business customers. The voluntary stream created an open process that
23 allowed anyone who wanted to be heard an opportunity to express themselves. Voluntary
24 completion of the workbook was solicited through promotion on Hydro Ottawa's website, bill
25 inserts, digital advertisements, social media, and other tactics such as Contact Centre scripting.

26
27 The workbook content was tested through two customer focus groups prior to release, with a
28 number of adaptations made as a result. The workbook provided customers with specific
29 information about Hydro Ottawa's planning process, how it solicited feedback from customers,
30 and information about the utility's cost benchmarking performance. The results of the Phase I

1 engagement were summarized and customers were again asked to rank priorities to evaluate if
2 the needs and preferences that should inform Hydro Ottawa's business and investment plans
3 had changed. Program-specific information – including activities, outcomes, and estimated bill
4 impacts – were shared in respect of trade-offs where customer input was sought. In addition,
5 customers participating in the online workbook were shown the estimated net bill impact of their
6 trade-off choices and allowed to change their responses if desired.

7
8 In total, more than 19,300 residential and small business customers completed the workbook.

9
10 The results indicated that a strong majority of Hydro Ottawa customers supported either what
11 was then included in the utility's draft plans, or an approach that would accelerate the pace of
12 investment. At a high-level, customer responses signalled the following:

- 13
14
- 15 ● The majority of residential and small business customers support an accelerated
16 approach to investments in both overhead and underground distribution systems.
 - 17 ● Despite being one of the lower-ranked priorities in Phase I, most customers are
18 supportive of Hydro Ottawa taking measures to prepare for severe weather events,
19 knowing that these investments would cost them more on their monthly bills.
 - 20 ● The majority of customers feel that Hydro Ottawa should proceed with its approach to
21 "serving a growing city" which would slow distribution system capacity to critical
22 investments only.
 - 23 ● The majority of small business customers are supportive of technological investments
24 that are intended to save money and reduce costs, whereas residential customers are
25 more divided.
 - 26 ● While most customers support Hydro Ottawa's general approach to technological
27 investments, they are split on whether investments should:
 - 28 ○ Increase productivity, and improve customer service and reliability; or
 - 29 ○ Improve productivity, reduce operating costs, and lower rates over the 2021-2025
period.

2.2.2. Mid-Sized/Large Commercial Customer Workshops and Workbook

Hydro Ottawa likewise engaged Innovative to undertake customer engagement with mid-market (GS > 50 kW - 999 kW) and commercial (1MW+) customers. A two-staged approach employed both qualitative and quantitative research methods. This approach was designed to allow these larger business customers multiple opportunities to provide feedback, both in-person and as part of a broadly distributed online workbook.

2.2.2.1 In-person Customer Engagement Workshops

Hydro Ottawa held two consultation sessions in Ottawa on September 17, 2019 for the purpose of providing information to, and gathering feedback from, business customers. The aim of these consultations was to create a forum for mid-market and large commercial (Key Account) customers to learn about Hydro Ottawa's preliminary five-year business plan and proposed expenditure investments and decisions, to discuss issues related to the draft plans, and to identify customer preferences and needs to assist in shaping the final plan.

A total of 24 customers participated. These customers were recruited by telephone from a randomly generated list of mid-market customers as well as by invitations to Hydro Ottawa's list of Key Account customers. Representatives from customer organizations were those individuals who either manage or oversee their respective business' electricity bills.

The workshop began with a one-hour presentation and Q&A session from Hydro Ottawa, and included information about the distribution system and electricity industry, the challenges facing the system, the utility's investment plans, and the operational and estimated financial impacts of the proposed rate application. After the presentation, customers were divided into equal-size groups and taken to breakout rooms to begin moderator-led focus group discussions, approximately 90 minutes in length. Similarly, an information workbook was provided to the participants as an educational tool. Participants were then asked to independently respond to the questions therein.

2.2.2.2 *Mid-Market and Commercial Customer Online Workbook*

In addition to the workshops, all mid-market and large commercial customers were given the opportunity to complete an online workbook. This online workbook was sent via a unique URL to all Hydro Ottawa mid-market and commercial customers who have previously provided the utility with an email address. Over the course of nearly one month, customers were encouraged on several occasions to complete the workbook – both via email reminders, as well as direct outbound calls from Hydro Ottawa employees.

In total, the workbook was sent to more than 1,200 mid-market and 70 large commercial customers via email. In total, 13 mid-market and large commercial customers completed the workbook.

At a high-level, the responses from these customers indicated the following:

- Reliability is the critical top priority for almost all customers and they are willing to pay what is required to ensure a constant supply of electricity.
- Most large commercial customers acknowledge rising prices to be a reality and that 0.3% of the entire bill is “nothing to lose sleep over.”⁴ Mid-market customers are more likely than larger commercial customers to say they are concerned with the overall price of electricity and to take issue with the increase in the distribution portion of the bill.
- Overall, mid-market and large commercial customers are very satisfied with the services they receive from Hydro Ottawa.
- Despite small sample sizes, it appears that a larger proportion of mid-market and commercial customers are more likely to feel that the utility should either proceed with investments in overhead and underground as outlined in the draft plan, or reduce the level of spending.
- Large commercial customers note that reliability is crucial, so critical infrastructure should be maintained without risk. However, run-to-failure is considered by this segment to be acceptable for non-critical equipment and when there is no impact to safety. In

⁴ Customer Engagement Report, page 299.

1 contrast, mid-market customers are more in favour of a proactive approach rather than a
2 reactive approach to reliability investments. Run-to-failure is viewed by mid-market
3 customers as being a more costly approach and an unacceptable strategy for running a
4 distribution system.

6 **2.3. KEY TAKE-AWAYS**

7 Overall, nearly 21,000 customers provided feedback on Hydro Ottawa's 2021-2025 Rate
8 Application, representing nearly 6% of the total customer base.

9
10 The outcomes of both Phase I and Phase II of the consultation are summarized and analyzed in
11 more detail on the following pages of the Customer Engagement Report:

- 12
13 1. Phase I Reference Survey Report – pages 29-36.
- 14 2. Residential and Small Business Priorities – pages 54-69.
- 15 3. Residential and Small Business, Phase I and II Representative Report – pages 98-173.
- 16 4. Voluntary Non-Representative Report – pages 234-294.
- 17 5. Mid-Market and Commercial Report – pages 296-347.

18
19 Overall, a majority of customers who engaged in the consultation and provided feedback on
20 their priorities, needs, and preferences have indicated that they are prepared to pay for the level
21 of investment included in Hydro Ottawa's draft plans.

22
23 With respect to how customer feedback was ultimately incorporated into Hydro Ottawa's
24 investment and business plans, there are several sections within the DSP which shed light on
25 how customer input is reflected in the utility's plans for pacing capital investments such that
26 customer priorities can be met while pressure on rates and costs is simultaneously contained.⁵
27 In addition, each project proposal set forth in Attachment 2-4-3(E): Material Investments
28 identifies specific benefits that are set to accrue to customers from the planned expenditures in
29 the distribution grid and in non-system assets such as fleet, facilities, information technology,

⁵ For example, see sections 1, 4, 5, and 8 of Exhibit 2-4-3: Distribution System Plan.

1 and tools. And finally, Hydro Ottawa's formal Business Plan likewise speaks to how the utility
2 has designed its capital and operational plans to reflect the needs and priorities of customers, in
3 both general and specific ways.⁶

⁶ See section 7 of Exhibit 1-1-9: Business Plan for more information.



Customer Engagement

2021-2025 Rate Application

November 2019

Prepared for:

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Ottawa, ON
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Customer Engagement Overview

November 2019

Confidentiality

This Overview and all the information and data contained within it may not be released, shared or otherwise disclosed to any other party, without the prior, written consent of Hydro Ottawa Limited ("Hydro Ottawa").

Acknowledgement

This overview has been prepared by Innovative Research Group Inc. ("INNOVATIVE") for Hydro Ottawa. The conclusions drawn, and opinions expressed are those of the authors.

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Appendix 2.0 – Reference Survey Report

Appendix 3.0 – Needs and Preferences Planning Placemat

Appendix 4.0 – Reference Survey Questionnaires

 Appendix 4.1 - Residential Reference Survey Telephone Questionnaire

 Appendix 4.2 – Small Business Reference Survey Telephone Questionnaire

PHASE II

Appendix 5.0 – Residential and Small Business Representative Report

Appendix 6.0 – Residential and Small Business Voluntary Report

Appendix 7.0 – Mid-Market and Commercial Report

Appendix 8.0 – Residential and Small Business Online Workbook Layout

Introduction

In early 2019, Innovative Research Group Inc. (INNOVATIVE) was engaged by Hydro Ottawa to assist in meeting the utility's customer engagement commitments under the Renewed Regulatory Framework for Electricity Distributors (RRFE).

Hydro Ottawa is in the process of developing its 2021-2025 rate application and set out to gather meaningful feedback from its customers, specifically when it comes to their needs, the outcomes important to them, and their preferences regarding the pacing and prioritization of specific investments.

Between January and October 2019, Hydro Ottawa gathered feedback from nearly 21,000 customers through its customer engagement efforts - in context, that means that Hydro Ottawa, through INNOVATIVE, engaged with nearly 6% of its entire customer base.

To the best of INNOVATIVE's knowledge, this engagement represents the single largest proportion of customers engaged by any LDC for the purpose of a rate application in Ontario to date.

Throughout this customer engagement, a concerted effort was made to ensure that all customers - regardless of where they live or operate, or how much electricity they use - had an equal opportunity to participate, whether through voluntary or random sampling. In order to facilitate this robust feedback, INNOVATIVE and Hydro Ottawa developed a two-phased approach which was both iterative and responsive to each stage of feedback.

Undertaking a two-phased approach also enabled Hydro Ottawa a clear opportunity to demonstrate how customer feedback was incorporated into the utility's draft plans, and then clearly respond to actionable feedback gathered in Phase II. Incorporating customer feedback into Hydro Ottawa's plans was a key objective of this customer engagement, and this two-phased approach helped facilitate its achievement.



Understanding that the way customers want to be engaged is changing. Hydro Ottawa's current approach leveraged methods that weren't robustly applied in the utility's last rate application customer engagement. With over 60% email coverage amongst residential and small business customers, particular focus was placed on engaging a representative sample of customers using online methods. This online-centered approach was the focal point of this customer engagement, and contributes largely to the successful participation rate.

This document contains the results of both phases of customer engagement, with a focus on the generalizable results of the representative sample from Phase II.

Customer Engagement Key Findings

Phase I: Understanding Needs and Preferences

The first phase of Hydro Ottawa's 2019 customer engagement took place between **January and March 2019**. The purpose of this initial phase of engagement was to provide input on customers' needs and preferences as they relate to the outcomes and goals that the utility should focus on over the 2021-2025 period, as well as develop a detailed understanding of the differences between customers with known email addresses (email sample) and the broader customer base (telephone sample). This initial phase of engagement was conducted at the beginning of Hydro Ottawa's planning cycle in order to ensure that the draft plan distinctly took into consideration the views of customers.

In January 2019, an initial round of exploratory focus groups was conducted amongst residential and small business customers. One primary objective of these groups was to obtain insights into what customers expect of Hydro Ottawa, and what customer priorities are, both in context of valued outcomes and the choices impacting customers that the utility will need to make.

Hydro Ottawa's customer engagement was an iterative process, wherein each phase and activity informed the next. The results of these exploratory focus groups (see **Appendix 1.0** for summary), played an important role in informing the questions that were asked in a subsequent series of telephone and online surveys. Results from these subsequent surveys formed the bulk of the insights gathered in Phase I of the customer engagement.

In addition to OEB direction on LDC rate application filings contained in the RRFE, its Handbook for Utility Rate Applications notes the following: *"The OEB expects a utility's rate application to provide an overview of customer needs, preferences and expectations learned through the utility's customer engagement activities."*¹ This section provides an overview of customer needs, preferences and expectations as gathered through parallel online and telephone surveys. Full results can be found in **Appendix 2.0**.

Customer Needs

Overall, most residential and small business customers are satisfied with the level of service that Hydro Ottawa provides.

Overall Satisfaction with Hydro Ottawa

Overall Satisfaction with Hydro Ottawa	Phase I Telephone Survey	
	Residential	Small Business
Satisfied	88%	85%
Neutral	7%	8%
Dissatisfied	4%	6%

¹ Handbook for Utility Rate Applications, p. 12 (October 13, 2016)

Comprehending customer needs means understanding the gap between the services and experience customers want and the services and experience customers are receiving. To uncover this gap, we asked what Hydro Ottawa could do to improve its services. As such, in addition to overall high levels of satisfaction with Hydro Ottawa, most residential and small business customers do not believe that there is anything specific that the utility can do to improve services. These results indicate that Hydro Ottawa is meeting its customers' needs.

Hydro Ottawa Customer Needs (Appendix 2.0)

Hydro Ottawa Customer Needs	Phase I Telephone Survey	
	Residential	Small Business
1 st	Nothing (51%)	Nothing (48%)
2 nd	Lower or reduce rates (20%)	Lower or reduce rates (16%)

Customer Priorities

Based on a preliminary audit on Hydro Ottawa's past and ongoing customer engagement efforts, as well as the initial exploratory focus groups, a list of potential utility outcomes or goals was identified. This list featured eight utility outcomes or goals.

- *Delivering electricity at reasonable distribution rates*
- *Ensuring reliable electrical service*
- *Finding internal efficiencies and ways to find cost savings*
- *Upgrading the electrical system to better respond to and withstand the impact of adverse weather*
- *Replacing aging infrastructure that is beyond its useful life*
- *Providing quality customer service and enhanced communications*
- *Helping customers with conservation and cost saving*
- *Investing in new technology that could help reduce future distribution electricity costs*

As gleaned from the Phase I surveys, customers don't just expect Hydro Ottawa to focus on one or two outcomes or goals, they are all important. In fact, both residential and small business customers selected "*ensuring reliable electrical service*" as the most important priority that Hydro Ottawa should focus on.

Importance of Outcomes (Appendix 2.0)

Importance of Hydro Ottawa Outcomes*	Phase I Telephone Survey	
	Residential	Small Business
Reliability	95%	97%
Distribution rate	92%	93%

* Customers who said either "*extremely important*" or "*somewhat important*".

Among competing outcomes or goals, *price*, *reliability*, and *investing in new technology* are the top three priorities for both residential and small business customers.

Hydro Ottawa Customer Priorities (Appendix 2.0)

Hydro Ottawa Customer Priorities	Phase I Telephone Survey	
	Residential	Small Business
1 st	Distribution rates	Distribution rates
2 nd	Reliability	Reliability
3 rd	Investing in new technology	Investing in new technology

Beyond developing a strong understanding of the needs and outcome priorities with residential and small business customers, the Phase I surveys also explored general trade-offs between several types of investments and cost. These questions were intended to provide initial input for Hydro Ottawa planners in putting together the initial draft plans. In fact, the results from these surveys were summarized in a “*Customer Engagement: Needs and Preferences Planning Placemat*” (see **Appendix 3.0**) which was shared with Hydro Ottawa planners, helping to ensure that customer feedback was brought into the planning process in the early stages.

What investment trade offs do customers value most?

Overall, the desire for electricity to be delivered at reasonable distribution rates is a top-of-mind priority for residential and small business customers, when considering the issues from an overview. However upon closer reflection, customers are generally willing to consider paying more to invest in aging infrastructure; equip staff with equipment and IT systems; proactively invest in system capacity; and modernize the grid, given the provision that investments in these areas may eventually save money down the line.

To illustrate, both residential and small business customers are strongly supportive of investments to replace the system’s aging infrastructure to maintain system reliability; even if that increases electricity bills by a few dollars over the next few years (as specified in the question).

Support for Investments in Aging Infrastructure to Maintain Reliability

System Renewal	Phase I Telephone Survey	
	Residential	Small Business
Invest what it takes to maintain reliability	72%	63%
Defer investments to lessen bill impacts	21%	23%

Using the input from the Phase I customer engagement, Hydro Ottawa planners developed a draft plan that included an estimated baseline cost, and identified a number of investment areas where spending could be increased, or in some cases decreased, in order to align with customer needs and expectations.

The Phase II customer engagement focused on presenting these investment trade-offs to customers and gathering feedback on Hydro Ottawa's draft plan. The next section will summarize the findings from these activities.

Phase II: Presenting Choices within Hydro Ottawa's 2021-2025 Draft Plan

In the Phase II customer engagement, INNOVATIVE and Hydro Ottawa developed a "workbook" intended to serve as the primary engagement tool. This workbook was designed to both provide customers with an adequate background on Hydro Ottawa and its draft business plans, as well as to gather feedback on trade-offs between specific investments and customer costs. The trade-off questions were presented as a choice between approach-options – i.e. accelerated approach, proposed baseline approach, or, where appropriate, a decelerated approach – which included the impact each approach would have on electricity bills.

The workbook, which can be found in its entirety in **Appendix 8.0**, was hosted on an online platform, and featured a unique feature which we call a "bill calculator". Where possible, Hydro Ottawa provided an estimate of the specific cost impacts of various levels of investment, and presented the choices as bill impacts, unique to each rate class.

Once customers finished sharing their thoughts on the decisions presented in the workbook, they had an opportunity to review their responses and the estimated total rate impact of those choices. They were able to change their responses until they felt they had found the right mix of investments and estimated rate impact. This feature allowed for a unique customer experience, allowing them to engage with their utility in a new way and provide more informed feedback.

A strong majority of Hydro Ottawa customers support either what is currently included in the utility's draft plan, or an approach that accelerates the pace of investment.

In fact, the majority of residential and small business customers support an accelerated approach to investments in both the overhead and underground distribution system. Despite small sample sizes, it appears that a larger proportion of mid-market and commercial customers are more likely to feel that the utility should either proceed with investments in overhead and underground as outlined in the draft plan, or reduce the level of spending.

Pacing Investments in the Overhead Distribution System

Online Workbook <i>n-size for sample sizes <60</i>	Representative Workbook			Voluntary
	Residential	Small Bus.	GS >50 kW	Low Volume
Accelerated approach	58%	56%	5/13	52%
Included in Draft Plan	30%	27%	5/13	26%
Reduced approach	12%	17%	3/13	22%

Pacing Investments in the Underground Distribution System

Online Workbook <i>n-size for sample sizes <60</i>	Representative Workbook			Voluntary
	Residential	Small Bus.	GS >50 kW	Low Volume
Accelerated approach	38%	34%	1/13	32%
Enhanced approach	24%	22%	3/13	27%
Included in Draft Plan	29%	29%	7/13	24%
Reduced approach	9%	15%	2/13	16%

For these overhead and underground investments, an extra layer of analysis was completed to examine potential differences between those who directly benefit from the projects and those who do not.

As illustrated below using the residential results, there are very limited differences between those who receive service via overhead wires and underground cables when it comes to their level of support for investments in the overhead distribution system. Therefore, customers support investments in both the underground and overhead system regardless of whether they directly benefit or not.

Pacing Investments in the Overhead Distribution System by Service Type

Representative Workbook	Residential		
	Total	Overhead	Underground
Accelerated approach	58%	61%	58%
Included in Draft Plan	30%	28%	31%
Reduced approach	12%	10%	11%

Despite being one of the lower ranked priorities in Phase I, most customers are supportive of Hydro Ottawa taking measures to prepare for severe weather events, knowing that these investments would cost them more on their monthly bills.

Preparing for Potential Increases in Severe Weather

Online Workbook <i>n-size for sample sizes <60</i>	Representative Workbook			Voluntary
	Residential	Small Bus.	GS >50 kW	Low Volume
Pay more for increased measures to prepare	82%	76%	8/13	80%
Do not invest in measures to prepare for severe weather	18%	24%	5/13	20%

While support for increased investments in the underground and overhead systems, as well as preparing for potential increases in severe weather are strong, customers are generally more split when it comes to investments in improving reliability and proactively increasing system capacity. In fact, the majority of customers feel that Hydro Ottawa should proceed with its approach to “serving a growing city” which would slow distribution system capacity to critical investments only.

Reliability Investments

Online Workbook <i>n-size for sample sizes <60</i>	Representative Workbook			Voluntary
	Residential	Small Bus.	GS >50 kW	Low Volume
Accelerated approach	44%	43%	3/13	42%
Included in Draft Plan	39%	34%	5/13	33%
Limited approach	10%	13%	5/13	13%
Reduced approach	7%	9%	0/13	13%

Serving a Growing City

Online Workbook <i>n-size for sample sizes <60</i>	Representative Workbook			Voluntary
	Residential	Small Bus.	GS >50 kW	Low Volume
Accelerated approach	41%	38%	4/13	45%
Included in Draft Plan	59%	62%	9/13	55%

Additionally, while most customers support Hydro Ottawa's general approach to technological investments, they are split on whether investments should:

- Increase productivity, improve customer service and reliability; or
- Improve productivity, reduce operating costs and lower rates over the 2021-2025 period

The majority of small business customers are supportive of technological investments that are intended to save money and reduce costs, whereas, residential customers are more divided.

And which of the following options do you prefer?

Online Workbook <i>n-size for sample sizes <60</i>	Representative Workbook			Voluntary
	Residential	Small Bus.	GS >50 kW	Low Volume
Investments to increase productivity, improve customer service and reliability	42%	32%	2/13	39%
Investments only to improve productivity, reduce operating costs and lower rates	43%	55%	10/13	48%
No preference/ Don't know	15%	13%	1/13	13%

Overall, customers are prepared to pay for the level of investment included in Hydro Ottawa's draft plan. When asked about their overall impression and view of Hydro Ottawa's draft plan, a clear majority either supports the current plan or feel that the utility should spend more to increase investments, particularly to the overhead and underground system.

With regards to Hydro Ottawa's draft plan, which of the following statements best represents your view?

Online Workbook <i>n-size for sample sizes <60</i>	Representative Workbook			Voluntary
	Residential	Small Bus.	GS >50 kW	Low Volume
Improve service, even if that means an increase that exceeds current plan	35%	29%	3/13	28%
Maintain increase associated with current plan	48%	47%	6/13	50%
Keep rate increase below what is associated with current plan	9%	12%	3/13	13%
Other	4%	9%	1/13	4%
Don't know	4%	3%	0/13	5%
Maintain plan or improve service	84%	76%	9/13	77%

Beyond the topline numbers, additional analysis was undertaken to identify the views of more "vulnerable" Hydro Ottawa customers when it comes to its investment plans.

As illustrated below, there is correlation between a customers' household financial circumstances and their overall impression of Hydro Ottawa's proposed plan. That said, vulnerable customers who stated their electricity bill had a significant to modest impact on their household finances supported the plan or investing in further service improvements. The same trend is consistent amongst small business customers who say their electricity bill has a significant impact on their organization's bottom line.

Impression of Hydro Ottawa's Plan by Impact on Household Finances

Representative Workbook	Residential		
	Significant impact	Some Impact	No impact
Improve service	37%	25%	32%
Maintain increase	49%	43%	45%
Keep rate increase below	7%	17%	9%
Maintain plan or improve service	87%	68%	78%

Customer Engagement Approach

As mentioned earlier, Hydro Ottawa and INNOVATIVE developed and executed a two-phased customer engagement approach. This approach created multiple opportunities for customers to provide feedback, and provided Hydro Ottawa with multiple opportunities to consider and incorporate customer feedback as part of the planning process.

While detailed methodologies are contained within each individual report as appendices, this section will highlight some of the key methodological elements of Hydro Ottawa's 2021-2025 customer engagement approach.

Between January and October 2019, Hydro Ottawa gathered feedback from nearly 21,000 customers through its customer engagement efforts - in context, that means that Hydro Ottawa, through INNOVATIVE, engaged with nearly 6% of its entire customer base.

Summary of Hydro Ottawa Customer Engagement Results – Phase I and Phase II

Customer Group	Methodology	Unweighted Sample Size	Field Dates
Residential	Telephone	n=517	February 28 - March 15, 2019
Small Business	Telephone	n=200	February 28 - March 15, 2019
Residential	Online	n=730	March 5 - 27, 2019
Small Business	Online	n=275	March 5 - 27, 2019
Phase I Total Customers Engaged: n=1,722			
Residential	Online Voluntary	n=1,700	August 20 - September 26, 2019
Small Business	Online Voluntary	n=11	August 20 - September 26, 2019
Residential	Online Representative	n=17,210	August 20 - September 26, 2019
Small Business	Online Representative	n=307	August 20 - September 26, 2019
Mid-Market/Commercial	Online Representative	n=13	September 27 - October 24, 2019
Phase II Total Customers Engaged: n=19,241			
Total Customers Engaged as Part of Hydro Ottawa's 2019 Customer Engagement: 20,963			

Phase I Approach

In the **first phase**, Hydro Ottawa and INNOVATIVE set out to understand two core elements about its customers.

First, as discussed in detail throughout this report, a key objective of Phase I was to develop an understanding of Hydro Ottawa customers' needs and preferences.

Second, in order to move to a more online-centric approach to engagement, INNOVATIVE needed to develop a detailed understanding of the differences between customers with known email addresses (email sample) and the broader customer base (telephone sample).

INNOVATIVE was able to confidently ascertain the potential differences between these two sample groups by first fielding two parallel online and telephone surveys (see **Appendix 2.0** for details) and then undertaking a rigorous “sample validation” process.

This sample validation process included comparing known variables (i.e. region and electricity consumption) across the overall population to the sample of that of the population with email addresses. Through this process, INNOVATIVE was able to conclude that no “group” is substantially underrepresented in the email sample.

Overage Email Coverage

Rate Class	Full Population	Email Coverage	
Residential	255,562 records	167,409 records	66%
Small Business	22,797 records	15,135 records	66%

A comparison of customers with emails to the overall customer base was completed on known characteristics of region and electricity usage. We found that customers with emails are similar to the overall customer base, which made an online survey a viable alternative to traditional telephone surveys.

Average Annual Consumption for Online vs. Telephone Sample

Rate Class	Full Population	Those with email addresses	Difference
Residential	8,157 kWh	8,136 kWh	-0.2%
Small Business	28,636 kWh	29,699 kWh	+3.7%

Phase I Response Rates

As previously discussed, how Hydro Ottawa customers wish to be engaged is changing. As such, INNOVATIVE is always learning and strategizing the most effective means of engagement for the future. When looking at the Phase I telephone surveys, we see response rates of 16% and 9% respectively amongst residential and small business respondents. The statistics below include only customers that were reached by telephone and do not include non-responding customers.

Phase I Telephone Surveys – Total customers contacted vs. number of completed surveys

Disposition Result	Residential	Small Business
Total customers contacted	3,224	2,338
Survey completes	517	200
Response Rate	16%	9%

Phase II Approach

In the **second phase**, Hydro Ottawa and INNOVATIVE collectively developed an online “workbook” which was subsequently sent to all customers with an email address on record.

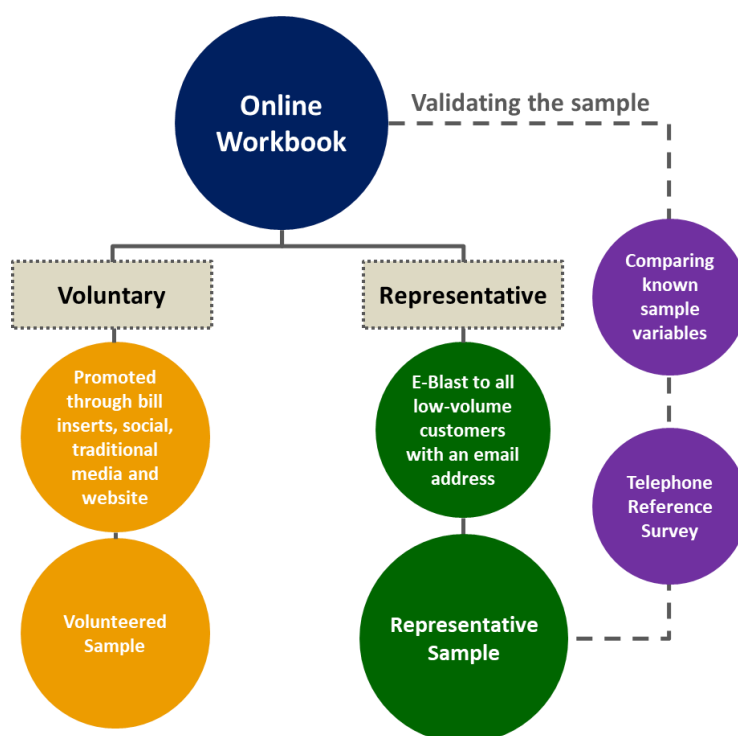
The residential and small business online workbooks featured two input streams:

1. **A representative stream** that ensured a representative sample of residential and small business customers were engaged, allowing for the generalizable reporting of findings.
2. **A voluntary stream** created to enable any customer who wanted to provide input on Hydro Ottawa’s preliminary plan an opportunity to contribute their feedback.

In the representative stream, each customer received a unique URL that could be linked back to their annual consumption, region and rate class. In total, the workbook was sent to 182,939 residential customers and 9,285 small business customers through e-blast from INNOVATIVE.

Unlike the representative stream, the voluntary workbook was promoted through Hydro Ottawa’s website, social media, bill inserts, digital advertisements and other tactics. Respondents who participated in this stream were only screened to ensure that they reside or operate in Hydro Ottawa’s service territory.

Because INNOVATIVE cannot definitively link those who completed the online workbook through the voluntary stream, this portion of the sample cannot be deemed representative of the broader Hydro Ottawa customer base. The voluntary online workbook stream also helps to ensure that customers who have not provided Hydro Ottawa with an email address have an opportunity to participate.



For residential and small business rate classes, responses from the representative stream were weighted by region and usage to ensure the responses were representative of the broader customer base.

Based on the comparative results of the first phase of the customer engagement, INNOVATIVE is confident that the representative online workbook results contained within this report are representative of Hydro Ottawa's actual customer base.

This determination was reached based on comparing the Phase I and II results based on key demographic, general attitudes towards electricity, as well as individual customer experience.

An initial overview of the residential and small business workbook, based on more than 12,000 completed workbooks was shared with Hydro Ottawa on September 9, 2019.

- The draft representative workbook results were shared on October 10, 2019.
- The draft mid-market and commercial report was shared on November 1, 2019.
- The draft voluntary workbook results were shared on October 4, 2019.

Throughout both Phase I and Phase II, INNOVATIVE regularly provided Hydro Ottawa staff with progress updates by way of telephone, including preliminary results.

Phase II Response Rates

In total, 64,098 residential and small business customers started the online workbook, either through the generic or unique URL. Of those who clicked on the online workbook link, 19,302 (30%) completed all the questions.

The tables below illustrate that if you progress beyond the first (introduction) page you are two times (30% vs. 61%) more likely to complete all the questions in the workbook. The tables below also illustrate that more than 50% of customer who click on the link drop off after the first page.

Customers who clicked on the online workbook link

Residential and Small Business Online Workbook Completion Rates	Total
Total started	64,098
Did not complete all questions	44,796
Completed all questions	19,302
Response rate	30.11%

Customers who progressed beyond the first (introduction) page

Residential and Small Business Online Workbook Completion Rates	Total
Total moved beyond first page	31,546
Did not complete all questions	12,244
Completed all questions	19,302
Response rate	61.18%

In total, 93 mid-market and commercial customers started the online workbook through a unique URL. Of those who clicked on the online workbook link, 13 (14%) completed all the questions.

Again, the tables below illustrate that your likelihood of responding to all the questions in the workbook increases from 14% to 46% if you move beyond the first page.

Customers who clicked on the online workbook link

Mid-market and Commercial Customer Online Workbook Completion Rates	Total
Total Started	93
Did not complete all questions	80
Completed all questions	13
Response rate	13.97%

Customers who progressed beyond the first (introduction) page

Mid-market and Commercial Customer Online Workbook Completion Rates	Total
Total moved beyond first page	28
Did not complete all questions	15
Completed all questions	13
Response rate	46.42%

Appendix 1.0



CUSTOMER ENGAGEMENT

Outcomes & Priorities

Low-Volume Customer Focus Groups

February 2019

Prepared for:

Hydro Ottawa

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Customer Engagement: Outcomes & Priorities

February 2019

Confidentiality

This Report and all of the information and data contained within it may not be released, shared or otherwise disclosed to any other party, without the prior, written consent of Hydro Ottawa Limited (Hydro Ottawa).

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This report has been prepared by Innovative Research Group Inc. (INNOVATIVE) for Hydro Ottawa. The conclusions drawn and opinions expressed are those of the authors.

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1. Low-Volume Customer Focus Groups

1.1 Methodology

Objective: Using an exploratory research methodology, our objective was first to understand the customer journey, from initial contact (typically account initiation or transfer) through to the various other touchpoints customers typically encounter.

Our second objective was to obtain insights into what customers expect of Hydro Ottawa, particularly in terms of what represents value to customers and what customer priorities for Hydro Ottawa are, both in context of valued outcomes and choices impacting customers.

Two low-volume focus groups were conducted on January 24, 2019 in downtown Ottawa.

1. Small Business Customers (8 participants) – 5:30pm to 7:30pm
2. Residential Customers (5 participants) – 7:30pm to 9:30pm

Small Business participants received a \$120 cash incentive as compensation for their time, while residential customers received \$80. Participants were recruited from across Ottawa and qualified if they either paid their organization's electricity bill or had oversight on electricity management decisions.

We deployed a detailed *Discussion Guide*, used to moderate all four focus groups. In all four focus groups a printed primer was shared with participants in the early part of the session to provide consistent contextual information on Hydro Ottawa and the role it plays within Ontario's electricity system, and bill impact.

This report summarizes key findings, and offers observations and potential strategic avenues based on these groups and past research. *Respondent verbatim responses are in italics*. In general, our approach in reporting is to allow the respondents to be heard as much as possible, utilizing representative verbatim comments, offering interpretation and comment where necessary.

Please Note: Qualitative research does not hold the statistical reliability or representativeness of quantitative research. It is an exploratory research technique that should be used for strategic direction only.

A note on interpreting focus groups findings: In focus group research, the value of the findings lies in the *depth* and *range* of information provided by the participants, rather than in the *number* of individuals holding each view. References in this report such as "most" or "some" participants cannot be projected to the full population. Only a large sample, quantitative survey would be accurately projectable to the full population.

1.2 Customer Knowledge

The groups started with a discussion of what Hydro Ottawa does, what services it provides, and what parts of the system it manages. Participants generally had a good sense of its role, saying that it delivers electricity generated by other companies. Some participants also noted that it runs other programs for employers and individuals to promote more efficient electricity usage. A few participants also noted from experience that they have seen Hydro Ottawa do a substantial amount of infrastructure maintenance.

They are resellers of hydro. Ontario Power generates it and then they sell it to the customer. [The difference is] one more level of administration and bureaucracy.

Delivering electricity. But also it has programs for employers and individuals as well, business and homeowners to upgrade and use electricity in a better way.

They provide funding to do energy efficient upgrades. We did a retrofit on our lighting. We are also working with a third party to do an energy audit on the building.

I know they do a lot of infrastructure maintenance.

Participants were then given a short handout with details about Hydro Ottawa (see Appendix for details) and asked if anything in it was surprising. Participants largely agreed that they did not know the details provided in the information, but some felt that despite that, the information was still uninteresting to them.

The thing I didn't know was that they need approval from the Ontario Energy Board to make changes to the rates.

The regulatory charges. I think that's a lot of overhead. 3% wow! I want to be in that business.

It wasn't very interesting. It's a lot of distinction without a difference. None of this affects what I feel about anyone in the supply chain.

However, where participants existing knowledge was more of an issue was in the area of energy generation. While the regulated portion of Hydro Ottawa is not involved in generation, participants did not draw this distinction and so mentions that Hydro Ottawa does not generate power left them confused. This led one participant to become suspicious of the process.

Are you sure that Ottawa Hydro is no way involved in generation?

Don't they own those falls over there? So they are involved in generation. This clearly says they aren't involved in generation, but they are.

1.3 Customer Journey

1.3.1 Initial Point of Contact

For many participants, the only points of contact they have had was paying their bill, and it is not one they pay much attention to. Participants found that paying their hydro bill was a habit and not something they put significant thought into a monthly basis.

For the most part billing is accurate. We don't spend too much time dealing with that.

I pay my bill online. Yes, [I use the online tools].

Monthly

Online billing

However, some participants had an initial contact point with Hydro Ottawa when they first set up their account. This longer interaction served more as a basis of opinion than the shorter and less thoughtful bill payment interactions.

Over the phone I set up something moving to our new place. Client services is what I do for a living and I was really impressed by them.

Outside of these routine contacts, the primary contact method was by telephone. The two main reasons for calling were to discuss issues with billing or to report an outage. Participants generally had negative impressions of their interactions related to billing, while interactions related to outages were perceived as more mixed.

By phone to discuss an issue with billing.

Several have had issues. One was a mistake on Hydro Ottawa's end that was never explained or followed up on. The other was a metering issue.

Landlord has to pay fee when tenants miss calling in when they switch, was supposed to be registered to a program that avoided that fee, inept staff erred. In the end it was rectified and the charge was removed.

I called once because there was dramatic changes in our bill. There was nothing different on our end. They came, checked the meter and couldn't find anything.

Emergency line, for example during the tornado this summer. I was impressed with their response.

I called in when a transformer got hit by lightning. I called to say the power was out and they better bring a transformer. I saw blue flame coming out of it.

Additionally, some participants also reported calling to discuss specific programs including energy efficiency programs.

The inefficiency of the employees who didn't register this program. The biggest concern is with the inadequacy of staffing. It's a crapshoot – sometimes you get a person who knows it inside and out, they understand you before you even speak. They do it so beautifully, that you think how could I criticize them?

Billing and energy programs. Changing our lights was a big thing, and the thermostat. [I found out about the program] by asking them if there was any way I could save on my bill. We run all day long, and a good chunk is during peak time. Every little bit helps. I had heard people talking about a funding program where they gave out lighting – there are things they can. It's easier to have a person you're physical speaking to than emailing back and forth.

Other ways participants had interacted with Hydro Ottawa were:

- Meter installation
- On the street – witnessing tree cutting
- Using the Hydro Ottawa app

I recently had a new meter installed. It wasn't a really good experience. I did everything they asked, all the paperwork, paid. They said someone would call back in two days, it was two weeks. They should think about improving that before asking for more money. They have to improve what they're doing.

Their app. It has real time updates on their outages and it makes suggestions on what you can do to lower your rates. I do find it is repetitive, but it is helpful to have that information there.

Tree cutting. I just see them doing it in front of my house.

1.3.2 Customer Expectations

The expectations of Hydro Ottawa that customers expressed fell into the following categories:

- Information during outages
- Acknowledgement
- Friendly customer contact
- Swift service, reasonable service standard (timely response)
- Ease of access, alternatives for access

In most areas, participants felt that their expectations were being met by the existing services of Hydro Ottawa. Where participants had issues, it was largely from instances where they had contacted Hydro Ottawa and at least initially had felt that their concerns were not being correctly or efficiently addressed.

1.3.3 Outages

Some participants, particularly among the business customers, felt that reliability has declined recently. However, this sense was not shared in the residential group where participants felt that

Uptime. In Kanata we experience a lot of power outs. If they said, "We need to increase the delivery charge so that we could be more reliable..."

I've had no problems. Keep it like it is.

The main expectation that participants had in relation to outages was that they would be able to remain in contact with Hydro Ottawa throughout. This contact could take place through several channels including the Hydro Ottawa app, Twitter feed, phone, and website. Participants had individual preferences for which of these they preferred to use for information.

Some were concerned that the different routes of accessing information were not all equal. One participant noted that they felt the website had the right information, but the Twitter feed didn't appear to provide anything during an outage.

I use the app whenever I have a problem. I watch it quite frequently in the winter time.

When there is an outage I notice it. I don't have the app on my phone, but it was good for getting updates. It helped me out to give me an idea what was happening with the folks.

I don't have the app, I don't want the app.

I've had one outage in the last two years. I just called them up on the phone and it surpassed expectations. I was expecting to sit on the phone for 45 minutes to hear someone say yeah we got that but they went beyond that.

I checked the website. [The experience was] pretty good. They had a nice little map showing who else was out in the area. The estimate said 2am but I think I got power back at 9:30 – was out at 7:00.

It's great the website tells you, but I find it odd they don't push anything out on Twitter.

[I would follow Hydro Ottawa on Twitter] only during an outage.

1.3.4 Billing

While bills were the main point of contact that customers had with Hydro Ottawa, the only expectation that customers had of them was that any issues would be efficiently and quickly solved by Hydro Ottawa.

When they owed me money I had to put effort in to make them give it to me. When I moved in they gave me a flat rate based on the previous tenant and that was too much. So in July I looked at it and had a negative \$1,000 balance and they told me they couldn't give me that money back. Would they accept that if I owed them \$1,000?

My issues was resolved quickly and efficiently. The reviewed everything, fixed it.

One participant had a specific issue with monthly billing and felt that it was an opportunity for Hydro Ottawa to make changes without customers noticing because their bill payment becomes a routine and they do not carefully review the bill.

The only issue I have is that it's now monthly. There's an inflation there that nobody looks at – you don't look at the breakdown, you just pay it because you need hydro.

1.3.5 Service/Field Interactions

Customers generally felt that their needs were being met when it comes to customer service and interactions with Hydro Ottawa.

It was my first time setting one up. I didn't have any issues doing it. I had questions and they were well set up.

Customer service yes, but it is at a relatively high level already.

One participant in the residential group also had concerns about what Hydro Ottawa is doing on their street and tried to contact Hydro Ottawa about it but did not get a reassuring response. This left them feeling that Hydro Ottawa is not doing everything it should be.

I called about forestry a few days ago. They were crowning the trees on my street and I asked what happens if Hydro [Ottawa] kills the tree in front of my house? And they said we don't do anything about that. It's one of these irritating things where if they kill the trees they don't do anything about it.

Firstly, I don't think they should be chopping trees. I think they should be burying lines whenever they can, but then the City of Ottawa loses its dividend. There is a cost to be occurred, there is also a benefit.

1.4 Emerging Issues

Frequently identified issues and associated priorities were consistent across all groups, and can be described as:

- Pricing and affordability
- Maintenance of infrastructure
- Greening the grid
- Electric vehicles

- Changes in demand
- Changes in technology

1.4.1 Greening the Grid

Participants felt that climate change was a clear issue that would only continue to worsen and so Hydro Ottawa needed to think about greening the grid in the near future. This was specifically in the form of ending reliance on fossil fuels and moving away from both coal and natural gas.

Greening the grid, yes please.

Greening the grid

Getting off gas as well.

Switching off coal.

The main area that participants identified specific interventions they wanted from Hydro Ottawa was helping them install solar panels.

I'm going to be asking for their assistance in implementing [a greener grid – e.g. solar panels].

Greasing the skids for people installing solar panels. It generally tends to be one way – you get your bill and pay it. But as bills get cheaper more people will do it. I've heard people talking about issues selling back to the grid.

Do you expect them to be an advisor through adding solar panels? Absolutely yes.

I would like that, yeah. Meaning they help set up solar panels on the roof. In the past they gave them to different companies and it was pretty expensive – the smallest kit was \$90,000. If there was a better program I would participate.

Participant also suggested programs or policies to specifically target the private sector, such as offering buildings price reductions for efficiency and instituting internal policies to do business specifically with environmentally friendly companies.

What about giving reductions to buildings that are high efficiency electric-wise?

Green procurement. Like when people meet a certain level they are a green business or if they have enough women or minorities. That is something to take into consideration.

1.4.2 Electric Vehicles

There was substantial discussion about the changing needs for power users that would come from an increase in electric cars. Participants identified supporting infrastructure as a key barrier to increased adoption of electric vehicles and felt that Hydro Ottawa should financially support the installation of more charging stations. One participant suggest that Hydro Ottawa could even get into the business of opening charging stations themselves and selling power through them.

Electric car infrastructure. It's a chicken or egg thing and you've got to start somewhere. Right now the user base is small and the cars are expensive.

I would hope that Hydro Ottawa, the province would look at multi-residential building and saying you need to put the infrastructure in place. And there should be a program to offset the costs [of electric charging stations].

Electric cars. The amount of electric cars is going to increase and they have to make sure they have the infrastructure to support it – that they can manage the increased demand.

Could Hydro Ottawa set up their own charging stations and sell power that way?

1.4.3 Changes in Demand

A few participants expected to see increases in demand in the future. They felt these would come both in increases in demand in areas further from the downtown core as the population grows, as well as increases in demand from existing urban cores as they continue to densify.

I was young when the city amalgamated, and part of the discussion is delivery to the places out there. What is next coming into the umbrella? Planning for the future and the future is further away from the core of Ottawa.

Urban density. Presumably demand for power will increase. Rather than sprawl it is increasing demand in urban cores.

1.4.4 Changes in Technology

Participants also saw changes in technology as a potential threat to security and felt that Hydro Ottawa would need to invest in the appropriate technical infrastructure to remain safe.

System security. Like cyber security.

I would assume just the technical infrastructure of managing the business itself – more digital. I imagine that's a considerable challenge for them, like any government organization. And then what about digital security?

Small business participants were also asked about small business tools, but they largely did not have strong views about them. Some participants were not aware of any existing tools or what Hydro Ottawa could do to help them. However, one participant pointed to the potential efficiencies business tools could create and agreed that Hydro Ottawa should look towards them because any potential productivity gains make it a good idea.

I don't know anything about that.

I have a lot of contact with people in shared services. It makes total sense to take twenty systems and mere them into five systems. It reduces the overhead and makes it more efficient. Look for productivity gains through technology – even in infrastructure maintenance look at things like robotics.

1.5 Identified Priorities

Participants were given the opportunity to rank the outcome priorities they identified

	1 st Priority	2 nd Priority	3 rd Priority	Total
Price	4	4	3	11
Reliability	6	3	1	10
Efficiency and cost reductions	0	2	2	4
Addressing climate change	2	0	1	3
Aging infrastructure	0	2	1	3
Environmental stewardship	0	1	2	3
Accountability	1	0	1	2
Crisis/outage response	0	1	0	1
Investment in new infrastructure	0	0	1	1
Communication	0	0	1	1

1.5.1 Pricing and Affordability

Focus on price as an emerging issue was limited, but customers did feel that they were currently paying more than they should be and that this was something Hydro Ottawa should address in the coming years.

I've been living in Quebec for 15 years. The government runs it and puts the money back in it. It is half the cost. For the future I would like to see some sort of push for the government to take responsibility for this. This is a necessary service.

Some participants felt they should be more focused on specifically addressing affordability and that it was not a question of lowering the rates across the board but putting programs in place to make it more affordable to those who earn the least.

Affordability and price. To put more nuance on it, relative to income. Not just price across but thinking about ability to afford as well.

Assistance programs

1.5.2 Reliability and Crisis Response

Participants viewed reliability as an important issue to continue addressing in the future. For some, the existing levels of reliability were acceptable. However, others said that even the existing outages were expensive for them and their business. Overall, the sense was the at least maintain the current level of reliability was an important priority.

I've had no problems. Keep it like it is.

As far as infrastructure maintenance – I am sure there are smarter people doing it so just do what it takes to keep the lights on. It's really expensive to lose power in the middle of the day.

Where participants saw an opportunity to improve reliability was in the area of natural disasters and potentially burying power lines to make them more resilient. Customers saw clear economic impacts of long outages caused by recent disasters and so wanted to know if everything was being done to prevent future outages.

However, there was also an acknowledgement of the trade-offs – both in the direct cost of burying lines and in the cost of disruption to tearing up streets and moving lines underground.

How can they better prepare for natural disasters? For the last decade we have had more and more. For four days we had no power and so for four days there is no revenue. What as business owners and Hydro can we do to prevent that?

Something like the ice storm or the tornado, I don't know how you could possibly harden it. Those big steel poles look like a giant came and turned them.

With the tornado and ice storm – is there a movement toward more underground wires?

They're redoing Elgin street to bury all the lines. Clearly it makes sense to do that when you are tearing everything apart on the street anyway.

One participant felt that there was only so much Hydro Ottawa could do to pre-emptively prevent outages and plan for specific situations, and so instead being prepared to response to an unexpected event is an important focus for the future,

Crisis response. You can't plan for everything so speed and effectiveness with which you deal with the unexpected.

I think the idea is that they have to have a plan, but they might not be planning for the worst-case scenario. You've got to recognize that when these events do happen you need to have a plan and be able to restore hydro as quickly as possible.

1.5.3 Addressing current issues

A number of the priorities participants had been motivated by their current experiences with the system. This manifested as prioritizing price, cost reductions, and aging infrastructure.

Price and cost reductions are a major concern that participants highlighted. Many felt that the current costs were unaffordable and finding efficiencies and reducing prices is essential to improving that moving forward.

In the end, if your business is stronger it benefits Ottawa. I know so many people who have gone out of business in the last five years. If they do a better job and lower our costs, we become stronger businesses. Everyone wins.

Aging infrastructure is even more directly addressing current issues. While one participant put new infrastructure in their top three priorities, several said that aging infrastructure should be addressed.

They need to deal with the aging infrastructure. That is a fundamental problem and it will only get worse as it ages.

1.5.4 Preparing for future changes

The other side of their motivation was to prepare for changes they expect to come in the future. These issues of climate change, developing new infrastructure, and adapting to new technology.

With these issues comes greater uncertainty than with addressing current issues. This lead to a broad range of potential concerns being discussed. For instance, participants were concerned both about increasing demand within urban cores, as well as increasing demand in more distant suburbs, and even the possibility of having to incorporate other metro areas.

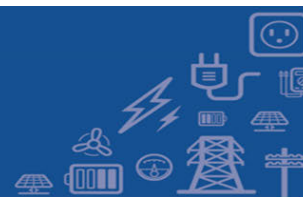
I was young when the city amalgamated, and part of the discussion is delivery to the places out there. What is next coming into the umbrella? Planning for the future and the future is further away from the core of Ottawa.

Urban density. Presumably demand for power will increase. Rather than sprawl it is increasing demand in urban cores.

1.6 Appendices

The following two-page background primer was used in the residential customer focus groups.

Hydro Ottawa's Role in Ontario's Electricity System



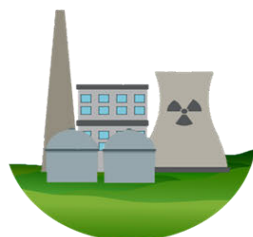
Ontario's electricity system is owned and operated by public, private and municipal corporations across the province. It is made up of three key components: **generation**, **transmission** and **distribution**.

1

Generation

Where electricity comes from.

Ontario's electricity is generated by nuclear, natural gas, hydroelectric and renewable technologies such as wind and solar. In Ontario, 70% of electricity is generated by *Ontario Power Generation*, which has generation stations across the province.

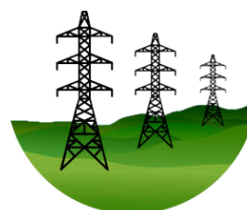


2

Transmission

Electricity travels across Ontario.

Once electricity is generated, it must be transported to urban and rural areas across the province. This happens by way of high voltage transmission lines that serve as highways for electricity. The province has more than 30,000 kilometres of transmission lines, most of which is owned and operated by *Hydro One*.



3

Local Distribution

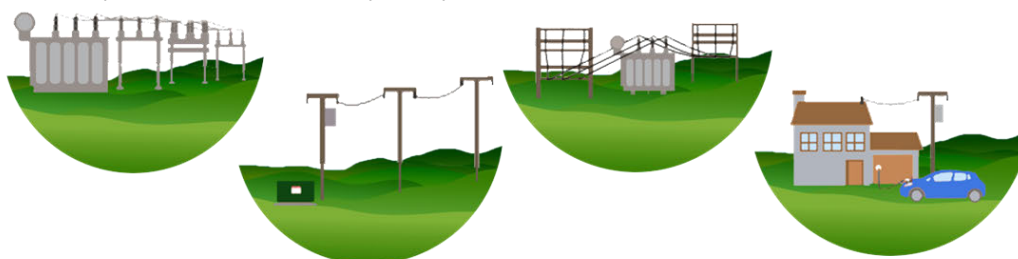
Delivering power to homes and businesses across much of Ottawa and Casselman.



Hydro Ottawa is responsible for the last step of the journey: distributing electricity to customers through its distribution system. This local distribution system includes transformer stations that decrease the voltage of the electricity so it can be used safely in your home or business.

There are approx. 60,000 poles, 2,700 km of overhead power lines and 2,900 km of underground cable. Through this distribution network, Hydro Ottawa delivers electricity to more than 334,000 homes and businesses.

Hydro Ottawa is 100% owned by the City of Ottawa.



1

Residential Electricity Bills: Understanding where your money goes

Every item and charge on your bill is either mandated by the provincial government or approved by the Ontario Energy Board (OEB). The OEB sets electricity rates in Ontario.

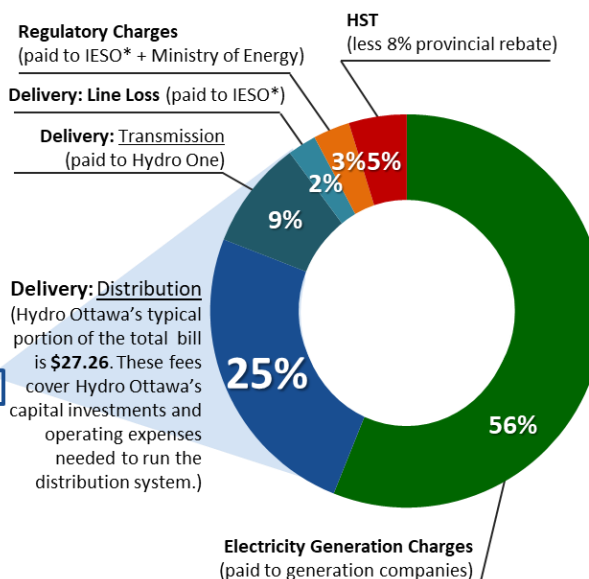
For the typical residential customer, about 25% of the electricity bill pays for **Hydro Ottawa's** distribution system. The rest of the bill goes to power generation companies, transmission companies, regulatory agencies, and government taxes.

Hydro Ottawa is responsible for billing customers for all of these costs, including any applicable taxes. The "Delivery" charge pays for both the cost of transmission and the cost of distribution. **Only the distribution portion is retained by Hydro Ottawa to pay for operating and maintaining its part of the system.**

Sample Residential Bill

Hydro Ottawa Monthly Bill (Based on consumption of 750 kWh)	
Account Number: 000 000 000 000 0000	
Meter Number: 00000000	
Your Electricity Charges	
Electricity	
Off-Peak @ 6.5 ¢/kWh	31.69
Mid-Peak @ 9.4 ¢/kWh	11.99
On-Peak @ 13.2 ¢/kWh	17.82
Delivery	39.66
Regulatory Charges	3.27
Total Electricity Charges	\$104.42
HST	13.57
8% Provincial Rebate*	(-\$8.35)
*The Ontario government is providing a rebate on your electricity costs equal to the provincial portion of the HST	
Total Amount	\$109.64

Hydro Ottawa's
portion: **\$27.26**



* IESO = Independent Electricity System Operator.

How are electricity rates determined in Ontario?

The Ontario electricity sector is regulated by the **Ontario Energy Board (OEB)**. One of the OEB's roles is to review the distribution plans of all electricity distributors and set the rates that they can charge customers.

Hydro Ottawa is funded by the distribution rates paid by its customers. Periodically, Hydro Ottawa is required to file an application with the OEB to determine the funding available to operate and maintain the distribution system. Hydro Ottawa must submit evidence to justify the amount of funding it needs to safely and reliably distribute electricity to its customers.

Appendix 2.0



Reference Survey Report

Customer Engagement



This report and all of the information and data contained within it may not be released, shared or otherwise disclosed to any other party, without the prior, written consent of Hydro Ottawa Limited.

April 2019

STRICTLY PRIVILEGED AND CONFIDENTIAL

Overview

Research Objective

As part of its Phase I Customer Engagement, Hydro Ottawa commissioned Innovative Research Group (INNOVATIVE) to survey its residential and small business customers. Among each customer type, INNOVATIVE conducted parallel telephone and online surveys. Running parallel telephone and online surveys serve two primary purposes:

1. **To gather feedback and insights on *priorities, preferences and needs* from low-volume customers.**
Feedback from these surveys will help Hydro Ottawa's planners and engineers inform the design of the utility's DSP and Business Plan, which will be shared in draft with customers in Phase II of this engagement.
2. **To establish baselines and develop weights that allow Hydro Ottawa to move to an online methodology for its low-volume customer engagement program.**
Establishing a baseline and understanding the difference between customers with known email addresses (email sample) and the broader customer base is a critical step for utilities that wish to migrate to representative online survey methodologies in the second phase of their customer engagement. Where significant differences exist between the email sample and the broader customer base (e.g. demographics, firmographics, attitudes, and opinions), the insights gained from these parallel surveys can be used to develop weights, which can minimize these differences.

Benefits of Moving to an Online Methodology

With known emails for approximately 66% of its low-volume customers, Hydro Ottawa is an ideal candidate to migrate from a generalizable pure-telephone methodology to a generalizable pure-online methodology in Phase II of its customer engagement.

The benefits of a purely online methodology will be realized in Phase II of Hydro Ottawa's customer engagement when its draft DSP and business plan are presented to customers in an interactive workbook format. These benefits include:

- Better presentation of information through the use of visuals (e.g. diagrams, pictures, videos).
- Ability to ask more questions, as respondents are more likely to spend a longer time participating in an online survey than on the phone.
- Reduced costs as online surveys are less costly than telephone surveys.

This report documents the results of four surveys conducted by INNOVATIVE among Hydro Ottawa's low-volume customers (small business and residential) and provides recommendations on appropriate weighting for future Hydro Ottawa online survey methodologies.

Sample Validation

Email Sample vs. Broader Sample

Comparing the overall population to the sample of that population with email addresses across known variables, we can see that no group is substantially underrepresented in the email sample.

Overall Coverage

Two thirds of each population is included in the email sample.

	Full Population	Email Sample	Coverage
Residential	255,562 records	167,409 records	66%
Small Business	22,797 records	15,135 records	66%

Average Consumption

Small businesses with email addresses consume an average of 3.7% more energy than the full population.

	Full Population	Email Sample	Difference
Residential	8,157 kWh	8,136 kWh	-0.2%
Small Business	28,636 kWh	29,699 kWh	+3.7%

Language

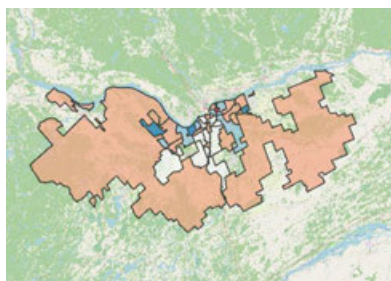
Bilingual and French accounts are overrepresented relative to English accounts, but English accounts are only slightly underrepresented.

	English			Bilingual			French		
	Full Pop.	Email Sample	Diff.	Full Pop.	Email Sample	Diff.	Full Pop.	Email Sample	Diff.
Residential	82.2%	80.0%	-2.7%	14.5%	16.7%	+15.0%	3.3%	3.4%	+2.1%
Small Business	83.7%	80.9%	-3.3%	13.8%	16.2%	+16.9%	2.5%	2.9%	+15.3%

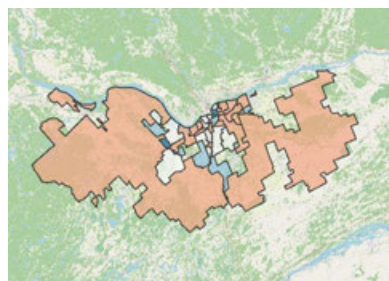
Region

There is no systematic pattern of FSAs* being over or under represented by email. Some FSAs are up to 20% over or under represented, but these differences are randomly distributed across the entire service area.

Small Business



Residential



% difference between email sample and full population
More than -10%
-10% to -4%
-4% to +4%
+4% to +10%
More than +10%

* Note: a forward sortation area (FSA) is the first three digits of a postal code.

Sample Validation

Email Sample vs. Telephone Sample

For the most part, responses from the telephone and online surveys are very similar within both customer types. However, there are a few distinct difference that are worth noting. The table below documents the differences between the *email* and *telephone* samples.

Residential	GS < 50 kW
Age: Online respondents are slightly older than telephone respondents (age 55+: 58% vs. 50% respectively).	Sector: Online respondents are less likely than telephone respondents to be represented in the commercial sector (22% vs. 33%), but more likely to be a multi-unit residential business (12% vs. 8%).
Work Status: Online respondents are more likely to be retired than telephone respondents (40% vs. 33% respectively). That said, online respondents are less likely than telephone to be full-time employed (42% vs. 47% respectively).	Hours of Operation: Online business respondents are less likely than telephone respondents to operate during regular business hours (39% vs. 51%) and less likely to operate on weekdays only (23% vs. 34%).

Weighting Convention

Given the relatively high coverage of email addresses (66% of the customer base among residential and small business customers) and similarities in known account characteristics (average consumption, language, and region), Hydro Ottawa's email sample looks to be a good representation of the broader customer base.

Likewise, the telephone and online surveys returned remarkably similar results on key demographics and firmographics, as well as customer knowledge, attitudes and beliefs.

Based on both comparisons (email sample to broader customer base and online to telephone results) INNOVATIVE does not recommend applying weights to subsequent online surveys in Phase II of this customer engagement.

Key Findings

Phase I Customer Engagement

Based on a review of the OEB handbook and previous rate application decisions, Hydro Ottawa's customer engagement focuses on two types of questions: **needs** and **preferences**.

- **Needs questions** focus on understanding the gap between the services and experience customers want and the services and experience customers are receiving.
- **Preference questions** focus on customer views about the outcomes the utility should focus on, priorities among those outcomes, and trade-offs illustrated by choices on specific programs or the pacing and prioritization of investments.

The following key findings are the result of Hydro Ottawa's random digit dialing telephone survey among residential and small business customers (GS<50kW). Given the similarity between telephone and online results, only the former are reported in the key findings. The full report contains all results.

What are customer needs?

The clear majority of Hydro Ottawa low-volume customers are satisfied with the current service they receive. When asked how Hydro Ottawa can improve service, top responses were "nothing", followed by "lower or reduce rates".

	Residential	GS < 50 kW
Overall Satisfaction	88% satisfied	85% satisfied
Improving services to customers		
1st	Nothing	Nothing
2nd	Lower or reduce rates	Lower or reduce rates

What Priorities are Most Important to Customers?

Customers don't just expect Hydro Ottawa to focus on price and reliability, all priorities are important. In fact, both residential and small business customers selected *"ensuring reliable electrical service"* as the most important priority that Hydro Ottawa should focus on.

Rating the Importance of Hydro Ottawa Priorities (Somewhat + Extremely Important)		
1st	Reliability	Reliability
2nd	Distribution Rates	Distribution Rates
3rd	Finding Cost Savings	Finding Cost Savings
	Replacing Aging Infrastructure	
	Investing in New Technology	

Key Findings

Phase I Customer Engagement

Overall, what outcomes do customers prioritize?

Among competing priorities, **price**, **reliability**, and **investing in new technology** are the top three priorities for both residential and small business customers. When ranked relative to other Hydro Ottawa priorities, price moves to the top of the list for both low-volume rate classes.

	Residential	GS < 50 kW
Ranking Priorities		
1 st	Distribution Rates	Distribution Rates
2 nd	Reliability	Reliability
3 rd	Investing in New Technology	Investing in New Technology

What reliability outcomes do customers prioritize?

The top reliability concern for low-volume customers is *reducing the length of time to restore power during extreme weather events*.

For residential customers, *reducing the overall length of outages* is a close second, followed by *reducing the number of outages during extreme weather events*.

For small business customers, reducing the number and overall length of outages were ranked well behind the top priority of restoration times during extreme weather.

	Residential	GS < 50 kW
Ranking Priorities		
1 st	Restoration times during extreme weather	Restoration times during extreme weather
2 nd	Overall length of outages	Overall number of outages
3 rd	Number of outages during extreme weather	Overall length of outages

Key Findings

Phase I Customer Engagement

What investment trade offs do customers value most?

Despite price concerns, low-volume customers are generally willing to consider paying more to invest in aging infrastructure, equip staff with equipment and IT systems, proactively invest in system capacity, and modernize the grid knowing that it could eventually save money.

Generally, small business customers are less willing to consider paying more to make these investments, but a majority still supports investments in all three categories.

Maintaining reliability, while making smart investments that could save money down the road appears to be a priority for low-volume customers.

System Renewal

Low-volume customers are most supportive of Hydro Ottawa investment in aging infrastructure in order to maintain reliability, even if that results in small rate increases.

System Renewal (% of customers who selected option)	Residential	GS < 50 kW
Invest what it takes to maintain reliability	72%	63%
Defer investments to lessen bill impacts	21%	23%

General Plant

The majority of customers support Hydro Ottawa making the necessary investments to ensure its staff have the equipment and IT systems that are needed to manage the system efficiently and reliably.

General Plant (% of customers who selected option)	Residential	GS < 50 kW
Make investments necessary	72%	69%
Find ways to make do with equipment	17%	27%

Key Findings

Phase I Customer Engagement

System Service

A majority of customers support Hydro Ottawa proactively investing in system capacity in order to ensure that customers in high growth areas do not experience a decrease in reliability.

Relative to investments in system renewal, general plant and grid modernization, system capacity received the lowest level of support, with nearly one-in-three low-volume customers preferring to delay these investments until customers start to experience a decline in reliability.

System Service (% of customers who selected option)	Residential	GS < 50 kW
Proactively invest in system capacity	63%	53%
Delay investments in system capacity	28%	33%

Grid Modernization

As with investments in renewing aging equipment and general plant, there is strong support for Hydro Ottawa proactively investing in modernizing the grid now, knowing it will cost more now, but could eventually save customers' money down the road.

Beyond containing cost increases and maintaining reliability, investments in new technology appear to be a core priority for low-volume customers if it can eventually save customer money down the road.

Grid Modernization (% of customers who selected option)	Residential	GS < 50 kW
Make investments necessary	69%	58%
Find ways to make do with equipment	22%	32%



Methodology & Respondent Profiles



Reference Survey Methodology

Survey Design

This report documents the results of four surveys conducted by INNOVATIVE among Hydro Ottawa's low-volume customers (small business and residential).



The **telephone surveys** were fielded from **February 28th to March 15th, 2019** amongst a random sample of **n=500** (unweighted n=517) residential and **n=200** (unweighted n=200) small business customers.

Both telephone surveys were weighted by region and consumption quartiles within their respective rate classes to produce a representative sample of Hydro Ottawa's customer base.

The final sample includes both landline and cell phone respondents, so that individuals who don't have a landline are represented. The margin of error is approximately $\pm 4.5\%$, 19 times out of 20 for the residential survey and approximately $\pm 6.9\%$, 19 times out of 20 for the small business survey.



The **online surveys** were fielded from **March 5th to 27th, 2019** amongst **n=730** (unweighted n=730) residential and **n=275** (unweighted n=275) small business customers.

Both online surveys were weighted by region and consumption quartiles within their respective rate classes to report on a representative sample of Hydro Ottawa's customer base.

The margin of error is approximately $\pm 3.6\%$, 19 times out of 20 for the residential survey and approximately $\pm 5.9\%$, 19 times out of 20 for the small business survey.

Sample Design

Hydro Ottawa provided INNOVATIVE with confidential access to its customer lists in order to conduct this research. The customer list included information on region, electricity consumption, and preferred language for communications, as well as all available telephone numbers and email addresses.



Since only a subset of the customers on the lists have email addresses on file, INNOVATIVE has conducted a baseline analysis to see how customers with email addresses differ from the broader customer base, followed by a detailed comparison between online and telephone survey results. The following pages detail the sampling methodology used for this research.

Note: Graphs and tables may not always total 100% due to rounding values rather than any error in data. Sums are added before rounding numbers. Caution interpreting results with small n-sizes.

Residential Sample



The residential telephone survey followed a stratified random sampling methodology. This is a method of sampling that involves the division of a population into smaller groups known as strata. In stratified random sampling, the strata are formed based on a group's shared attributes or characteristics (in this case, customer service area and electricity usage). A random sample from each stratum is taken in a number proportional to the stratum's size when compared to the customer population. These subsets of the strata are then pooled to form a random sample.

In the telephone survey, residential customers were divided into strata based on service area populations. Within service area populations, residential customers were then divided into quartiles based on annual electricity usage to ensure the sample has a proportionate mix of customers from *low*, *medium-low*, *medium-high*, and *high* electricity usage households. Weights were applied to adjust the *observed strata* to ensure a representative customer base.

Telephone Residential Sample

Region	Unweighted N					Weighted N				
	Consumption Quartiles					Consumption Quartiles				
	Low	Medium-Low	Medium-High	High	Total	Low	Medium-Low	Medium-High	High	Total
Gloucester	37	36	38	36	147	35	35	35	35	140
Goulbourn/Casselman	6	6	8	10	30	8	8	8	8	32
Kanata	15	15	15	15	60	14	14	14	14	56
Nepean	33	35	34	32	134	33	33	33	33	132
Ottawa	37	37	37	35	146	35	35	35	35	140
Total	128	129	132	128	517	125	125	125	125	500

The online survey has been weighted by region and consumption to ensure a representative customer base.

Online Residential Sample

Region	Unweighted N					Weighted N				
	Consumption Quartiles					Consumption Quartiles				
	Low	Medium-Low	Medium-High	High	Total	Low	Medium-Low	Medium-High	High	Total
Gloucester	48	58	50	59	215	51	51	51	51	204
Goulbourn/Casselman	2	7	20	14	43	12	12	12	12	47
Kanata	19	24	18	20	81	20	20	20	20	82
Nepean	40	55	45	48	188	48	48	48	48	193
Ottawa	83	53	33	34	203	51	51	51	51	204
Total	192	197	166	175	730	183	183	183	183	730

Small Business



Small Business Sample

Like the residential telephone survey, the **small business telephone** survey followed stratified random sampling methodology. Weights were applied to adjust the *observed strata* to ensure a representative customer base.

Telephone Small Business Sample

Region	Unweighted N					Weighted N				
	Consumption Quartiles					Consumption Quartiles				
	Low	Medium-Low	Medium-High	High	Total	Low	Medium-Low	Medium-High	High	Total
Gloucester	13	14	14	14	55	14	14	14	14	54
Goulbourn/Casselman	2	7	5	1	15	3	3	3	3	12
Kanata	2	2	1	2	7	3	3	3	3	10
Nepean	9	9	8	6	32	11	11	11	11	42
Ottawa	23	23	23	22	91	20	20	20	20	82
Total	49	55	51	45	200	50	50	50	50	200

The online survey has been weighted by region and consumption to ensure a representative customer base.

Online Small Business Sample

Region	Unweighted N					Weighted N				
	Consumption Quartiles					Consumption Quartiles				
	Low	Medium-Low	Medium-High	High	Total	Low	Medium-Low	Medium-High	High	Total
Gloucester	18	15	11	17	61	19	19	19	19	74
Goulbourn/Casselman	8	6	6	7	27	4	4	4	4	16
Kanata	6	3	6	3	18	4	4	4	4	14
Nepean	14	23	8	4	49	15	15	15	15	58
Ottawa	47	24	25	24	120	28	28	28	28	112
Total	93	71	56	55	275	69	69	69	69	275

Demographics

Respondent Profile

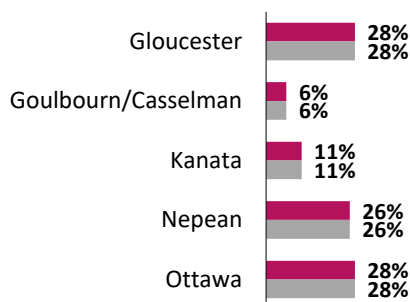
Residential



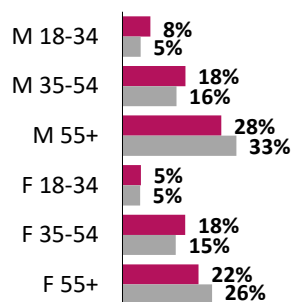
Telephone

Online

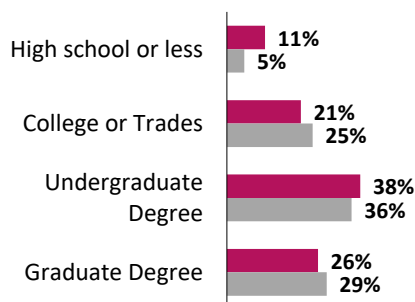
Region



Age-Gender

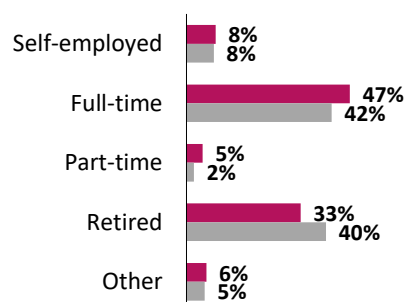


Education



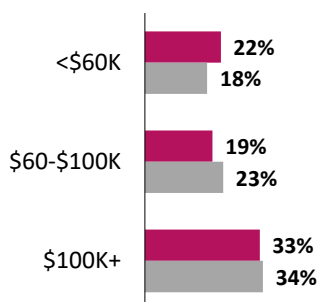
Note: 'Prefer not say' (T: 3%; O: 6%) not shown

Employment



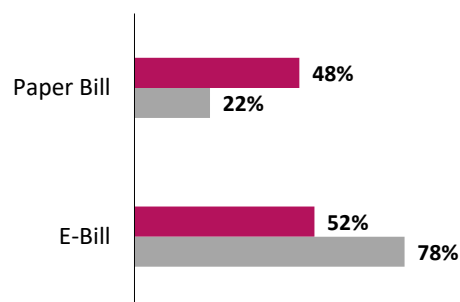
Note: 'Prefer not say' (T: 1%; O: 3%) not shown

Household Income (After Tax)



Note: 'Prefer not say' (T: 26%; O: 26%) not shown

Bill Type



Note: 'Don't know' (T: 1%; O: 0%) not shown

Firmographics

Small Business Respondent Profile

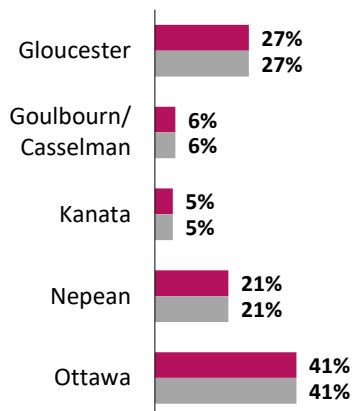
Small Business



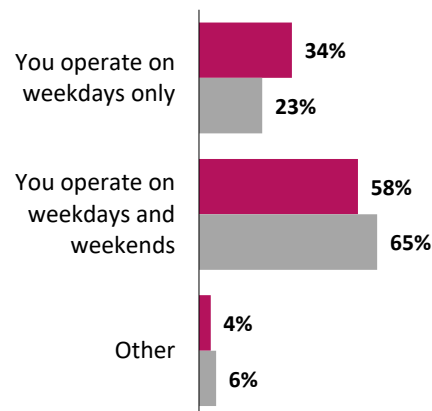
Telephone

Online

Region

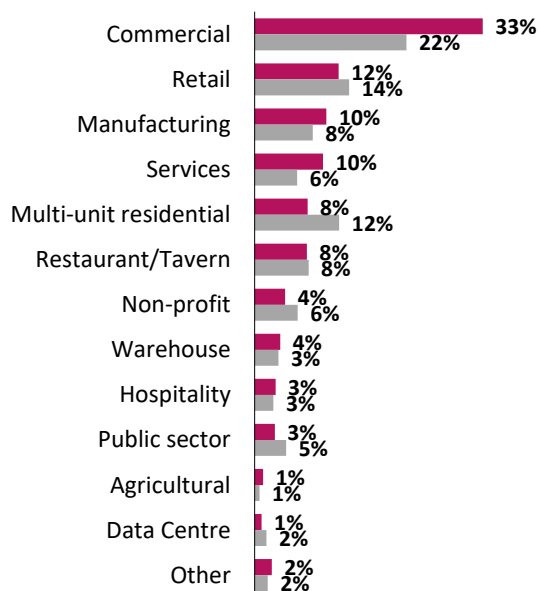


Days of operation



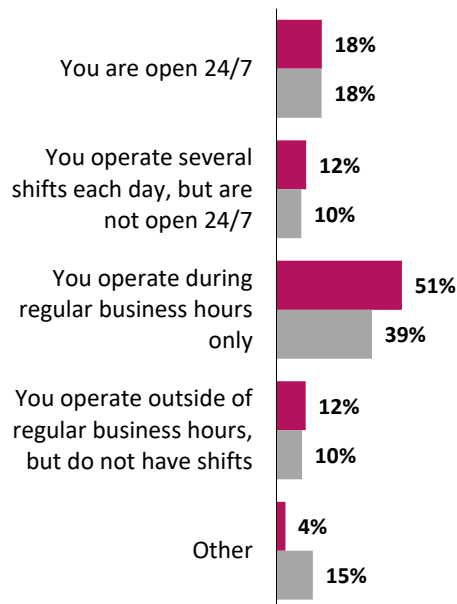
Note: 'Prefer not to say' (T: 3%; O: 5%) not shown

Sector



Note: 'Prefer not to say' (T: 0%; O: 8%) not shown

Hours of operation



Note: 'Prefer not to say' (T: 4%; O: 8%) not shown

Environmental Controls

It is important to distinguish between what is within, and what is outside of Hydro Ottawa's influence or control when it comes to drivers of customer opinion.

Perceptions of distributors often tend to move with general perceptions of **provincial government management in the sector** rather than in response to the local utility.

In addition, perceptions of utilities are also strongly correlated with **financial circumstances**. In tough times perception and preference can change because customers are struggling with their bills, not because of anything the company has, or has not, done.

Control questions help distributors distinguish between:

- a) utility driven programs that impact customer opinion; and
- b) uncontrollable external drivers that impact customer opinion.

When conducting research in the energy sector, INNOVATIVE often tests multiple environmental controls to assess what role predispositions (customer values and beliefs – which can be difficult and costly to change) play in the formation of opinion towards a utility.

In this study, our environmental controls focus on two key questions to help capture external phenomena:



Government Management of the Electricity System: *Consumers are well-protected with respect to prices and the reliability and quality of electricity service in Ontario.*



Financial Circumstances: *The cost of my electricity bill has a major impact on my finances and requires I do without some other important priorities.*

Environmental Controls

Customer Feedback

Q For each statement please tell me if you would strongly agree, somewhat agree, somewhat disagree or strongly disagree. If you don't know enough to say or don't have an opinion just let me know.

Residential

Telephone n=500

Online n=730

Total Agree

The cost of my electricity bill has a major impact on my finances and requires I do without some other important priorities.

Telephone



41%

Online



44%

Customers are well served by the electricity system in Ontario.

Telephone



84%

Online



82%

Small Business

Telephone n=200

Online n=275

Total Agree

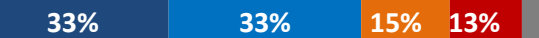
The cost of my electricity bill has a major impact on my finances and requires I do without some other important priorities.

Telephone



59%

Online



67%

Customers are well served by the electricity system in Ontario.

Telephone



80%

Online



79%

Strongly agree

Somewhat agree

Somewhat disagree

Strongly disagree

Don't know/No opinion

Note: sums added before rounding.

Customer Perceptions

Knowledge, CSAT, Needs



Introduction & Core Measure

Preamble

“

*Today I want to talk about **Hydro Ottawa** and the local electricity system in your community.*

There are three topics I would like to discuss:

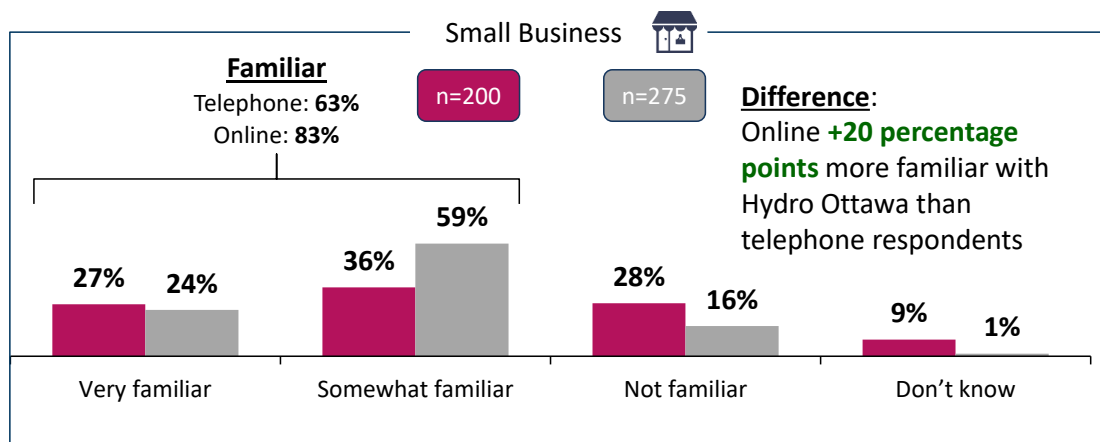
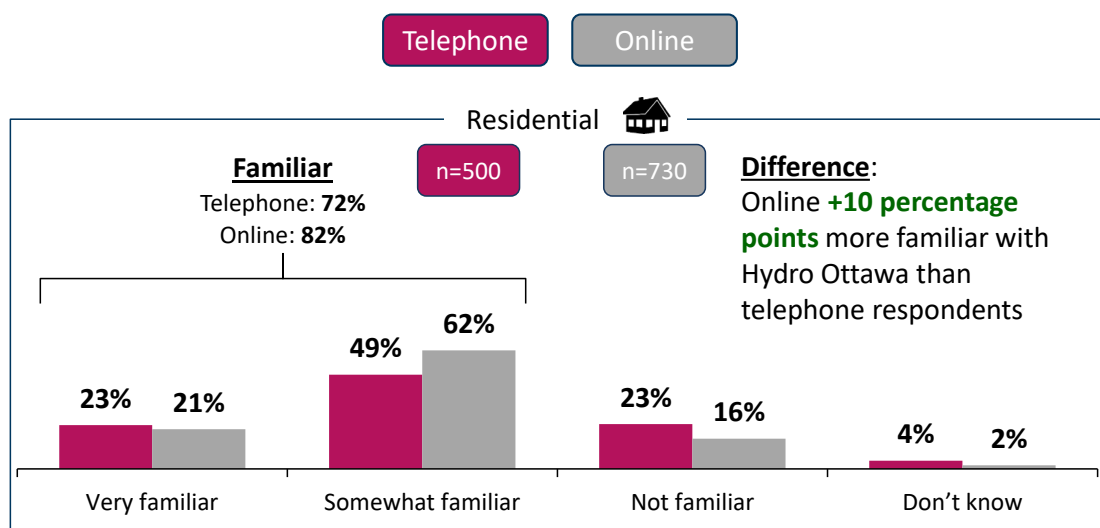
- *First, we will talk about your experience with Hydro Ottawa;*
- *Second, we will talk about the outcomes that matter most to you; and*
- *And finally, we will talk about some trade-offs in planning future investments.*

***First, let's talk about your experience.** While **Hydro Ottawa** owns a number of hydroelectric dams through a subsidiary company, the following questions are about **Hydro Ottawa's** distribution system. This is the system that takes the electricity from high-voltage transmission towers and brings it to your home/organization through a network of wires, poles and other equipment that is owned and operated by **Hydro Ottawa**.*”

Familiarity with Hydro Ottawa

Online respondents more familiar with Hydro Ottawa than telephone respondents

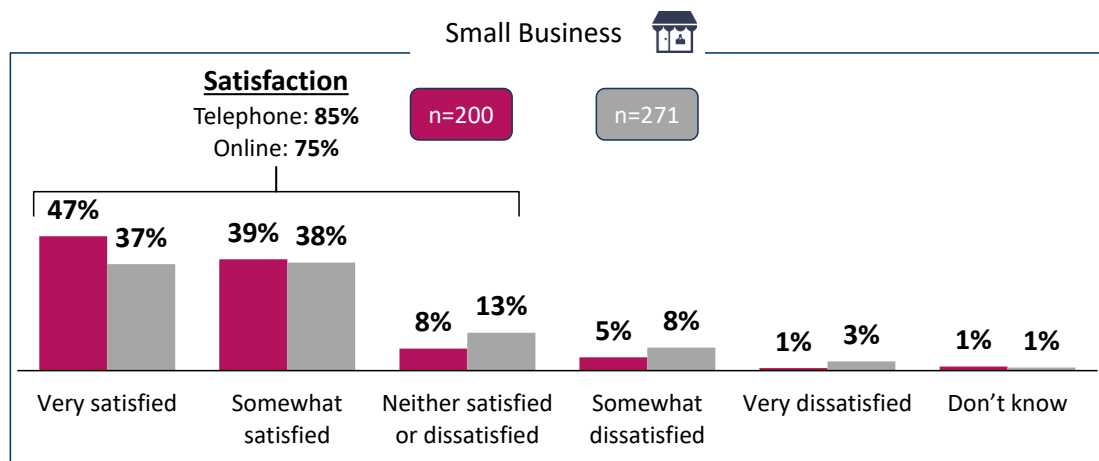
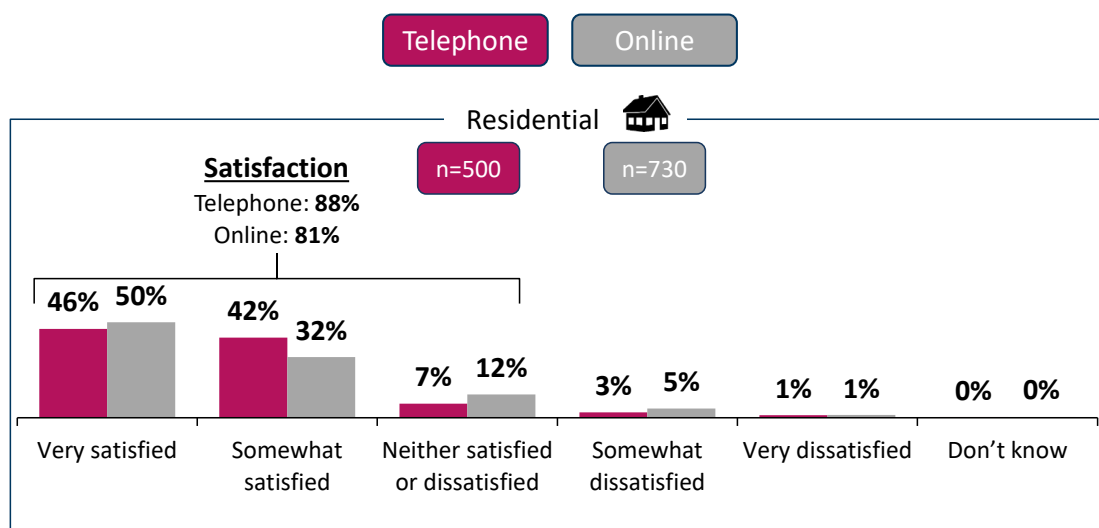
Q How familiar are you with Hydro Ottawa, which operates the electricity distribution system in your community? Would you say you are very familiar, somewhat familiar, not familiar or would you say you don't know?



Note: sums added before rounding.

Satisfaction with Hydro Ottawa

Q Thinking specifically about the services provided to you and your community by **Hydro Ottawa**, overall, how satisfied or dissatisfied are you with the services that you/your organization receive? Would you say you are very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, very dissatisfied or would you say you don't know?



Note: sums added before rounding.

Residential



Suggestions for Improvement

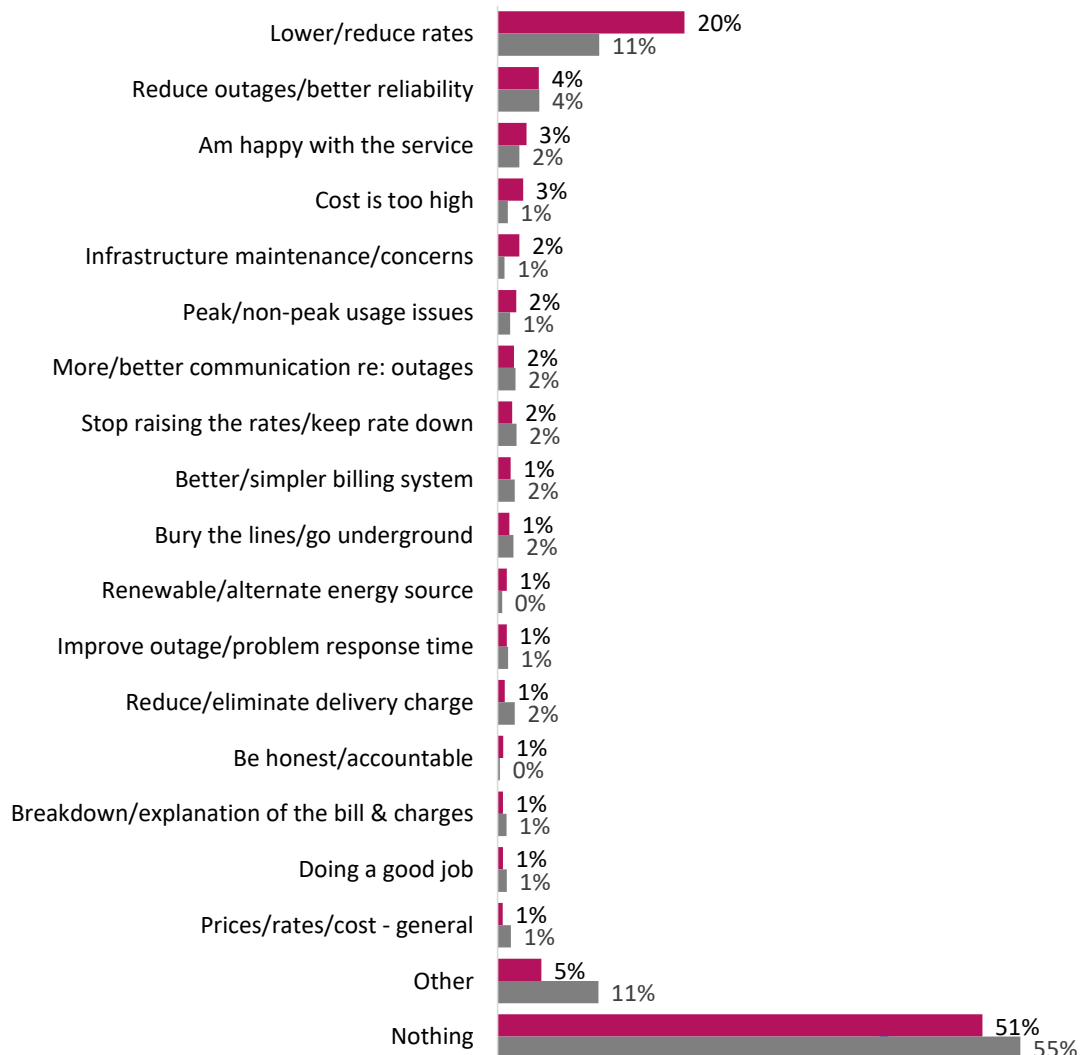


And, is there anything in particular you would like Hydro Ottawa to do to improve its services to you?

[asked of all respondents]

Telephone

Online



Ranked in order by telephone responses. "Other" represents responses codes <1%.

Small Business



Suggestions for Improvement

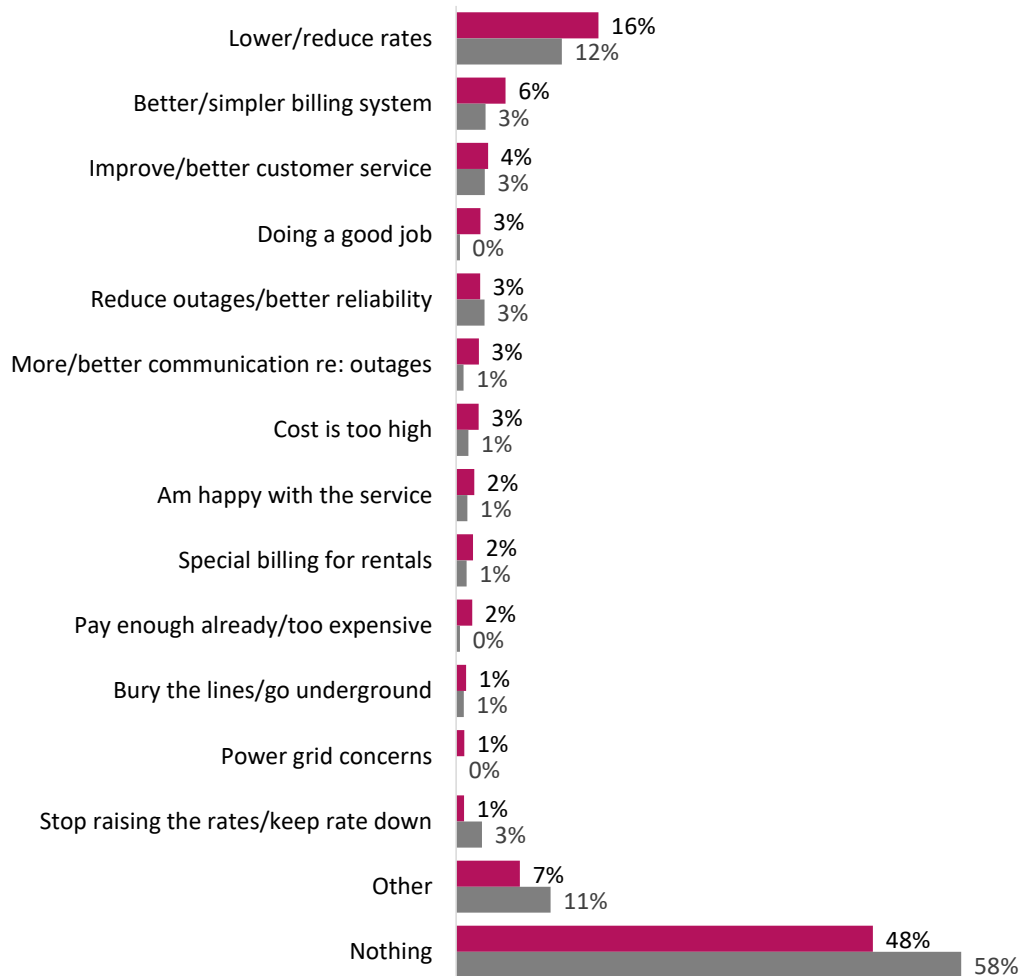


And, is there anything in particular you would like Hydro Ottawa to do to improve its services to you?

[asked of all respondents]

Telephone

Online



Ranked in order by telephone responses. "Other" represents responses codes <1%.

Familiarity with Share of the Bill

Preamble

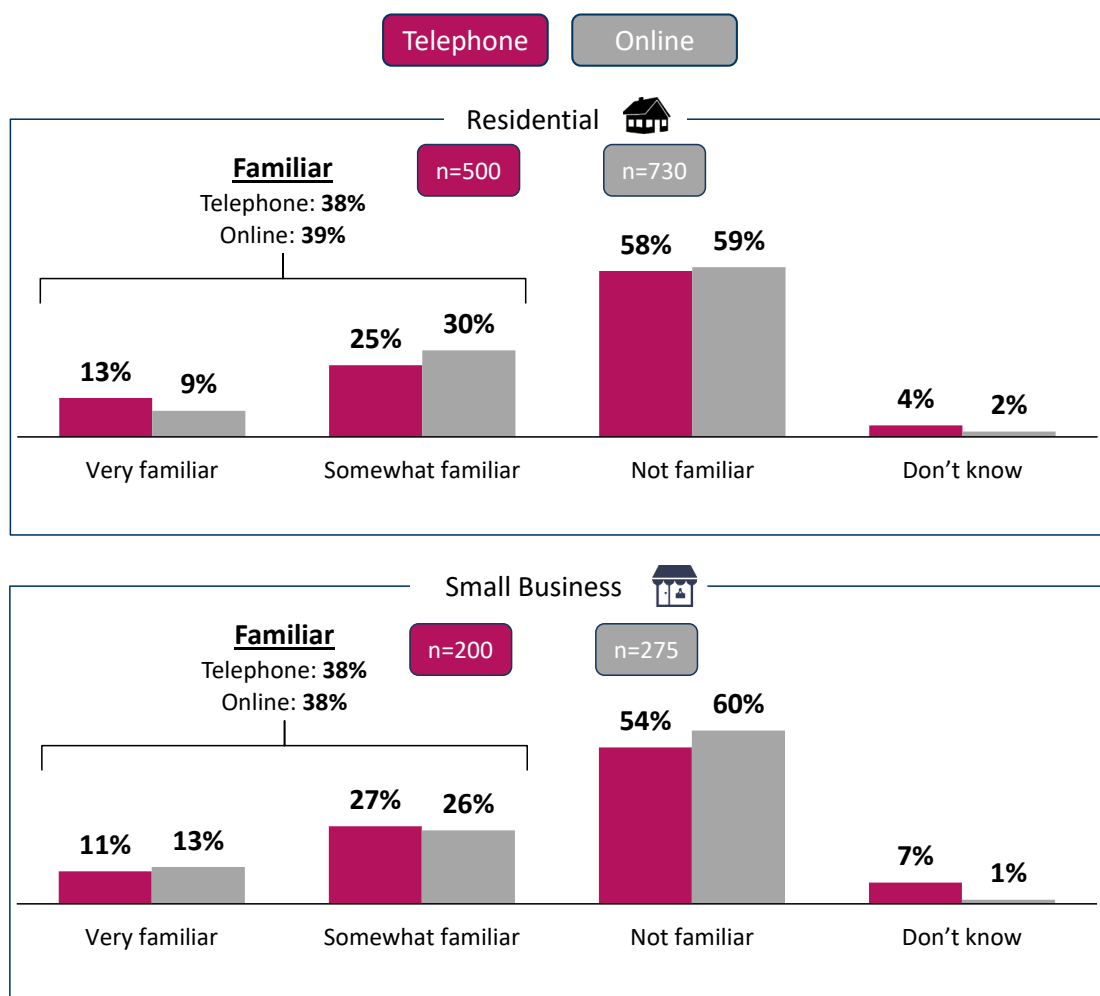
“

While **Hydro Ottawa** is responsible for collecting payment for the entire electricity bill, it keeps about **25%** of the average residential/small business customer's bill. The rest of the bill goes to power generation companies, transmission companies, the provincial government and regulatory agencies.

”

Familiarity with Hydro Ottawa's Share of the Bill

Q Before this survey, how familiar were you with the amount of your (organization's) electricity bill that went to **Hydro Ottawa**? Would you say you were very familiar, somewhat familiar, not familiar or would you say you don't know?

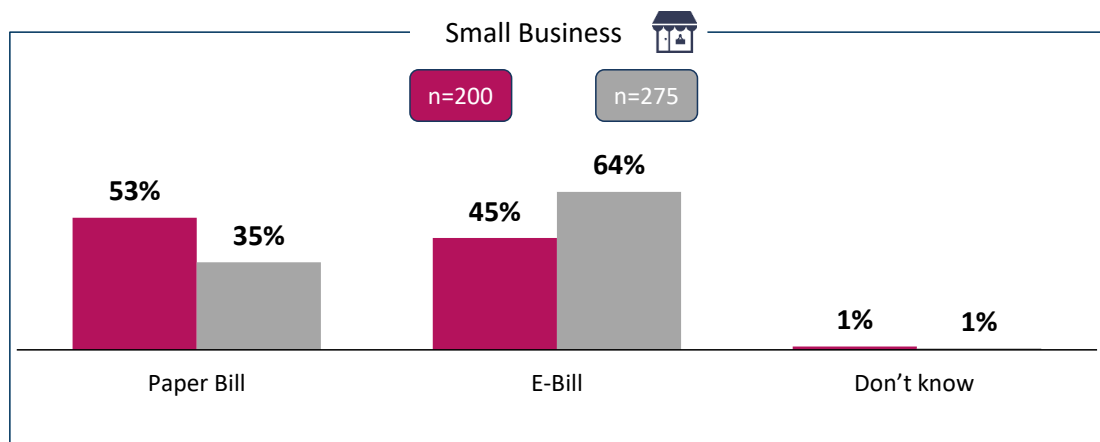
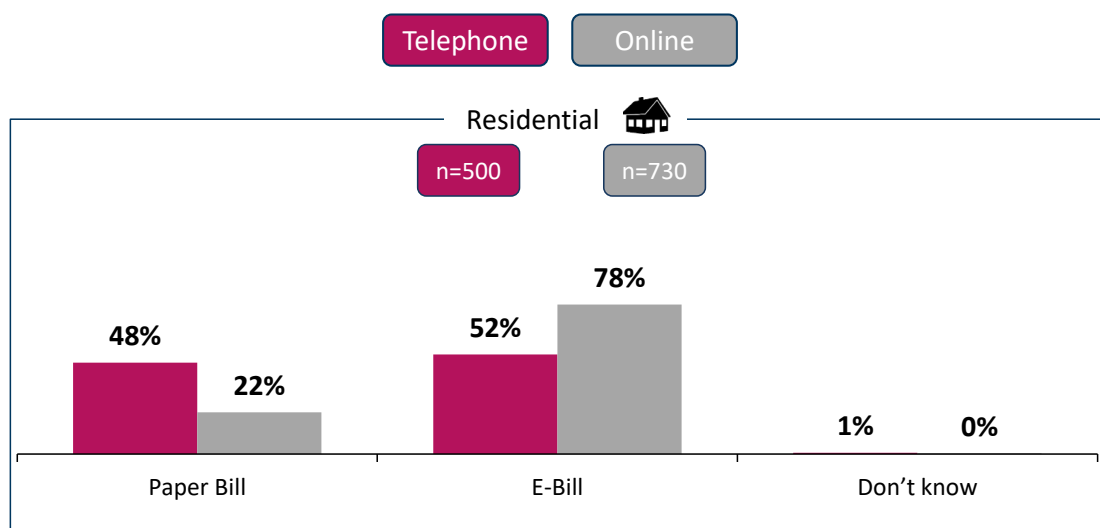


Note: sums added before rounding.

Bill Type



Do you/your organization receive your monthly bill from Hydro Ottawa as a **paper bill** or an **electronic bill**?



Note: sums added before rounding.



Hydro Ottawa's Customer Priorities



Residential Priorities

Overview of Importance Ratings

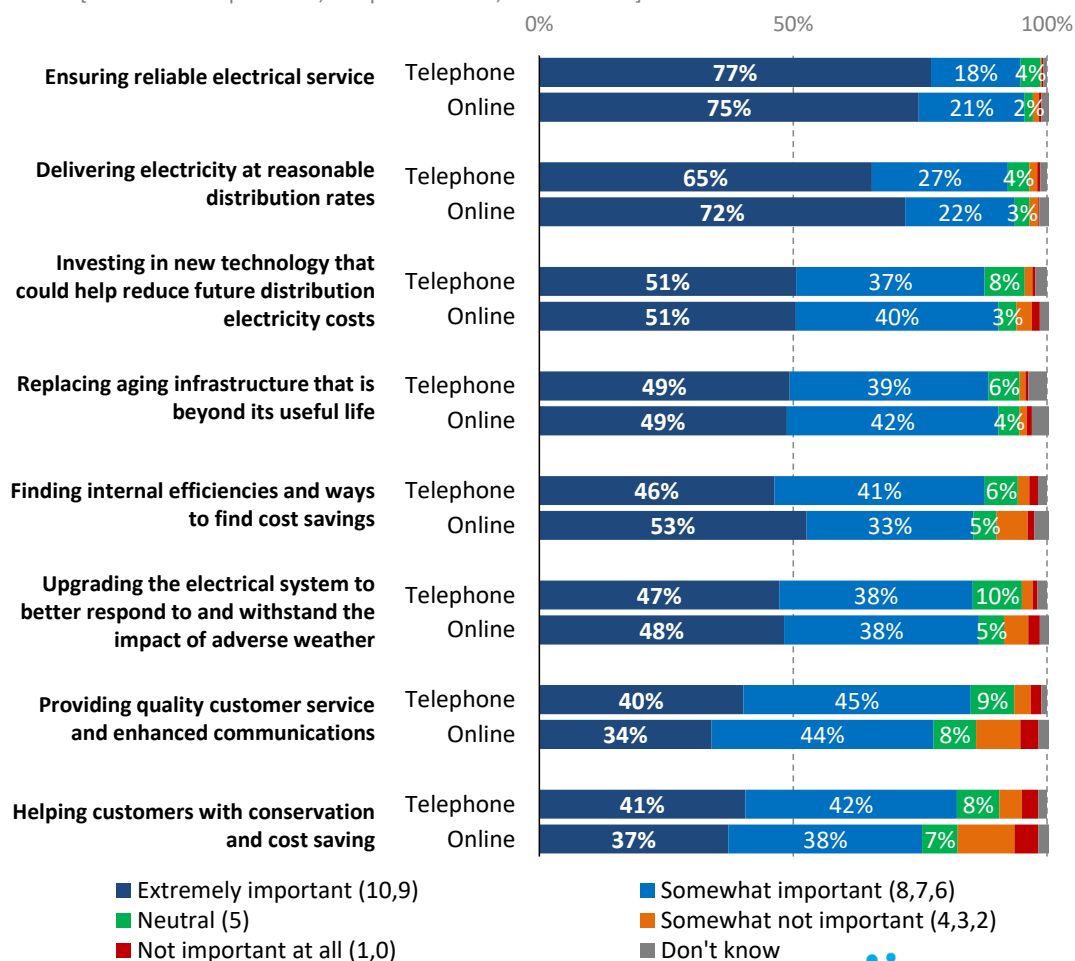
Residential



Now, let's talk about our second topic – outcomes. Hydro Ottawa regularly holds discussions with its customers to better understand how it should set spending and investment priorities. In recent conversations with customers, a number of company goals were identified as priorities for Hydro Ottawa.

Using a scale from 0 to 10, where 0 means not important at all and 10 means extremely important, how important are each of the following Hydro Ottawa priorities to you as a customer?

[asked of all respondents, Telephone n=500; Online n=730]



Small Business Priorities

Overview of Importance Ratings

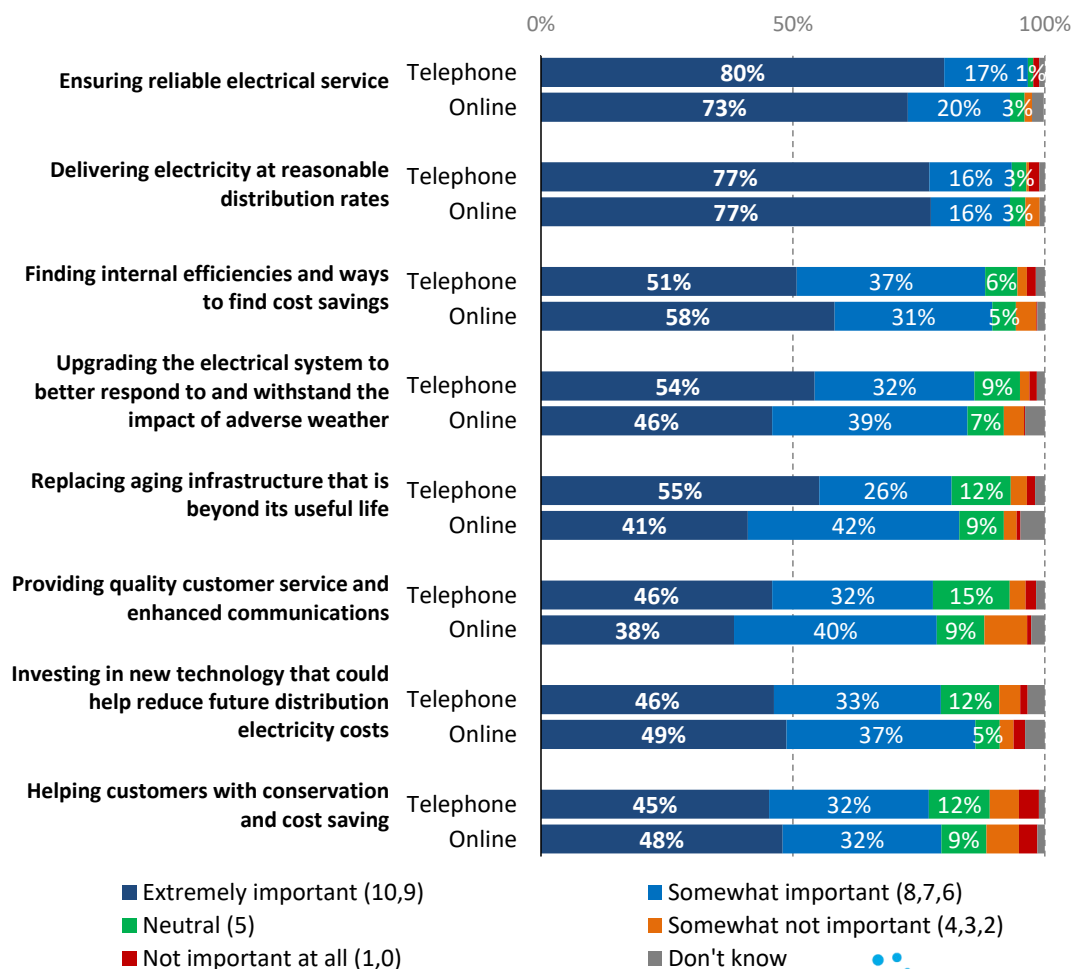
Small Business



Now, let's talk about our second topic – outcomes. Hydro Ottawa regularly holds discussions with its customers to better understand how it should set spending and investment priorities. In recent conversations with customers, a number of company goals were identified as priorities for Hydro Ottawa.

Using a scale from 0 to 10, where 0 means not important at all and 10 means extremely important, how important are each of the following Hydro Ottawa priorities to you as a customer?

[asked of all respondents, Telephone n=200; Online n=275]



Residential



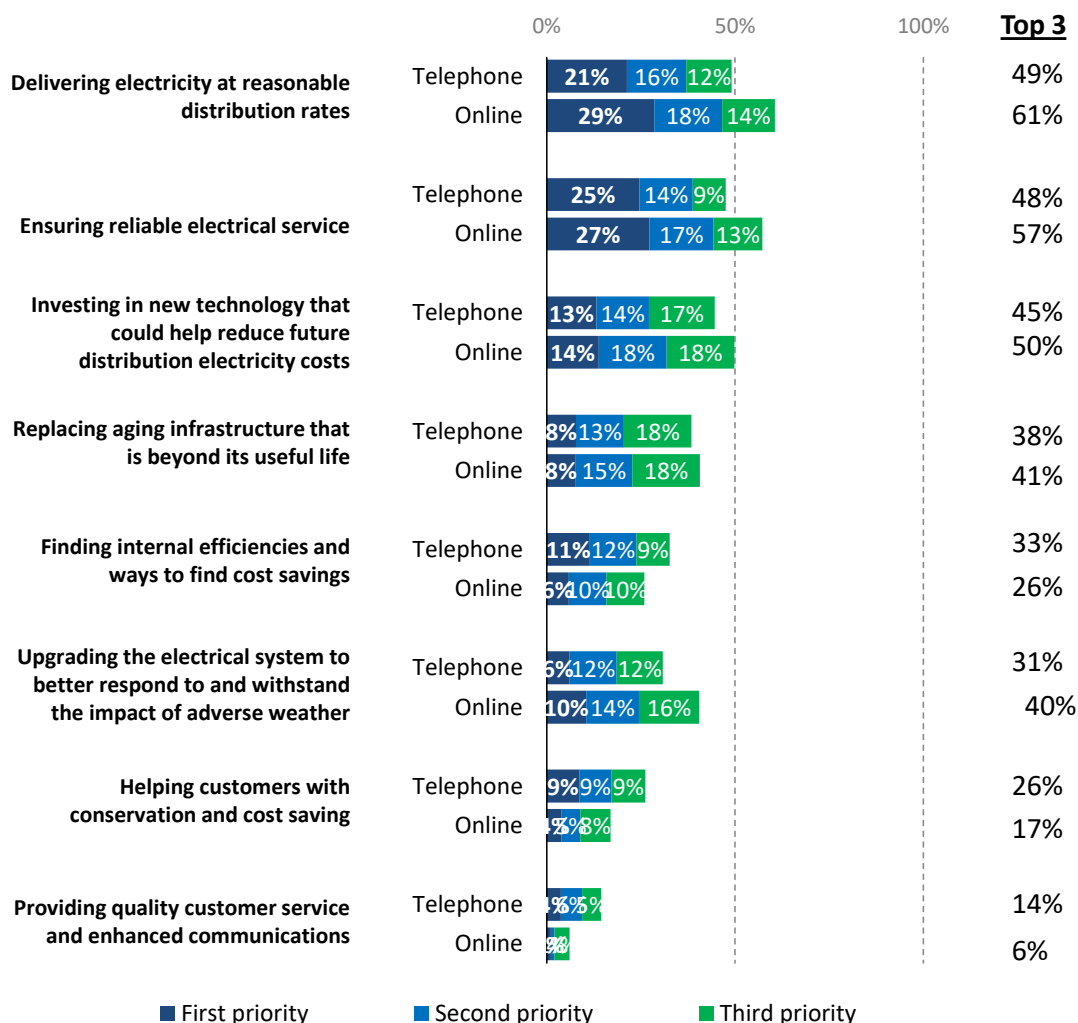
Residential Priority Rankings

Ranking the Top 3



Now thinking of the priorities that we just discussed, please tell me which one is most important to you.

[asked of all respondents, Telephone n=500; Online n=730]



Note: Ranked in order by telephone responses.
 "Don't know" not shown. Sums added before rounding.

Small Business



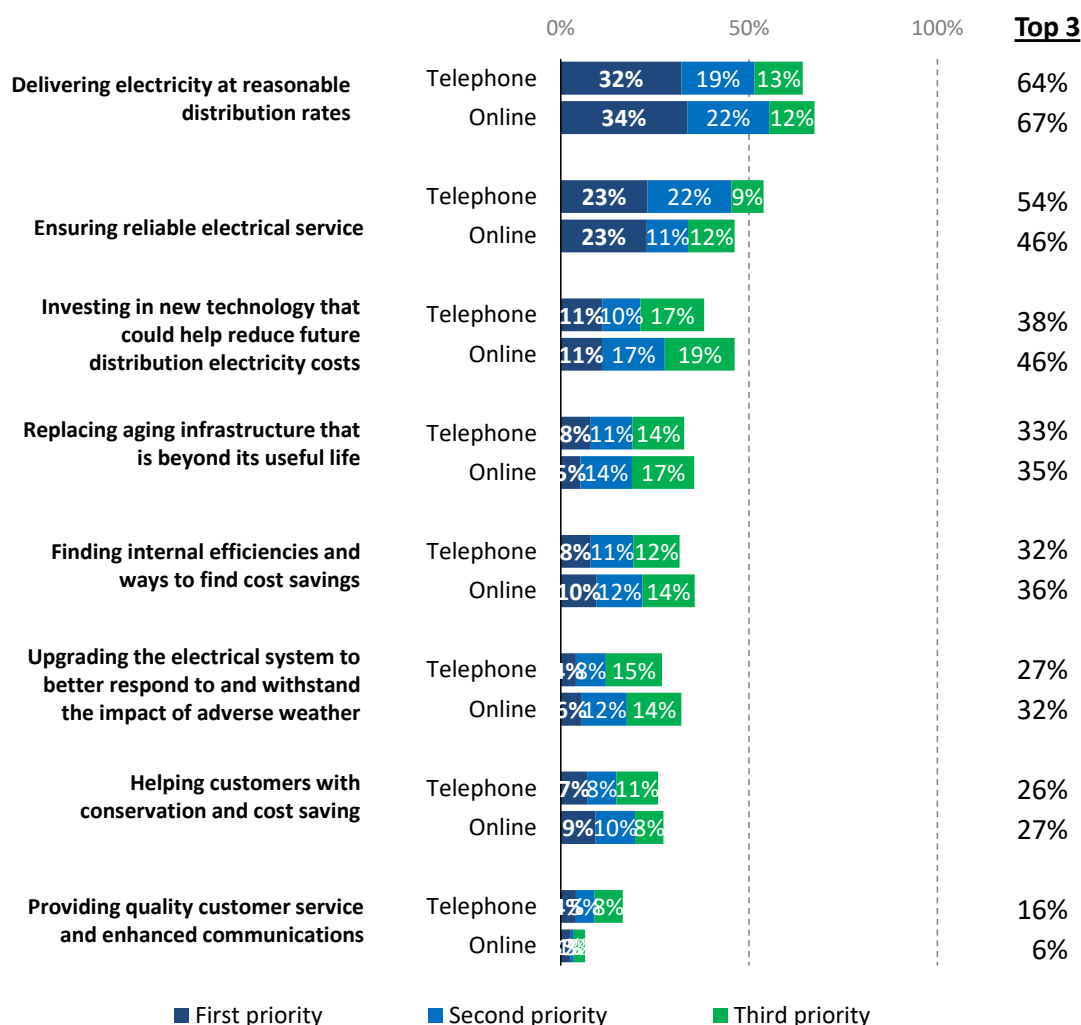
Small Business Priority Rankings

Ranking the Top 3



Now thinking of the priorities that we just discussed, please tell me which one is most important to you.

[asked of all respondents, Telephone n=200; Online n=275]



Note: Ranked in order by telephone responses.
 "Don't know" not shown. Sums added before rounding.

Residential



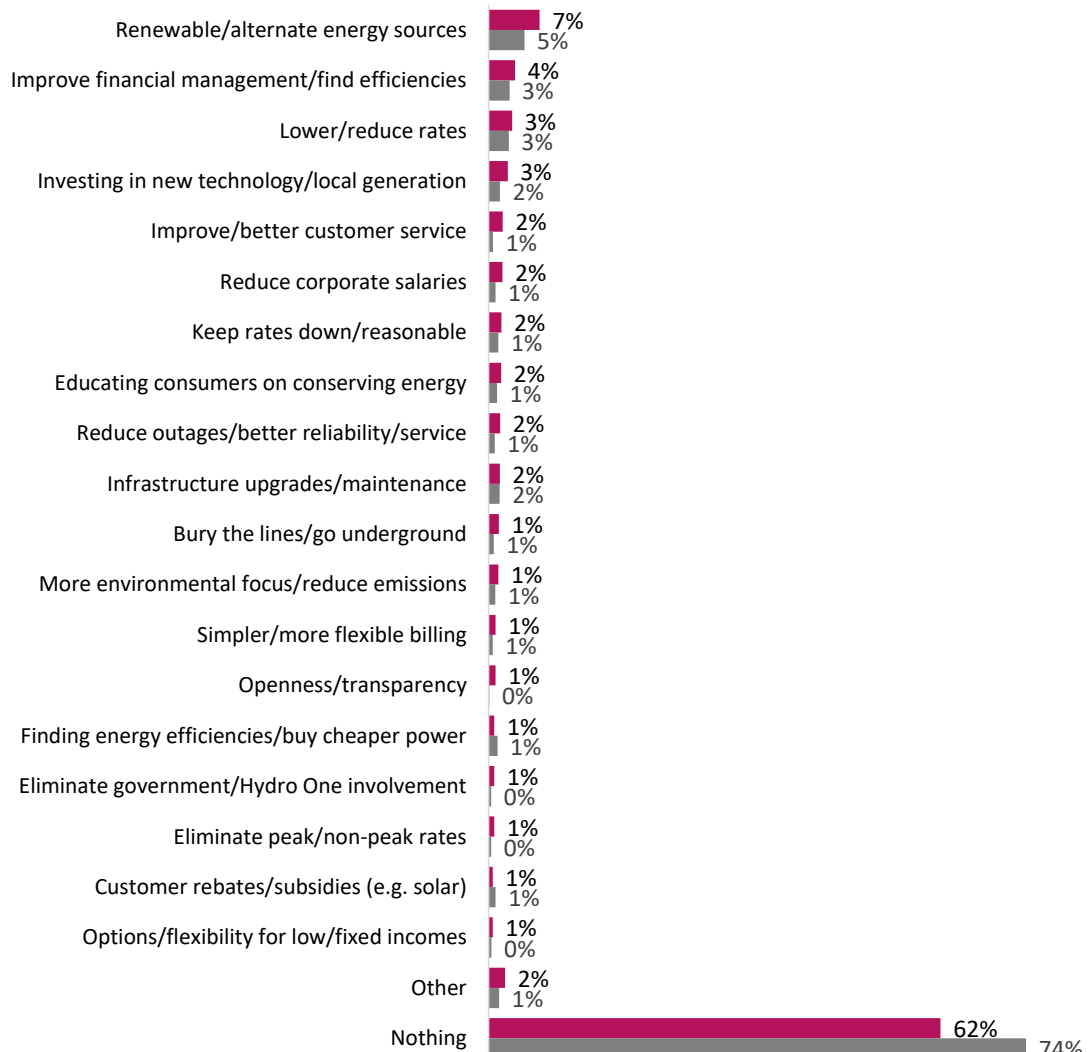
Other Important Priorities



Can you think of any other important priorities that Hydro Ottawa should be focusing on?
 [asked of all respondents]

Telephone

Online



Ranked in order by telephone responses. "Other" represents responses codes <1%.

Small Business



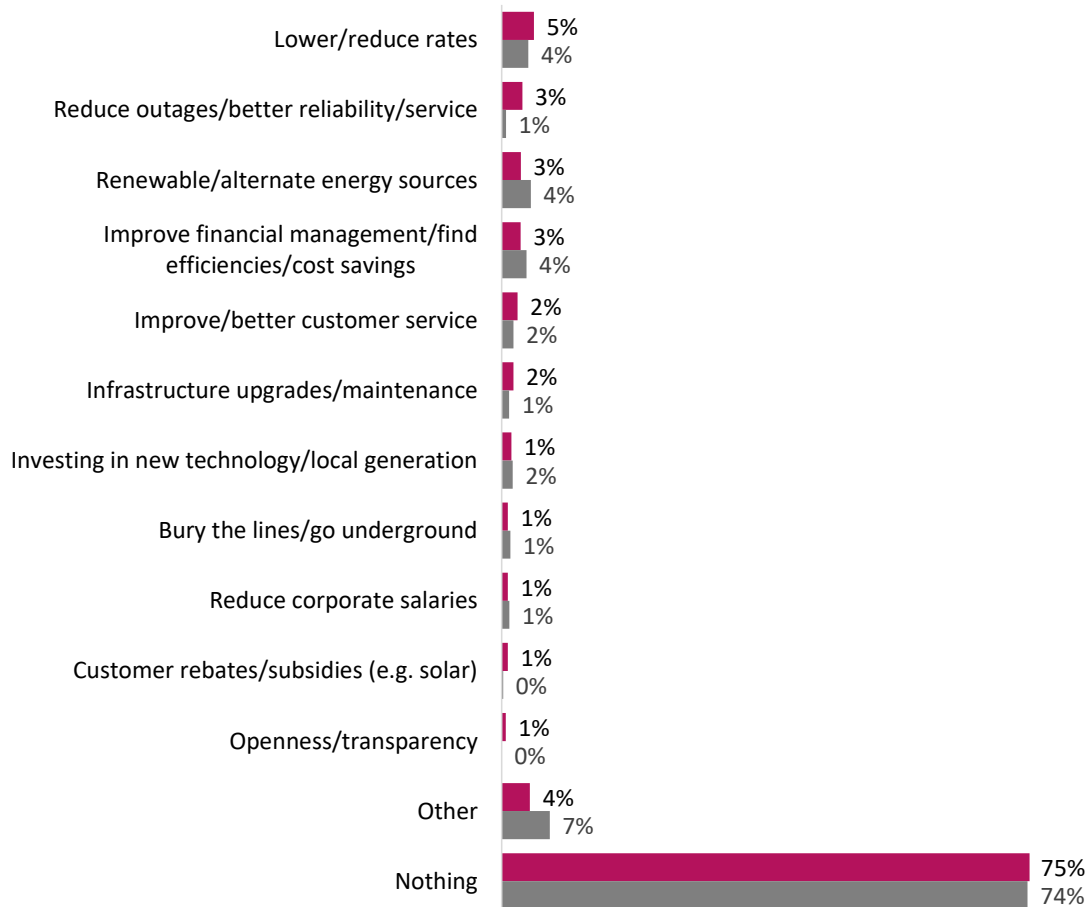
Other Important Priorities



Can you think of any other important priorities that Hydro Ottawa should be focusing on?
 [asked of all respondents]

Telephone

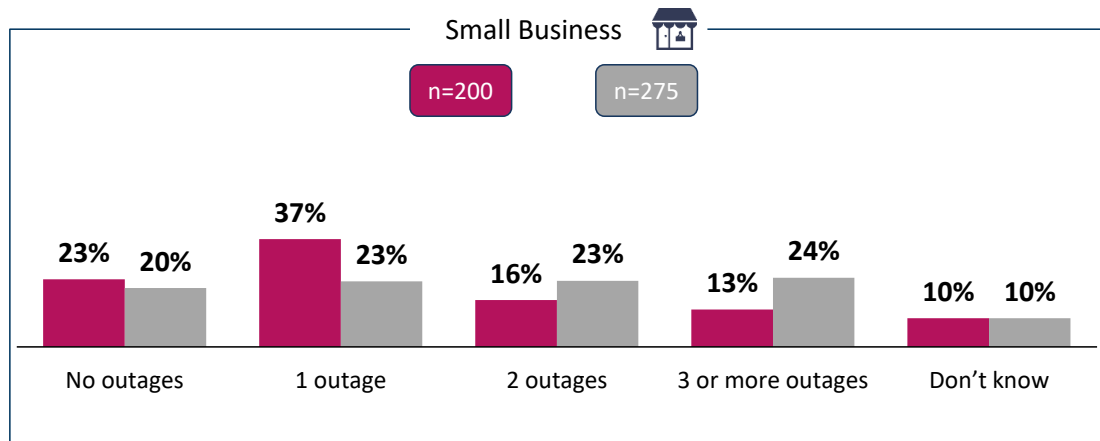
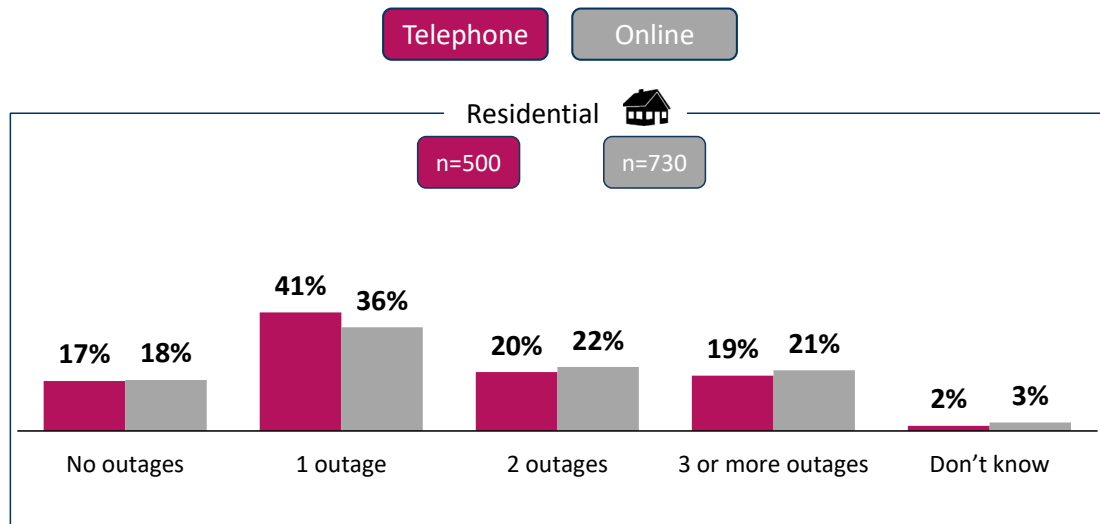
Online



Ranked in order by telephone responses. "Other" represents responses codes <1%.

Reliability Experience

Q Now, let's talk about the reliability of electricity service you/your organization receive. Have you experienced any power outages at **home/your organization in the past 12 months** which *lasted longer than one minute*? If so, approximately how many of these power outages did you/your organization experience?



Ranking Reliability Outcomes

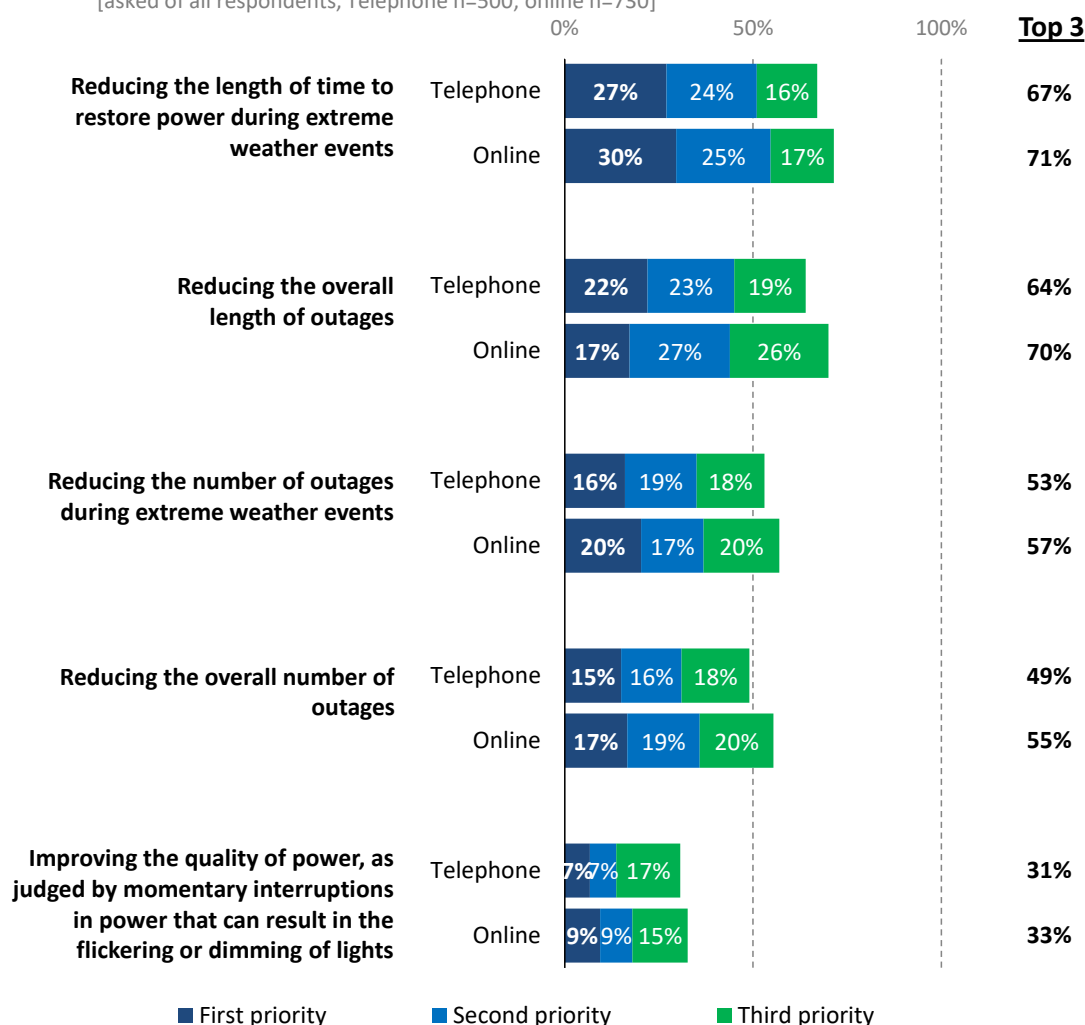
Ranking the Top 3

Residential



And when it comes to reliability, there are a number of areas that Hydro Ottawa could focus on. Among the following reliability outcomes, please tell me which one is most important to you. What is the next most important priority you think Hydro Ottawa should focus on? And what do you consider the third most important priority?

[asked of all respondents, Telephone n=500; online n=730]



Note: Ranked in order by telephone responses.
 "Don't know" not shown. Sums added before rounding.

Ranking Reliability Outcomes

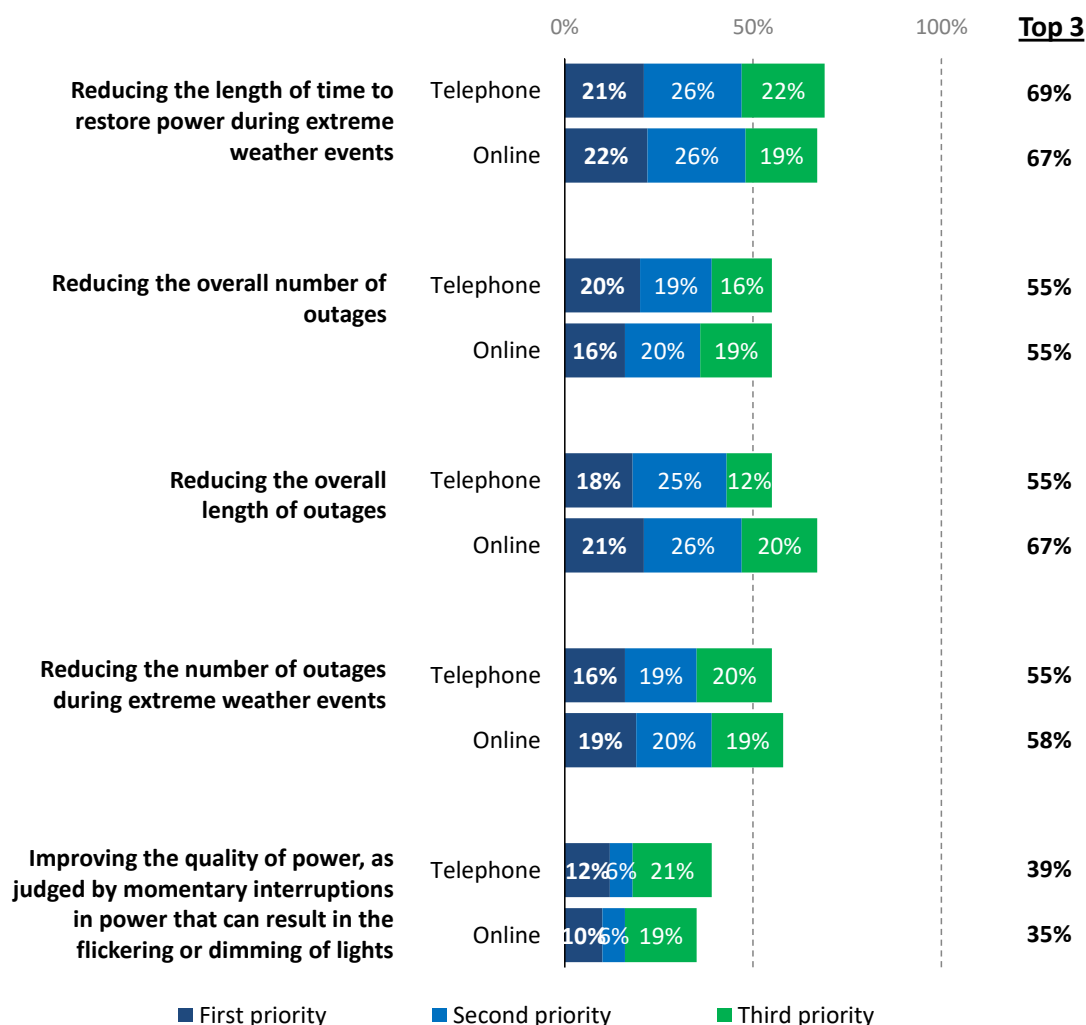
Ranking the Top 3

Small Business



And when it comes to reliability, there are a number of areas that Hydro Ottawa could focus on. Among the following reliability outcomes, please tell me which one is most important to you. What is the next most important priority you think Hydro Ottawa should focus on? And what do you consider the third most important priority?

[asked of all respondents, Telephone n=200; Online n= 275]



Note: Ranked in order by telephone responses.
 "Don't know" not shown. Sums added before rounding.



Investment Trade-offs

System Renewal

Q The first category focuses on projects that replace and restore aging electrical infrastructure, like overhead poles and underground cables. Regarding investments in aging infrastructure, which of the following statements best represents your point of view?

Telephone

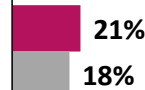
Online

Residential

Hydro Ottawa should invest what it takes to replace the system's aging infrastructure to maintain system reliability; even if that increases my monthly electricity bill by a few dollars over the next few years



Hydro Ottawa should defer its investments in replacing aging infrastructure to lessen the impact of any bill increase; even if this could eventually lead to more or longer power outages



n=500

n=730

Don't know

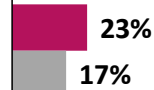


Small Business

Hydro Ottawa should invest what it takes to replace the system's aging infrastructure to maintain system reliability; even if that increases my monthly electricity bill by a few dollars over the next few years



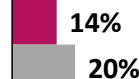
Hydro Ottawa should defer its investments in replacing aging infrastructure to lessen the impact of any bill increase; even if this could eventually lead to more or longer power outages



n=200

n=275

Don't know



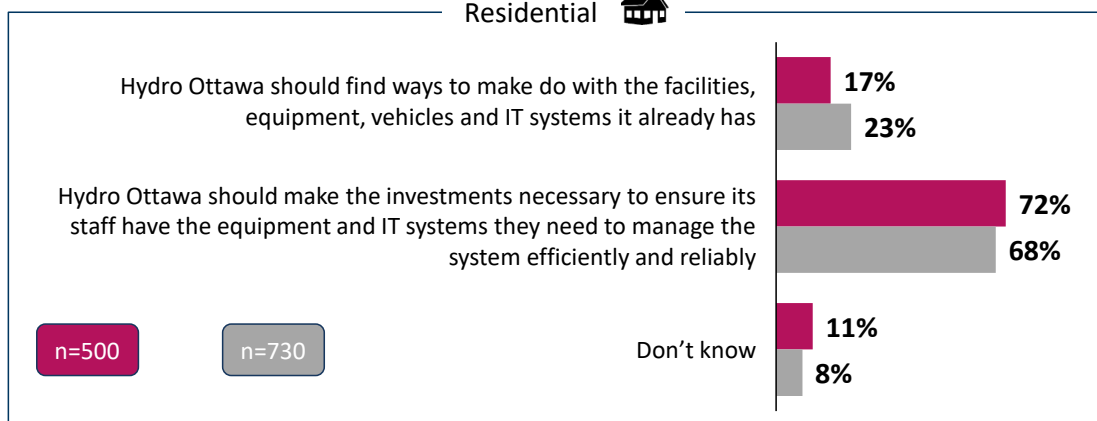
General Plant

Q The second category focuses on keeping Hydro Ottawa's business running. This includes facilities to house staff and equipment, vehicles and tools to service equipment and IT systems to manage the system and customer information. Regarding these types of investments, which of the following statements best represents your point of view?

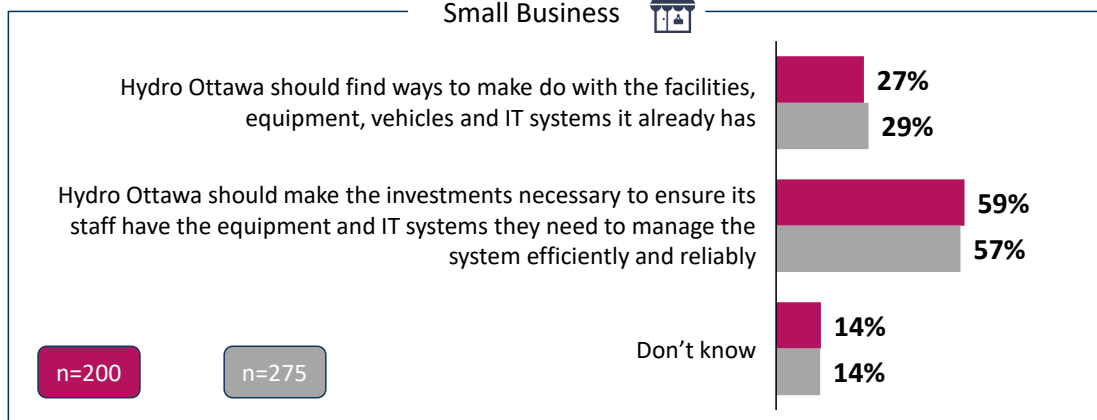
Telephone

Online

Residential



Small Business



System Service

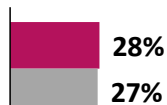
Q The third investment category focuses on growth and greater demand for electricity in various parts of Hydro Ottawa's service territory. Increased demand for electricity puts pressure on existing electrical infrastructure. Eventually, further infrastructure investments are required to support increased demand for electricity. With this in mind, which of the following statements best represents your point of view?

Telephone

Online

Residential

To help keep rate increases down, Hydro Ottawa should delay investments in system capacity needs until customers start to experience a decline in reliability



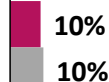
Hydro Ottawa should proactively invest in system capacity infrastructure to ensure customers in high growth areas do not experience a decrease in reliability, even if this adds a small increase to customer bills.



n=500

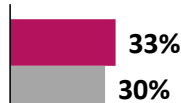
n=730

Don't know



Small Business

To help keep rate increases down, Hydro Ottawa should delay investments in system capacity needs until customers start to experience a decline in reliability



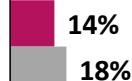
Hydro Ottawa should proactively invest in system capacity infrastructure to ensure customers in high growth areas do not experience a decrease in reliability, even if this adds a small increase to customer bills.



n=200

n=275

Don't know



Grid Modernization

Q The final category is related to new technology that Hydro Ottawa can implement, which may eventually save customers' money down the road. These types of investments could include electricity storage, solar energy or grid automation to more easily re-route power in the case of an outage. With this in mind, which of the following statements best represents your point of view?

Telephone

Online

Residential

Hydro Ottawa should proactively invest in modernizing the grid now, knowing it will cost more now, but could eventually save customers' money down the road

69%

69%

Hydro Ottawa should make investments decisions based on the lowest-cost, proven options like poles and wires, even if that means delaying the benefits of modernizing the grid

22%

21%

n=500

n=730

Don't know

9%

10%

Small Business

Hydro Ottawa should proactively invest in modernizing the grid now, knowing it will cost more now, but could eventually save customers' money down the road

58%

59%

Hydro Ottawa should make investments decisions based on the lowest-cost, proven options like poles and wires, even if that means delaying the benefits of modernizing the grid

32%

24%

n=200

n=275

Don't know

10%

17%



Appendix:

Regional Segmentation



Regional Segmentation

Throughout this study, regional references are made to categorize Hydro Ottawa customers. These regional categorizations are roughly based on pre-amalgamation municipality boundaries. Regions are based on service address FSA (forward sortation area).

The table below illustrates this categorization.

Forward Sortation Area (first 3-digits of postal code)	Region
K1B	Gloucester
K1C	
K1E	
K1G	
K1H	
K1J	
K1T	
K1V	
K1W	
K1X	
K4A	
K4B	
K4C	
K0A	Goulbourn/Casselman
K2S	
K4M	
K4P	
K7C	Kanata
K2K	
K2L	
K2M	
K2T	
K2V	
K2W	Nepean
K2B	
K2C	
K2E	
K2G	
K2H	
K2J	
K2R	Ottawa Centre
K1K	
K1A	
K1L	
K1M	
K1N	
K1P	
K1R	
K1S	
K1Y	
K1Z	
K2A	
K2P	



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Customer Engagement: Needs and Preferences Planning Placemat

	Residential	GS<50kW
What are customer needs?		
The clear majority of Hydro Ottawa low-volume customers are satisfied with the current service they receive. When asked how Hydro Ottawa can improve service, top responses were “nothing”, followed by “lower or reduce rates”.		
1 st	Nothing	Nothing
2 nd	Lower or reduce rates	Lower or reduce rates
What priorities are most important to customers?		
Customers don’t just expect Hydro Ottawa to focus on price and reliability, all priorities are important. In fact, both residential and small business customers selected “ensuring reliable electrical service” as the most important priority that Hydro Ottawa should focus on.		
Most Important	Reliability	Reliability
2 nd Most Important	Distribution Rates	Distribution Rates
3 rd Most Important	Finding Cost Savings	Finding Cost Savings
	Replacing Aging Infrastructure	
	Investing in New Technology	
Overall, what outcomes do customers prioritize?		
Among competing priorities, price, reliability, and investing in new technology are the top three priorities for both residential and small business customers. When ranked relative to other Hydro Ottawa priorities, price moves to the top of the list for both low-volume rate classes.		
1 st	Distribution Rates	Distribution Rates
2 nd	Reliability	Reliability
3 rd	Investing in New Technology	Investing in New Technology
What reliability outcomes do customers prioritize?		
The top reliability concern for low-volume customers is <i>reducing the length of time to restore power during extreme weather events</i> .		
For residential customers, <i>reducing the overall length of outages</i> is a close second, followed by <i>reducing the number of outages during extreme weather events</i> .		
For small business customers, reducing the number and overall length of outages were ranked well behind the top priority of restoration times during extreme weather.		
1 st	Restoration times during extreme weather	Restoration times during extreme weather
2 nd	Overall length of outages	Overall number of outages
3 rd	Number of outages during extreme weather	Overall length of outages

	Residential	(GS<50kW
What investment trade offs do customers value most? Despite price concerns, low-volume customers are generally willing to consider paying more to invest in aging infrastructure, equip staff with equipment and IT systems, proactively invest in system capacity, and modernize the grid knowing that it could eventually save money. Generally, small business customers are less willing to consider paying more to make these investments, but a majority still support investments in all three categories. Maintaining reliability, while making smart investments that could save money down the road appears to be a priority for low-volume customers.		
System Renewal Low-volume customers are most supportive of Hydro Ottawa investment in aging infrastructure in order to maintain reliability, even if that results in small rate increases. <i>% of customers who say Hydro Ottawa should invest what it takes to maintain reliability</i>		
Invest to maintain reliability	72%	63%
General Plant The majority of customers support Hydro Ottawa making the necessary investments to ensure its staff have the equipment and IT systems that are needed to manage the system efficiently and reliably. <i>% of customers who say Hydro Ottawa should make investments necessary in general plant</i>		
Invest what is necessary	72%	69%
System Service A majority of customers support Hydro Ottawa proactively investing in system capacity in order to ensure that customers in high growth areas do not experience a decrease in reliability. Relative to investments in system renewal, general plant and grid modernization, system capacity received the lowest level of support, with nearly one-in-three low-volume customers preferring to delay these investment until customers start to experience a decline in reliability. <i>% of customers who say Hydro Ottawa should proactively invest in system capacity</i>		
Proactively invest in system capacity	63%	53%
Grid Modernization As with investments in renewing aging equipment and general plant, there is strong support for Hydro Ottawa proactively investing in modernizing the grid now, knowing it will cost more now, but could eventually save customers money down the road. Beyond containing cost increases and maintaining reliability, investments in new technology appear to be a core priority for low-volume customers if it can eventually save customer money down the road. <i>% of customers who say Hydro Ottawa should proactively invest in modernizing the grid now</i>		
Proactively invest in modernization	69%	58%
Customer Engagement Methodology These findings are based on two telephone surveys conducted by Innovative Research Group among residential and GS<50kW customers. Field Dates: February 28 – March 15, 2019 Sample Size: n=517 residential and n=200 GS<50kW (unweighted)		Additional Information For more information on using this document or customer engagement results, please contact: Laurie Elliott , Manager, Regulatory Compliance and Reporting, Hydro Ottawa Limited Julian Garas , Senior Consultant, Innovative Research Group

Appendix 4.1



Telephone Reference Survey

Residential Ratepayer Questionnaire

February 2019

Prepared by:

Innovative Research Group, Inc.
www.innovativeresearch.ca

Vancouver
888 Dunsmuir Street, Suite 350
Vancouver BC | V6C 3K4

Toronto
56 The Esplanade, Suite 310
Toronto, Ontario | M5E 1A7



A. SCREENING AND QUALIFICATIONS

Introduction

Hello, my name is _____ and I'm calling from **Innovative Research Group** on behalf of **Hydro Ottawa**, your local electricity distributor.

Innovative Research Group is a national public opinion research firm. **We need your input on choices that will affect the service you receive from Hydro Ottawa.**

We are simply interested in hearing your opinions – no attempt will be made to sell you anything.

A1. Do you have about **7 minutes** to answer some survey questions? All your responses will be kept strictly confidential.

- | | | |
|---|-----------------------------|--------------------|
| 1 | Yes | [continue] |
| 2 | No – NOT PRIMARY BILL PAYER | [go to TRANSFER-1] |
| 3 | No – BAD TIME | ARRANGE CALLBACK |
| 4 | No – HARD REFUSAL | [Terminate] |

MONIT

This call may be monitored or audio taped for quality control and evaluation purposes.

- | | |
|---|-------------------|
| 1 | PRESS TO CONTINUE |
|---|-------------------|

CELL. Are you currently operating a car, truck or other motor vehicle?

- | | | |
|----|-------------------------------------|------------------|
| 1 | YES | ARRANGE CALLBACK |
| 2 | NO | [continue to A2] |
| 98 | Refused – LOG (THANK AND TERMINATE) | [Terminate] |

A2. Are you the person primarily responsible for paying the electricity bill in your household?

- | | | |
|----|-----------------------------|--------------------|
| 1 | Yes – I pay the bill | [continue to A3] |
| 2 | Yes – shared responsibility | [continue to A3] |
| 3 | No | [go to TRANSFER-1] |
| 98 | Don't know (DNR) | [Terminate] |

TRANSFER-1

Can I speak with the person in your household who usually pays the electricity bill?

- 1 Yes **[BACK TO INTRO]**
- 2 No – NOT AVAILABLE/BAD TIME **[ARRANGE CALLBACK]**
- 3 No – HARD REFUSAL **[Terminate]**
- 98 Don't know (DNR) **[Terminate]**

A3. Can you confirm that your household receives an electricity or hydro bill from **Hydro Ottawa**?

- 1 Yes **[continue]**
- 2 No **[Terminate]**
- 98 Don't know (DNR) **[Terminate]**

GENDER

Note gender by observation:

- 1 Male
- 2 Female

A4. For statistical purposes, can you please indicate which age category you fall in? Is that ...
[READ LIST]

01	Younger than 18	DNR
02	18 to 24	
03	25 to 34	
04	35 to 44	
05	45 to 54	
06	55 to 64	
07	65 to 74	
08	75 or older	
99	Refused	READ: For this survey we need to identify customers' age. IF STILL REFUSE: THANK & TERMINATE

B. INTRODUCTION AND CORE MEASURE

[PREAMBLE]

Today I want to talk about **Hydro Ottawa** and the local electricity system in your community.

There are three topics I would like to discuss:

- First, we will talk about your experience with Hydro Ottawa.
- Second, we will talk about the outcomes that matter most to you; and
- And finally, we will talk about some trade-offs in planning future investments.

First, let's talk about your experience. While **Hydro Ottawa** owns a number of hydroelectric dams through a subsidiary company, the following questions are about **Hydro Ottawa's** distribution system. This is the system that takes the electricity from high-voltage transmission towers and brings it to your home through a network of wires, poles and other equipment that is owned and operated by **Hydro Ottawa**.

- B5. How familiar are you with **Hydro Ottawa**, which operates the electricity distribution system in your community?

Would you say you are *very familiar*, *somewhat familiar*, *not familiar* or would you say you *don't know*?

01	Very familiar	
02	Somewhat familiar	
03	Not familiar	
98	Don't know	
99	Refused [DO NOT READ]	

- B6. Thinking specifically about the services provided to you and your community by **Hydro Ottawa**, overall, how satisfied or dissatisfied are you with the services that you receive?

Would you say you are *very satisfied*, *somewhat satisfied*, *neither satisfied nor dissatisfied*, *somewhat dissatisfied*, *very dissatisfied* or would you say you *don't know*?

01	Very satisfied	
02	Somewhat satisfied	
03	Neither satisfied or dissatisfied	
04	Somewhat dissatisfied	
05	Very dissatisfied	
98	Don't know	
99	Refused [DO NOT READ]	

- B7. And, is there anything in particular you would like **Hydro Ottawa** to do to improve its services to you? **[OPEN]**

98	Don't know	
99	Refused [DO NOT READ]	

- B8. While **Hydro Ottawa** is responsible for collecting payment for the entire electricity bill, it keeps about **25%** of the average residential customer's bill. The rest of the bill goes to power generation companies, transmission companies, the provincial government and regulatory agencies.

Before this survey, how familiar were you with the amount of your electricity bill that went to **Hydro Ottawa**? Would you say you were *very familiar, somewhat familiar, not familiar or would you say you don't know*?

01	Very familiar	
02	Somewhat familiar	
03	Not familiar	
98	Don't know	

Bill Type

- B9. And do you receive your monthly bill from Hydro Ottawa as a **paper bill** or an **electronic bill**?

01	Paper Bill	
02	E-Bill	
98	Don't know [DO NOT READ]	

C. CUSTOMER PRIORITIES

Now, let's talk about our second topic – outcomes.

Hydro Ottawa regularly holds discussions with its customers to better understand how it should set spending and investment priorities.

In recent conversations with customers, a number of company goals were identified as priorities for Hydro Ottawa.

Using a scale from 0 to 10, where *0 means not important at all* and *10 means extremely important*, how important are each of the following Hydro Ottawa priorities to you as a customer?

Code	Response	
00	Not important at all	
01		
02		
03		
04		
05	Somewhat important	
06		
07		
08		
09		
10	Extremely important	
98	Don't know	

Randomize

- C10. Delivering electricity at reasonable distribution rates
- C11. Ensuring reliable electrical service
- C12. Finding internal efficiencies and ways to find cost savings
- C13. Upgrading the electrical system to better respond to and withstand the impact of adverse weather
- C14. Replacing aging infrastructure that is beyond its useful life
- C15. Providing quality customer service and enhanced communications
- C16. Helping customers with conservation and cost saving
- C17. Investing in new technology that could help reduce future distribution electricity costs

End Battery

C18. Now thinking of the priorities that we just discussed, please tell me which one is most important to you.

01	Delivering electricity at reasonable distribution rates	
02	Ensuring reliable electrical service	
03	Finding internal efficiencies and ways to find cost savings	
04	Upgrading the electrical system to better respond to and withstand the impact of adverse weather	
05	Replacing aging infrastructure that is beyond its useful life	
06	Providing quality customer service and enhanced communications	
07	Helping customers with conservation and cost saving	
08	Investing in new technology that could help reduce future distribution electricity costs	
98	Don't know [DO NOT READ]	
99	Refused [DO NOT READ]	

C19. What is the next most important priority you think **Hydro Ottawa** should focus on?

[Remove answer from C18 if asked to read again]

C20. And what do you consider the third most important priority?

[Remove answer from C18 and C19 if asked to read again]

C21. Can you think of any other important priorities that **Hydro Ottawa** should be focusing on?

[OPEN]

98	Don't know [DO NOT READ]	
99	Refused [DO NOT READ]	

D. RELIABILITY OUTCOMES

- D22. Now, let's talk about the reliability of electricity service you receive. Have you experienced any power outages at **home in the past 12 months** which *lasted longer than one minute*? If so, approximately how many of these power outages did you experience? **[DO NOT READ LIST]**

00	No outages	
01	1 outage	
02	2 outages	
03	3 outages	
04	4 outages	
05	5 outages	
06	6 outages	
07	7 outages	
08	8 or more outages	
98	Don't know [DO NOT READ]	
99	Refused [DO NOT READ]	

- D23. And when it comes to reliability, there are a number of areas that **Hydro Ottawa** could focus on. Among the following reliability outcomes, please tell me which one is most important to you.

01	Reducing the overall number of outages
02	Reducing the overall length of outages
03	Reducing the number of outages during extreme weather events
04	Reducing the length of time to restore power during extreme weather events
05	Improving the quality of power, as judged by momentary interruptions in power that can result in the flickering or dimming of lights
98	Don't know [DO NOT READ]
99	Refused [DO NOT READ]

- D24. What is the next most important reliability outcome you think **Hydro Ottawa** should focus on?

[Remove answer from C18 if asked to read again]

- D25. And what do you consider the third most important reliability outcome?

[Remove answer from C18 and C19 if asked to read again]

E. INVESTMENT TRADE-OFFS

Now let's turn to our final topic – investment trade-offs.

Hydro Ottawa is in the early stages of developing its investment plan for the next five years. While conversations with customers will continue over the next several months, the utility wants to find your preferences when it comes to finding the right balance between costs and other outcomes.

There are four investment categories that we would like to discuss.

System Renewal

- E26. The first category focuses on projects that replace and restore aging electrical infrastructure, like overhead poles and underground cables.

Regarding investments in aging infrastructure, which of the following statements best represents your point of view? **[READ LIST; ROTATE 01 & 02]**

01	Hydro Ottawa should invest what it takes to replace the system's aging infrastructure to maintain system reliability; even if that increases my monthly electricity bill by a few dollars over the next few years
02	Hydro Ottawa should defer its investments in replacing aging infrastructure to lessen the impact of any bill increase; even if this could eventually lead to more or longer power outages
98	Don't know

General Plant

- E27. The second category focuses on keeping **Hydro Ottawa's** business running. This includes facilities to house staff and equipment, vehicles and tools to service equipment and IT systems to manage the system and customer information.

Regarding these types of investments, which of the following statements best represents your point of view? **[READ LIST; ROTATE 01 & 02]**

01	Hydro Ottawa should find ways to make do with the facilities, equipment, vehicles and IT systems it already has
02	Hydro Ottawa should make the investments necessary to ensure its staff have the equipment and IT systems they need to manage the system efficiently and reliably
98	Don't know

System Service

- E28. The third investment category focuses on growth and greater demand for electricity in various parts of **Hydro Ottawa's** service territory.

Increased demand for electricity puts pressure on existing electrical infrastructure. Eventually, further infrastructure investments are required to support increased demand for electricity.

With this in mind, which of the following statements best represents your point of view?

[READ LIST; ROTATE 01 & 02]

01	To help keep rate increases down, Hydro Ottawa should delay investments in system capacity needs until customers start to experience a decline in reliability
02	Hydro Ottawa should proactively invest in system capacity infrastructure to ensure customers in high growth areas do not experience a decrease in reliability, even if this adds a small increase to customer bills.
98	Don't know

Grid Modernization

- E29. The final category is related to new technology that **Hydro Ottawa** can implement, which may eventually save customers' money down the road. These types of investments could include electricity storage, solar energy or grid automation to more easily re-route power in the case of an outage.

With this in mind, which of the following statements best represents your point of view?

[READ LIST; ROTATE 01 & 02]

01	Hydro Ottawa should proactively invest in modernizing the grid now, knowing it will cost more now, but could eventually save customers' money down the road
02	Hydro Ottawa should make investments decisions based on the lowest-cost, proven options like poles and wires, even if that means delaying the benefits of modernizing the grid
98	Don't know

F. DEMOGRAPHICS

Lastly, I'd like to ask you some general questions about the electricity system in Ontario.

For each statement please tell me if you would strongly agree, somewhat agree, somewhat disagree or strongly disagree. If you don't know enough to say or don't have an opinion just let me know.

01	Strongly agree
02	Somewhat agree
03	Somewhat disagree
04	Strongly disagree
98	Don't know/No opinion
99	Refused [DNR]

[ROTATE]

F30. The cost of my electricity bill has a major impact on my finances and requires I do without some other important priorities.

F31. Customers are well served by the electricity system in Ontario.

[END BATTERY]

General Demos

These final few questions are for statistical purposes only.

F32. What is the highest level of education that you have *completed*? *Would you say ...*

[READ LIST]

01	No formal schooling	
02	Some elementary or high school	
03	High school	
04	Apprenticeship or trades certificate or diploma	
05	College, CEGEP, or college classique	
06	Bachelor's degree	
07	Degree in medicine, dentistry, veterinary medicine, or optometry	
08	Master's degree	
09	Doctorate	

F33. Which of the following categories best describes your current employment status? *Would you say ...* **[READ LIST]**

01	Self-employed	
02	Employed full-time	
03	Employed part-time	
04	Seasonal employment	
05	Term employment	
06	Unemployed	
07	Student	
08	Retired	
09	Homemaker	
10	Disability/sick leave	
11	Maternity/paternal leave	
88	Other	[please specify]
99	Prefer not to say / refused [DNR]	

F34. Finally, which of the following categories best describes the total annual income, before taxes, of all the members of your household? *Would you say...* **[READ LIST]**

01	Less than \$20,000	
02	\$20,000 to less than \$40,000	
03	\$40,000 to less than \$60,000	
04	\$60,000 to less than \$80,000	
05	\$80,000 to less than \$100,000	
06	\$100,000 to less than \$120,000	
07	\$120,000 to less than \$140,000	
08	\$140,000 to less than \$160,000	
09	\$160,000 or more	
99	Prefer not to say	

THANK and END SURVEY

Thank you very much for taking the time to complete this survey.

Appendix 4.2



Telephone Reference Survey

Small Business Ratepayer Questionnaire

February 2019

Prepared by:

Innovative Research Group, Inc.
www.innovativeresearch.ca

Vancouver
888 Dunsmuir Street, Suite 350
Vancouver BC | V6C 3K4

Toronto
56 The Esplanade, Suite 310
Toronto, Ontario | M5E 1A7



A. SCREENING AND QUALIFICATIONS

Hello, my name is _____ and I'm calling from **Innovative Research Group** on behalf of **Hydro Ottawa**, your local electricity distributor.

Innovative Research Group is a national public opinion research firm. **We need your input on choices that will affect the service you receive from Hydro Ottawa.** Your answers will be combined with others to protect your privacy.

Can I please speak to the person who is in-charge of managing the electricity bill at your organization?

- | | |
|---|------------------------|
| 1) Yes, speaking <contact on the line> | [skip to A1] |
| 2) Yes <transferred to contact> | [skip to A1] |
| 3) No <not the right contact person> | [GO to "NEW"] |
| 4) No <busy> "When is a good time to callback?" | [record callback time] |
| 5) Maybe <may I ask who is calling?> | [skip to GATE] |

NEW. And ... can I have their ...

First Name _____
Last Name _____
Title/Position _____
Phone Number _____

ASK to be transferred ...

- if transferred → go to A2
- if not transferred → Thank & Add to Callback List

GATE. Hello, my name is _____ and I'm calling from **Innovative Research** on behalf of **Hydro Ottawa**, your local electricity distributor.

INTERVIEWER NOTE: If gatekeeper asks the purpose of call → I'd like to ask the person in-charge of managing the electricity bill at your organization a few questions concerning a **Hydro Ottawa** customer consultation.

- | | |
|--|--|
| 1) Yes <transferred to contact> | [skip to A2] |
| 2) No <not available> "When is a good time to callback?" | [record call-back time
and go to "NEW"] |
| 3) No <not interested in talking> | [Thank & Terminate] |

A1 QUAL PREAMBLE:

Read preamble again, if transferred to new person:

Hello, my name is _____ and I'm calling from **Innovative Research** on behalf of **Hydro Ottawa**, your local electricity distributor.

Innovative Research is a national public opinion research firm. We have been hired by **Hydro Ottawa** to help them better understand the needs and preferences of non-residential customers who are responsible for paying their organization's electricity bill.

A1. Can I have roughly **7 minutes** of your time to ask you some questions? All your responses will be kept strictly confidential.

Yes – I don't mind

1 **[CONTINUE]**

No – Not primary bill payer (i.e. not best person to speak to)

2 **[go to TRANSFER]**

No – BAD TIME

3 **[ARRANGE CALLBACK]**

No – HARD REFUSAL

4 **[THANK & TERMINATE]**

MONIT [INTERNAL]

This call may be monitored or audio taped for quality control and evaluation purposes.

PRESS TO CONTINUE

1

A2. Can you confirm that your organization receives an electricity or hydro bill from **Hydro Ottawa**?

YES

1 **[CONTINUE]**

NO

2 **[THANK & TERMINATE]**

DK (volunteered)

98 **[THANK & TERMINATE]**

Only those in charge of managing/overseeing organizations electricity bill will be interviewed.

A3. As part of your job, are you in charge of managing or overseeing your organization's electricity or hydro bill?

YES

1

[CONTINUE]

NO

2

"Can I speak to the person who manages your organization's electricity bill?"

[Return to NEW]

DK

3

"Can I speak to the person who manages your organization's electricity bill?"

[Return to NEW]

TRANSFER

Can I please speak to the person who is in-charge of managing the electricity bill at your organization?

Yes

1 **[BACK TO INTRO]**

No – NOT AVAILABLE/BAD TIME – (ARRANGE CALLBACK)

2 **[ARRANGE CALLBACK]**

No – HARD REFUSAL

3 **[THANK & TERMINATE]**

A4. XX

B. INTRODUCTION AND CORE MEASURE

[PREAMBLE]

Today I want to talk about **Hydro Ottawa** and the local electricity system in your community.

There are three topics I would like to discuss:

- First, we will talk about your experience with Hydro Ottawa.
- Second, we will talk about the outcomes that matter most to you; and
- And finally, we will talk about some trade-offs in planning future investments.

First, let's talk about your experience. While **Hydro Ottawa** owns a number of hydroelectric dams through a subsidiary company, the following questions are about **Hydro Ottawa's** distribution system. This is the system that takes the electricity from high-voltage transmission towers and brings it to your organization through a network of wires, poles and other equipment that is owned and operated by **Hydro Ottawa**.

- B5. How familiar are you with **Hydro Ottawa**, which operates the electricity distribution system in your community?

Would you say you are *very familiar*, *somewhat familiar*, *not familiar* or would you say you *don't know*?

01	Very familiar	
02	Somewhat familiar	
03	Not familiar	
98	Don't know	
99	Refused [DO NOT READ]	

- B6. Thinking specifically about the services provided to your organization by **Hydro Ottawa**, overall, how satisfied or dissatisfied are you with the services that your organization receive?

Would you say you are *very satisfied*, *somewhat satisfied*, *neither satisfied nor dissatisfied*, *somewhat dissatisfied*, *very dissatisfied* or would you say you *don't know*?

01	Very satisfied	
02	Somewhat satisfied	
03	Neither satisfied or dissatisfied	
04	Somewhat dissatisfied	
05	Very dissatisfied	
98	Don't know	
99	Refused [DO NOT READ]	

- B7. And, is there anything in particular you would like **Hydro Ottawa** to do to improve its services to your organization? **[OPEN]**

98	Don't know	
99	Refused [DO NOT READ]	

- B8. While **Hydro Ottawa** is responsible for collecting payment for the entire electricity bill, it keeps about **25%** of the average small business customer's bill. The rest of the bill goes to power generation companies, transmission companies, the provincial government and regulatory agencies.

Before this survey, how familiar were you with the amount of your organization's electricity bill that went to **Hydro Ottawa**? Would you say you were *very familiar*, *somewhat familiar*, *not familiar* or would you say you don't know?

01	Very familiar	
02	Somewhat familiar	
03	Not familiar	
98	Don't know	

Bill Type

- B9. And does your organization receive your monthly bill from Hydro Ottawa as a **paper bill** or an **electronic bill**?

01	Paper Bill	
02	E-Bill	
98	Don't know [DO NOT READ]	

C. CUSTOMER PRIORITIES

Now, let's talk about our second topic – outcomes.

Hydro Ottawa regularly holds discussions with its customers to better understand how it should set spending and investment priorities.

In recent conversions with customers, a number of company goals were identified as priorities for Hydro Ottawa.

Using a scale from 0 to 10, where *0 means not important at all* and *10 means extremely important*, how important are each of the following Hydro Ottawa priorities to you as a small business customer?

Code	Response	
00	Not important at all	
01		
02		
03		
04		
05	Somewhat important	
06		
07		
08		
09		
10	Extremely important	
98	Don't know	

Randomize

- C10. Delivering electricity at reasonable distribution rates
- C11. Ensuring reliable electrical service
- C12. Finding internal efficiencies and ways to find cost savings
- C13. Upgrading the electrical system to better respond to and withstand the impact of adverse weather
- C14. Replacing aging infrastructure that is beyond its useful life
- C15. Providing quality customer service and enhanced communications
- C16. Helping customers with conservation and cost saving
- C17. Investing in new technology that could help reduce future distribution electricity costs

End Battery

C18. Now thinking of the priorities that we just discussed, please tell me which one is most important to you.

01	Delivering electricity at reasonable distribution rates	
02	Ensuring reliable electrical service	
03	Finding internal efficiencies and ways to find cost savings	
04	Upgrading the electrical system to better respond to and withstand the impact of adverse weather	
05	Replacing aging infrastructure that is beyond its useful life	
06	Providing quality customer service and enhanced communications	
07	Helping customers with conservation and cost saving	
08	Investing in new technology that could help reduce future distribution electricity costs	
98	Don't know [DO NOT READ]	
99	Refused [DO NOT READ]	

C19. What is the next most important priority you think **Hydro Ottawa** should focus on?

[Remove answer from C18 if asked to read again]

C20. And what do you consider the third most important priority?

[Remove answer from C18 and C19 if asked to read again]

C21. Can you think of any other important priorities that **Hydro Ottawa** should be focusing on?

[OPEN]

98	Don't know [DO NOT READ]	
99	Refused [DO NOT READ]	

D. RELIABILITY OUTCOMES

- D22. Now, let's talk about the reliability of electricity service your organization receive. Have you experienced any power outages at **your organization in the past 12 months** which lasted longer than one minute? If so, approximately how many of these power outages did your organization experience? **[DO NOT READ LIST]**

00	No outages	
01	1 outage	
02	2 outages	
03	3 outages	
04	4 outages	
05	5 outages	
06	6 outages	
07	7 outages	
08	8 or more outages	
98	Don't know [DO NOT READ]	
99	Refused [DO NOT READ]	

- D23. And when it comes to reliability, there are a number of areas that **Hydro Ottawa** could focus on. Among the following reliability outcomes, please tell me which one is most important to you.

01	Reducing the overall number of outages
02	Reducing the overall length of outages
03	Reducing the number of outages during extreme weather events
04	Reducing the length of time to restore power during extreme weather events
05	Improving the quality of power, as judged by momentary interruptions in power that can result in the flickering or dimming of lights
98	Don't know [DO NOT READ]
99	Refused [DO NOT READ]

- D24. What is the next most important reliability outcome you think **Hydro Ottawa** should focus on?

[Remove answer from C18 if asked to read again]

- D25. And what do you consider the third most important reliability outcome?

[Remove answer from C18 and C19 if asked to read again]

E. INVESTMENT TRADE-OFFS

Now let's turn to our final topic – investment trade-offs.

Hydro Ottawa is in the early stages of developing its investment plan for the next five years. While conversations with customers will continue over the next several months, the utility wants to find your preferences when it comes to finding the right balance between costs and other outcomes.

There are four investment categories that we would like to discuss.

System Renewal

- E26. The first category focuses on projects that replace and restore aging electrical infrastructure, like overhead poles and underground cables.

Regarding investments in aging infrastructure, which of the following statements best represents your point of view? **[READ LIST; ROTATE 01 & 02]**

01	Hydro Ottawa should invest what it takes to replace the system's aging infrastructure to maintain system reliability; even if that increases my monthly electricity bill by a few dollars over the next few years
02	Hydro Ottawa should defer its investments in replacing aging infrastructure to lessen the impact of any bill increase; even if this could eventually lead to more or longer power outages
98	Don't know

General Plant

- E27. The second category focuses on keeping **Hydro Ottawa's** business running. This includes facilities to house staff and equipment, vehicles and tools to service equipment and IT systems to manage the system and customer information.

Regarding these types of investments, which of the following statements best represents your point of view? **[READ LIST; ROTATE 01 & 02]**

01	Hydro Ottawa should find ways to make do with the facilities, equipment, vehicles and IT systems it already has
02	Hydro Ottawa should make the investments necessary to ensure its staff have the equipment and IT systems they need to manage the system efficiently and reliably
98	Don't know

System Service

- E28. The third investment category focuses on growth and greater demand for electricity in various parts of **Hydro Ottawa's** service territory.

Increased demand for electricity puts pressure on existing electrical infrastructure. Eventually, further infrastructure investments are required to support increased demand for electricity.

With this in mind, which of the following statements best represents your point of view?

[READ LIST; ROTATE 01 & 02]

01	To help keep rate increases down, Hydro Ottawa should delay investments in system capacity needs until customers start to experience a decline in reliability
02	Hydro Ottawa should proactively invest in system capacity infrastructure to ensure customers in high growth areas do not experience a decrease in reliability, even if this adds a small increase to customer bills.
98	Don't know

Grid Modernization

- E29. The final category is related to new technology that **Hydro Ottawa** can implement, which may eventually save customers' money down the road. These types of investments could include electricity storage, solar energy or grid automation to more easily re-route power in the case of an outage.

With this in mind, which of the following statements best represents your point of view?

[READ LIST; ROTATE 01 & 02]

01	Hydro Ottawa should proactively invest in modernizing the grid now, knowing it will cost more now, but could eventually save customers' money down the road
02	Hydro Ottawa should make investments decisions based on the lowest-cost, proven options like poles and wires, even if that means delaying the benefits of modernizing the grid
98	Don't know

F. DEMOGRAPHICS

Lastly, I'd like to ask you some general questions about the electricity system in Ontario.

For each statement please tell me if you would strongly agree, somewhat agree, somewhat disagree or strongly disagree. If you don't know enough to say or don't have an opinion just let me know.

01	Strongly agree
02	Somewhat agree
03	Somewhat disagree
04	Strongly disagree
98	Don't know/No opinion
99	Refused [DNR]

[ROTATE]

F30. The cost of my electricity bill has a major impact on the bottom line of my organization and results in some important spending priorities and investments being put off.

F31. Customers are well served by the electricity system in Ontario.

[END BATTERY]

General Demos

These final few questions are for statistical purposes only.

F32. Which of the following best describes the sector in which your business operates? Would you say... **[READ LIST]**

01	Commercial	
02	Manufacturing/Industrial	
03	Data Centre	
04	Hospitality	
05	Restaurant/Tavern	
06	Retail	
07	Warehouse	
88	Other [Please specify:_____]	

F33. Which of the following best describes the **hours of operation** of your business? *Would you say...* **[READ LIST]**

01	You are open 24/7	
02	You operate several shifts each day, but are not open 24/7	
03	You operate during regular business hours only	
04	You operate outside of regular business hours, but do not have shifts	
88	Other [DNR]	[please specify]
99	Prefer not to say / refused [DNR]	

F34. And, which of the following best describes when your business operates throughout the week? *Would you say...* **[READ LIST]**

01	You operate on weekdays only	
02	You operate on weekdays and weekends	
88	Other [DNR]	[please specify]
99	Prefer not to say / refused [DNR]	

THANK and END SURVEY

Thank you very much for taking the time to complete this survey.

Appendix 5.0



2021-2025 Rate Application

Representative Report



This report and all of the information and data contained within it may not be released, shared or otherwise disclosed to any other party, without the prior, written consent of Hydro Ottawa Limited.

November 2019

STRICTLY PRIVILEGED AND CONFIDENTIAL

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Introduction

Representative Online Workbook

Hydro Ottawa's 2021-2025 Rate Application Customer Engagement

Innovative Research Group Inc. (INNOVATIVE) was engaged by Hydro Ottawa to assist in meeting Hydro Ottawa's customer engagement commitments under the Renewed Regulatory Framework for Electricity Distributors. The information contained within this report are the result of a series of customer engagements.

Setting the Context (Phase I)

Hydro Ottawa's 2021-2025 Rate Application Customer Engagement was designed in two phases. The first phase, which was finalized in April 2019 focused on conducting parallel telephone and online surveys. Running parallel telephone and online surveys serve two primary purposes:

- 1. To gather feedback and insights on *priorities, preferences and needs* from low-volume customers.**
Feedback from these surveys will help Hydro Ottawa's planners and engineers inform the design of the utility's Distribution System Plan and Business Plan, which will be shared in draft with customers in Phase II of this engagement.
- 2. To establish baselines and develop weights that allow Hydro Ottawa to move to an online methodology for its low-volume customer engagement program.**
Establishing a baseline and understanding the difference between customers with known email addresses (email sample) and the broader customer base is a critical step for utilities that wish to migrate to representative online survey methodologies in the second phase of their customer engagement. Where significant differences exist between the email sample and the broader customer base (e.g. demographics, firmographics, attitudes, and opinions), the insights gained from these parallel surveys can be used to develop weights, which can minimize these differences.

Phase II Customer Engagement

Hydro Ottawa is in the process of developing its 2021-2025 Rate Application. This report covers the second phase of engagement which focused on customer preferences on program timing and balancing outcomes. In order to obtain this feedback from customers, an online "workbook" was deployed to all customers with an email address, as well as promoted through a generic link on Hydro Ottawa's website, social media platforms, and through bill inserts and traditional media.

Interpreting the Results

For residential and small business (GS<50kW) rate classes, responses were weighted by region and usage to ensure the responses were representative of the broader customer base. Based on the comparative results of the first phase of the customer engagement, INNOVATIVE is confident that the online workbook results contained within this report are representative of Hydro Ottawa's actual customer base. This determination was reached by comparing the Phase I and II results based on key demographic, general attitudes towards electricity, as well as individual customer experience.

Introduction

Regional and Environmental Control Segmentation

Regional and Environmental Control Segmentation

In addition to segmenting customers based on their geographical location within Hydro Ottawa's service territory, it is important to be able to identify factors that may influence customer preferences and distinguish between what is within, and what is outside of Hydro Ottawa's influence or control.

Perceptions of LDCs often tend to move with general perceptions of the sector rather than in response to the local utility.

Throughout this report, environmental control questions are used to help distinguish whether opinions regarding Hydro Ottawa's plans are utility-driven preferences or externally driven.

Segmentation "*side bars*" have been used throughout this report to look beyond the topline numbers to analyze the results for key segments. The makeup of these side bars varies based on rate class.

1. **Regional Segmentation:** Using customer postal codes, Hydro Ottawa's service territory is divided and analyzed based five sub-regions.
2. **Bill Impact on Finances:** To what extent do customers agree with the following statement:
 - a) Residential: *The cost of my electricity bill has a major impact on my finances and requires I do without some other important priorities.*
 - b) Small Business: *The cost of my electricity bill has a major impact on the bottom line of my organization and results in some important spending priorities and investments being put off.*
3. **General Feelings Towards the Sector:** To what extent do customers agree or disagree with the following statement:
 - a) Residential and Small Business: *Customers are well served by the electricity system in Ontario.*
4. **Vulnerable Consumers:** Using a combination of household size and combined household income, the residential portion of this report identifies customer who would be eligible for financial assistance programs. The methodology used to calculate this segmentation is based on the OEB's *Low-income Energy Assistance Program (LEAP)*.

Understanding Side Bars

Side bars are an effective way of looking past the topline numbers and digging deeper into the needs and preferences of the customer segments above. For instance, while it is valuable to know that, overall, 88% of residential customers are satisfied with Hydro Ottawa, it is also important to understand whether satisfaction differs based on geography or within vulnerable customer groups. Side bars allow readers of this report to quickly look past the topline numbers and understand how various segments of customers feel about various issues.

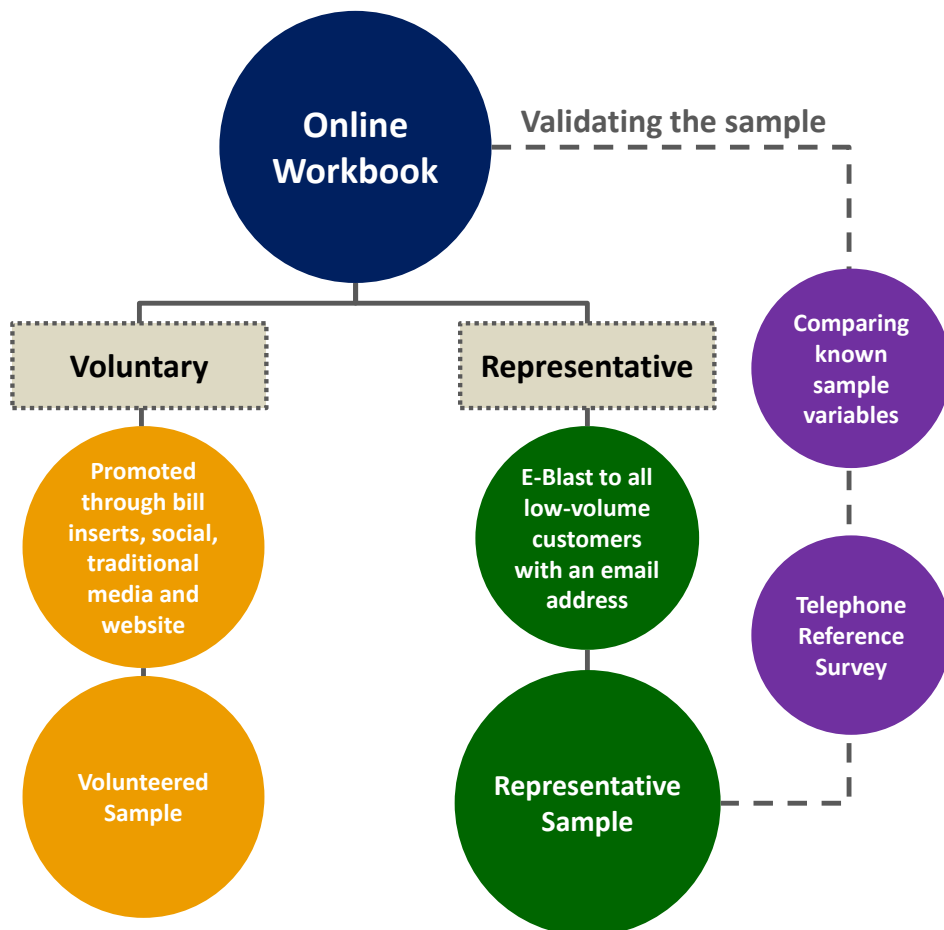
Sample Validation

Overall Approach

Hydro Ottawa's low volume (residential and small business) customer engagement workbook featured two streams – *representative* and *voluntary*.

The voluntary stream created an open process that allowed anyone who wants to be heard an opportunity to express themselves, including those who have not provided the utility with an email address. *Those results are provided in a separate report.*

The representative stream ensures a representative sample of customers are engaged, allowing for the generalizability of findings. *This is a report of those responses.*



Sample Validation

Email Sample Versus Broader Sample

Comparing the overall population to the sample of that population with email addresses across known variables, we can see that no group is substantially underrepresented in the email sample.

Overall Coverage

Two thirds of each population is included in the email sample.

	Full Population	Email Sample	Coverage
Residential	255,562 records	167,409 records	66%
Small Business	22,797 records	15,135 records	66%

Average Consumption

Small businesses with email addresses consume an average of 3.7% more energy than the full population.

	Full Population	Email Sample	Difference
Residential	8,157 kWh	8,136 kWh	-0.2%
Small Business	28,636 kWh	29,699 kWh	+3.7%

Language

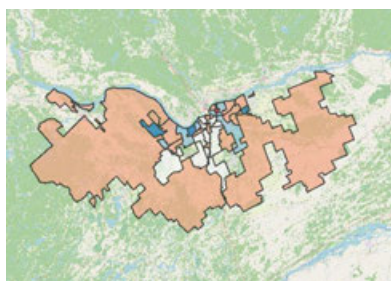
Bilingual and French accounts are overrepresented relative to English accounts, but English accounts are only slightly underrepresented.

	English			Bilingual			French		
	Full Pop.	Email Sample	Diff.	Full Pop.	Email Sample	Diff.	Full Pop.	Email Sample	Diff.
Residential	82.2%	80.0%	-2.7%	14.5%	16.7%	+15.0%	3.3%	3.4%	+2.1%
Small Business	83.7%	80.9%	-3.3%	13.8%	16.2%	+16.9%	2.5%	2.9%	+15.3%

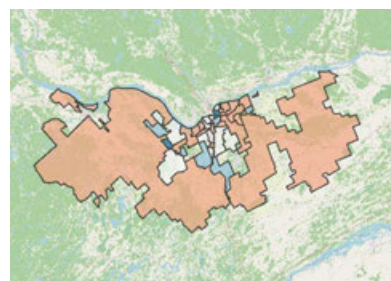
Region

There is no systematic pattern of FSAs* being over or under-represented by email. Some FSAs are up to 20% over or under-represented, but these differences are randomly distributed across the entire service area.

Small Business



Residential



% difference between email sample and full population
More than -10%
-10% to -4%
-4% to +4%
+4% to +10%
More than +10%

* Note: a forward sortation area (FSA) is the first three digits of a postal code.

Phase I Compared to Phase II

Survey Design & Methodology

Residential



7

Both the residential telephone reference survey and representative online workbook were weighted based on known variables, including rate zone and rate class. Furthermore, both surveys were weighted to be proportionate based on the actual distribution of residential customers throughout Hydro Ottawa's service territory. *Weighted and unweighted sample sizes are outlined below.*

Residential Telephone Reference Survey

Regional Breakdown	Unweighted N					Weighted N				
	Consumption Quartiles					Consumption Quartiles				
	Low	Medium-Low	Medium-High	High	Total	Low	Medium-Low	Medium-High	High	Total
Gloucester	37	36	38	36	147	35	35	35	35	140
Goulbourn/Casselman	6	6	8	10	30	8	8	8	8	32
Kanata	15	15	15	15	60	14	14	14	14	56
Nepean	33	35	34	32	134	33	33	33	33	132
Ottawa	37	37	37	35	146	35	35	35	35	140
Total	128	129	132	128	517	125	125	125	125	500

Residential Representative Online Workbook

Regional Breakdown	Unweighted N					Weighted N				
	Consumption Quartiles					Consumption Quartiles				
	Low	Medium-Low	Medium-High	High	Total	Low	Medium-Low	Medium-High	High	Total
Gloucester	956	1,354	1,352	1,201	4,863	1,200	1,204	1,205	1,206	4,816
Goulbourn/Casselman	116	256	345	454	1,171	276	276	276	276	1,103
Kanata	405	679	608	503	2,195	481	482	482	482	1,927
Nepean	983	1,317	1,177	1,074	4,551	1,135	1,136	1,136	1,134	4,542
Ottawa	1,716	1,015	866	833	4,430	1,206	1,204	1,206	1,203	4,820
Total	4,176	4,621	4,348	4,065	17,210	4,298	4,302	4,305	4,302	17,208

Note: Graphs and tables may not always total 100% due to rounding values rather than any error in data. Sums are added before rounding numbers. Caution interpreting results with small n-sizes.

Phase I Compared to Phase II

Demographics

Residential



8

Comparing Phase I Versus Phase II: In Phase I, one of the core objectives was to establish baseline and understand the difference between customers with known email addresses (email sample) and the broader customer base to migrate any potential differences in the second phase of the engagement. Comparing the results from Phase I versus Phase II showed that:

1. Overall, the Phase I and II samples look very similar on key measures, including demographics, attitudes towards the electricity and outage experience.
2. There are only minor demographic differences between the Phase I telephone survey and the Phase II online workbook. Nothing significant that requires any weighting correction.
3. Those who completed the Phase II representative online workbook generally hold the same views towards the electricity sector as those who were engaged in Phase I. The Phase II representative workbook sample is slightly more vulnerable than the Phase I sample, with more customers saying that their electricity bill has an impact on their household finances.
4. The Phase I and II samples have similar outage experiences, with close to 2-in-10 experiencing three or more outages in the past year, and a similar proportion having experienced zero in that same time period.

Gender	Phase I Online	Phase I Telephone	Phase II Workbook
Male	53%	55%	58%
Female	46%	45%	42%
Self-identified	1%	-	1%

Gender	Phase I Online	Phase I Telephone	Phase II Workbook
18-24	0%	2%	1%
25-34	11%	11%	12%
35-44	15%	16%	16%
45-54	16%	21%	18%
55-64	24%	19%	23%
65 or older	35%	31%	30%

Note: sums added before rounding.

Phase I Compared to Phase II

Attitudes Towards Electricity

Residential



9

The cost of my electricity bill has a major impact on my finances and requires I do without some other important priorities.	Phase I Online	Phase I Telephone	Phase II Workbook
Strongly agree	17%	20%	17%
Somewhat agree	27%	20%	36%
Somewhat disagree	26%	26%	26%
Strongly disagree	28%	29%	20%
Don't know/No opinion	2%	5%	1%
Agree (Strongly + Somewhat)	44%	41%	53%
Disagree (Strongly + Somewhat)	54%	55%	46%

Customers are well served by the electricity system in Ontario.	Phase I Online	Phase I Telephone	Phase II Workbook
Strongly agree	29%	39%	34%
Somewhat agree	53%	45%	49%
Somewhat disagree	9%	4%	10%
Strongly disagree	5%	5%	4%
Don't know/No opinion	3%	7%	2%
Agree (Strongly + Somewhat)	82%	84%	83%
Disagree (Strongly + Somewhat)	15%	9%	14%

Phase I Compared to Phase II

Outage Experience

Residential



10

Number of Outages in Past Year	Phase I Online	Phase I Telephone	Phase II Workbook
No outages	18%	17%	18%
1 outage	36%	41%	30%
2 outages	22%	20%	28%
3 or more outages	21%	19%	19%
Don't know	3%	2%	5%

Note: sums added before rounding.

Phase I Compared to Phase II

Survey Design & Methodology

Small Business



Both the small business telephone reference survey and representative online workbook were weighted based on known variables, including rate zone and rate class. Furthermore, both surveys were weighted to be proportionate based on the actual distribution of residential customers throughout Hydro Ottawa's service territory. *Weighted and unweighted sample sizes are outlined below.*

Small Business Telephone Reference Survey

Regional Breakdown	Unweighted N					Weighted N				
	Consumption Quartiles					Consumption Quartiles				
	Low	Medium-Low	Medium-High	High	Total	Low	Medium-Low	Medium-High	High	Total
Gloucester	37	36	38	36	147	35	35	35	35	140
Goulbourn/Casselman	6	6	8	10	30	8	8	8	8	32
Kanata	15	15	15	15	60	14	14	14	14	56
Nepean	33	35	34	32	134	33	33	33	33	132
Ottawa	37	37	37	35	146	35	35	35	35	140
Total	128	129	132	128	517	125	125	125	125	500

Small Business Representative Online Workbook

Regional Breakdown	Unweighted N					Weighted N				
	Consumption Quartiles					Consumption Quartiles				
	Low	Medium-Low	Medium-High	High	Total	Low	Medium-Low	Medium-High	High	Total
Gloucester	24	17	16	11	68	21	21	21	21	86
Goulbourn/Casselman	10	8	5	3	26	5	5	5	5	20
Kanata	12	2	5	4	23	9	9	9	9	34
Nepean	21	13	18	9	61	20	20	20	20	81
Ottawa	56	33	20	20	129	21	21	21	21	86
Total	123	73	64	47	307	77	77	77	77	307

Note: Graphs and tables may not always total 100% due to rounding values rather than any error in data. Sums are added before rounding numbers. Caution interpreting results with small n-sizes.

Phase I Compared to Phase II

Small Business

Outage Experience

12



Comparing Phase I versus Phase II: In Phase I, one of the core objectives was to establish baseline and understand the difference between customers with known email addresses (email sample) and the broader customer base to migrate any potential differences in the second phase of the engagement. Comparing the results from Phase I versus Phase II showed that:

1. Overall, the Phase I and II samples look similar on key measures, including attitudes towards the electricity and outage experience.
2. Those who completed the Phase II representative online workbook generally hold the same views towards the electricity sector as those who were engaged in Phase I. The Phase II representative workbook sample is more vulnerable than the Phase I sample, with more customers saying that the cost of their electricity bill has a major impact on the bottom line of their organization and results in some important spending priorities and investments being put off.
3. The Phase I and II samples have similar outage experiences, with the Phase II representative workbook sample experiencing, on average, more outages than those who participated in the Phase I online and telephone surveys.

Number of Outages in Past Year	Phase I Online	Phase I Telephone	Phase II Workbook
No outages	20%	23%	19%
1 outage	23%	37%	24%
2 outages	23%	16%	27%
3 or more outages	24%	13%	24%
Don't know	10%	10%	6%

Note: sums added before rounding.

Phase I Compared to Phase II

Small Business

Attitudes Towards Electricity

13



The cost of my electricity bill has a major impact on the bottom line of my organization and results in some important spending priorities and investments being put off.	Phase I Online	Phase I Telephone	Phase II Workbook
Strongly agree	33%	30%	26%
Somewhat agree	33%	28%	47%
Somewhat disagree	15%	17%	18%
Strongly disagree	13%	17%	8%
Don't know/No opinion	5%	7%	1%
Agree (Strongly + Somewhat)	67%	59%	73%
Disagree (Strongly + Somewhat)	28%	34%	26%

Customers are well served by the electricity system in Ontario.	Phase I Online	Phase I Telephone	Phase II Workbook
Strongly agree	22%	41%	31%
Somewhat agree	57%	38%	47%
Somewhat disagree	10%	4%	12%
Strongly disagree	6%	6%	8%
Don't know/No opinion	5%	9%	1%
Agree (Strongly + Somewhat)	79%	80%	78%
Disagree (Strongly + Somewhat)	16%	10%	21%

Representative Workbook

Survey Design & Methodology

Residential



15



INNOVATIVE was engaged by Hydro Ottawa to gather input on preferences on program timing and balancing outcomes. **Pages 15 to 76** show the actual pages of the workbook that was sent and completed by customers. The only additions are the actual results.

Field Dates & Workbook Delivery

The **Residential Online Workbook** was sent to all Hydro Ottawa residential customers who have provided the utility with an email address. Customers had an opportunity to complete the workbook between **August 20th and September 26th, 2019**.

Each customer received a unique URL that could be linked back to their annual consumption, region and rate class.

In total, the residential workbook was sent to **182,939** customers by-way-of e-blast from INNOVATIVE.

Residential Online Workbook Completes

A total of **17,210** (unweighted) Hydro Ottawa residential customers completed the online workbook through a unique URL.

Sample Weighting

The residential online workbook sample has been weighted proportionately by region and consumption quartiles in order to be representative of the broader Hydro Ottawa service territory.

The table below summarizes the weighted sample breakdown by rate zone and quartile. For unweighted n-sizes, please consult Page 7 of this report.

Weighted Sample	Consumption Quartiles				Total	Distribution
	Low	Medium-Low	Medium-High	High		
Gloucester	1,200	1,204	1,205	1,206	4,816	28%
Goulbourn/Casselman	276	276	276	276	1,103	6%
Kanata	481	482	482	482	1,927	11%
Nepean	1,135	1,136	1,136	1,134	4,542	26%
Ottawa	1,206	1,204	1,206	1,203	4,820	28%
Total	4,298	4,302	4,305	4,302	17,208	100%

Note: Graphs and tables may not always total 100% due to rounding values rather than any error in data. Sums are added before rounding numbers. Caution interpreting results with small n-sizes.

Representative Workbook

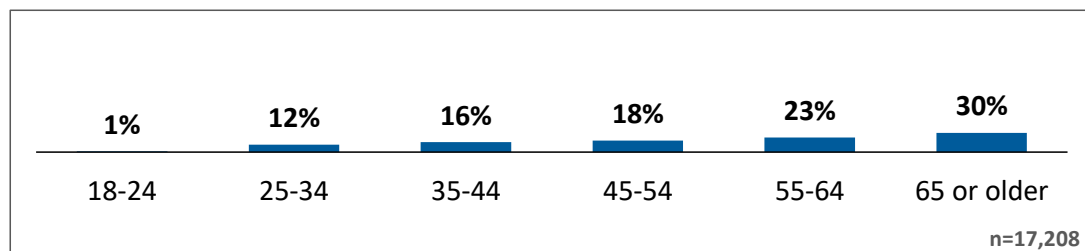
Demographic Breakdown

Residential

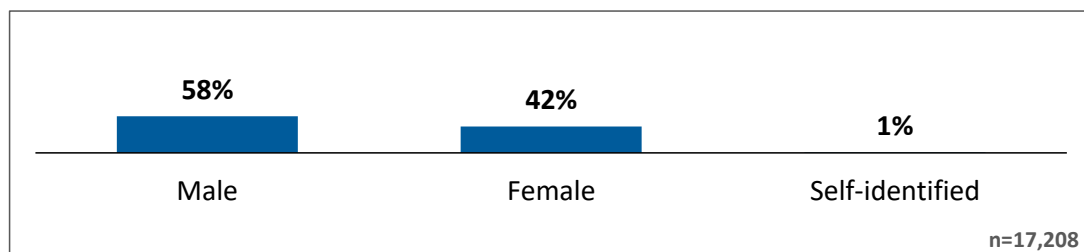


16

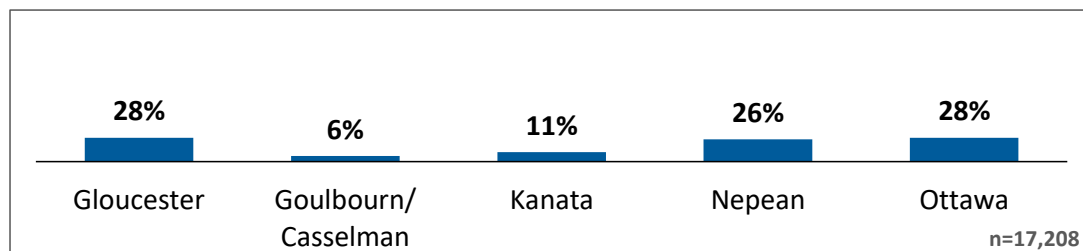
Q Age



Q Gender



Q Region



Representative Workbook

Demographic Breakdown

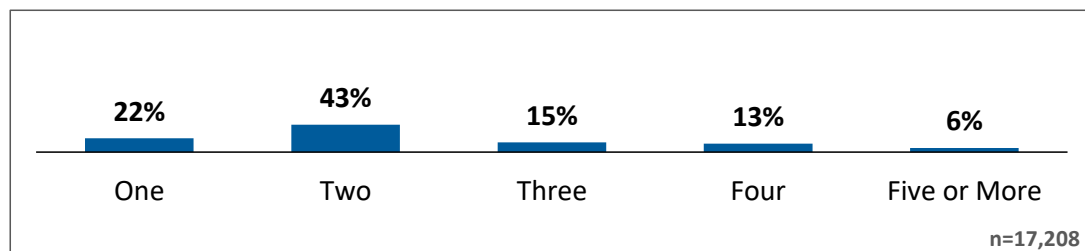
Residential



17

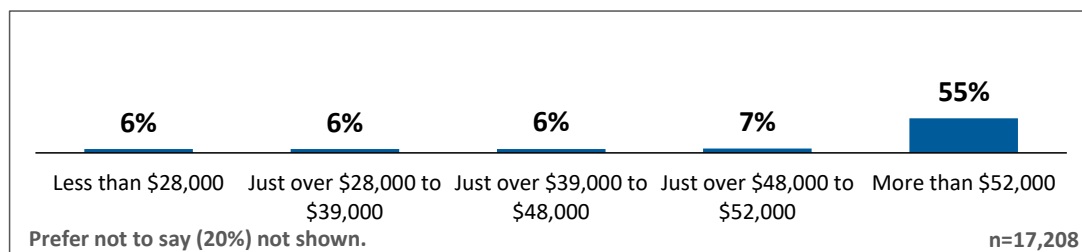
Q

Household Size



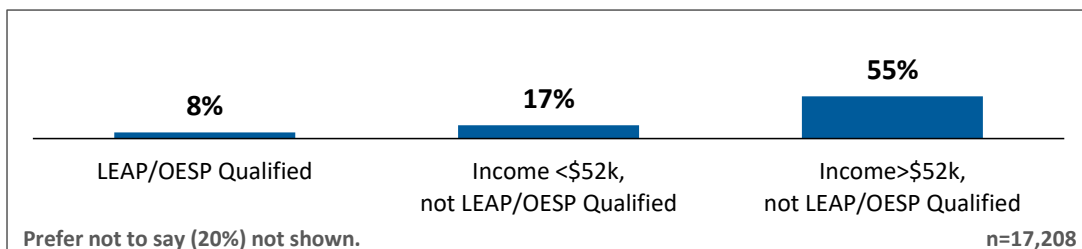
Q

After Tax Household Income



Q

LEAP/OESP Qualification (calculated based on household size and income)



Representative Workbook

Environmental Controls

Residential

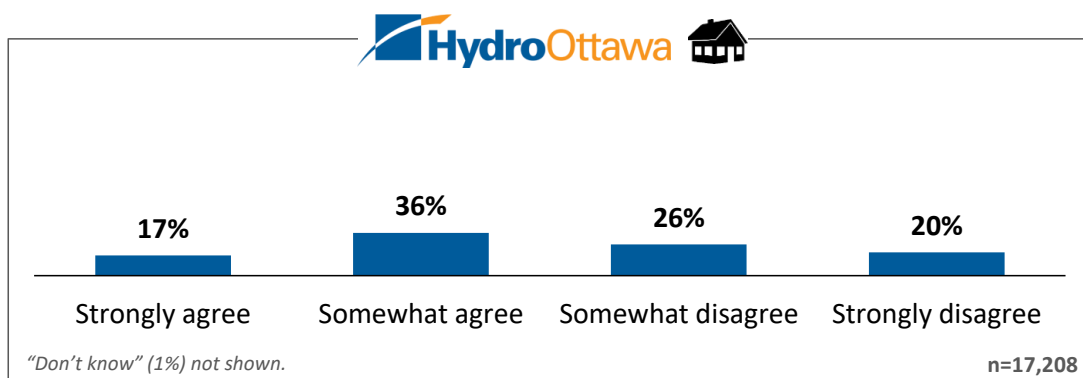


18

Thinking generally about the electricity system in Ontario, including generation, transmission and local distribution, do you agree or disagree with the following statements?

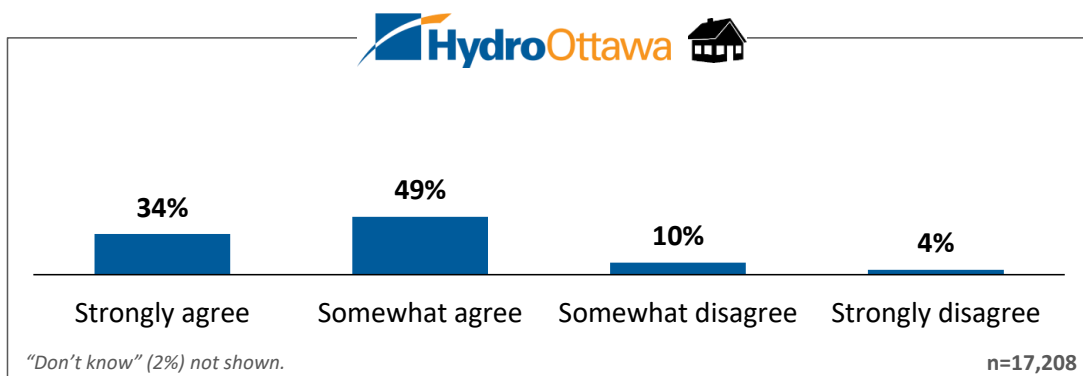
Q

The cost of my electricity bill has a major impact on my finances and requires I do without some other important priorities.



Q

Customers are well served by the electricity system in Ontario.



Representative Workbook

Background Information

Residential



19

Hydro Ottawa Limited (Hydro Ottawa) is looking for your input on choices that will help shape the service you receive and the price you pay.



Hydro Ottawa is developing its business plan for 2021 to 2025. This plan will determine the level of spending and investments Hydro Ottawa makes in equipment and infrastructure and the services it provides, as well as the rates you pay.



Hydro Ottawa is accountable to the provincial regulator, the **Ontario Energy Board (OEB)**, both in terms of sharing what customers say and demonstrating how they considered those views when undertaking the planning process.



You don't need to be an electricity expert to participate in this consultation. This workbook is focused on basic choices and provides the background information you need to answer the questions.

Building on previous customer feedback, the goal of this consultation is to allow Hydro Ottawa to better understand the needs and preferences of customers like you, and help them align their plan with what you have shared.

While your view may not always align exactly with the available options, please select the one that is closest to your point of view.

Those who complete the questions that follow will be invited to enter a draw to win one of four (4) \$500 cash prizes.

Depending on how much feedback you wish to provide, this consultation should take approximately 30-45 minutes to complete. If you need to pause and return at a later time to finish your feedback, your completed answers will be saved

If you are reading this on a smaller mobile device, you may want to consider accessing the survey from a tablet, desktop or laptop instead so that it is easier for you to read.

Representative Workbook

Background Information

Residential



20

This consultation is about gathering your feedback on finding the right balance between the services you receive from Hydro Ottawa over the next five years and the price you pay.

Hydro Ottawa has important decisions to make about the pace and mix of expenditures it makes in equipment and infrastructure, the services it provides you as a customer, and the rates you pay.

Every five years, Hydro Ottawa submits a plan for its proposed rates and spending to the Ontario Energy Board for approval. They are now in the process of finalizing that plan.

- Earlier in 2019, Hydro Ottawa asked thousands of customers about their priorities and preferred outcomes for electricity distribution service.
- Using the feedback shared by customers, Hydro Ottawa built a plan that is intended to align with customer preferences. Want to learn more about how Hydro Ottawa plans? [Click here](#)
- Hydro Ottawa is now coming back to its customers with a series of expenditure options in order to finalize its draft plan for the next five years.

How will this customer consultation work?



Hydro Ottawa will ask for your feedback on a number of decisions it needs to make in order to finalize their plan. These decisions will impact both the services you receive, as well as the price you pay on the distribution portion of your electricity bill.



For each decision, Hydro Ottawa has identified the option that it feels balances customer feedback received to date to limit cost impacts, while prudently investing in the distribution system. These options have been included in the current plan, but may be influenced by your feedback.



Once you have finished sharing your thoughts on these decisions, you will have an opportunity to review your responses and the estimated total rate impact of those choices. You will be able to change your responses until you feel you have found the right mix of investments and estimated rate impact.

Representative Workbook

Background Information

Residential



21

How will your views impact Hydro Ottawa's plans and rates?

The Ontario Energy Board (OEB) sets electricity rates in Ontario.



Electricity distributors like Hydro Ottawa are funded by the distribution rates paid by its customers. Electricity distributors are required to file a rate application with the OEB to request a change in distribution rates based on its plans for capital and operating costs.

As a customer, how are my interests protected?

The OEB requires all electricity distributors in Ontario, like Hydro Ottawa, to consider customer needs and preferences as they develop their business plan and distribution system plan.

The OEB then reviews Hydro Ottawa's plan and proposed rates in an open and transparent public process known as a rate hearing. Any individual or group may participate during Hydro Ottawa's application to ask questions or seek more information about Hydro Ottawa's plan and application.

Hydro Ottawa will be held accountable for the way you were consulted, the information shared with you and the ways in which the plan considers what you say.

At the end of the process, the OEB will weigh the evidence and decide on the rates Hydro Ottawa can charge its customers.

Representative Workbook

Purpose of Hydro Ottawa's customer consultation

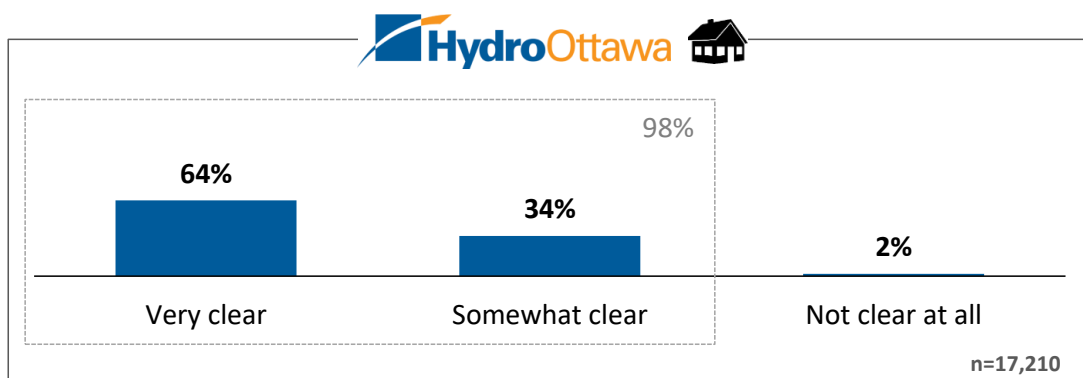
Residential



22

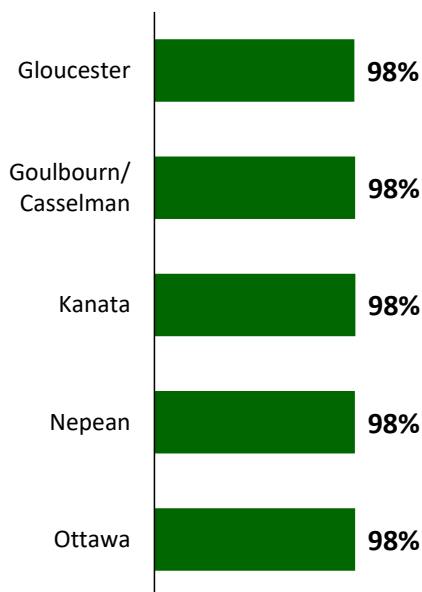
Q

Do you feel that the purpose of Hydro Ottawa's customer consultation is clear?



Regional Segmentation

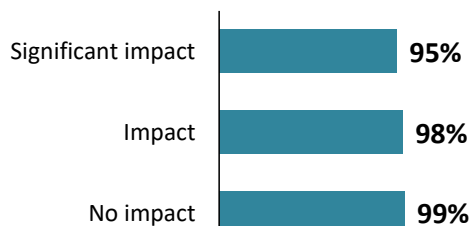
Respondents who say "Clear"



Vulnerable Customer Segmentation

Respondents who say "Clear"

Bill Impact on Finances



LEAP/OESP Qualification



Representative Workbook

Background Information

Residential



Understanding Ontario's electricity system and Hydro Ottawa's role

Ontario's electricity system is owned and operated by public, private and municipal corporations across the province. It is made up of three key components: **generation**, **transmission** and **distribution**.

Generation

Where electricity comes from

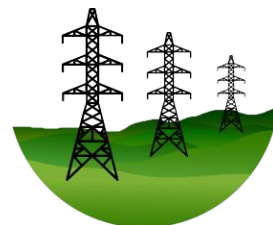
Ontario's electricity is generated using a mix of nuclear, gas-fired, and water power (hydro), as well as biomass and renewable sources such as wind and solar technology. In Ontario, a number of companies own these generating stations but approximately half of the electricity is generated by Ontario Power Generation. The Independent Electricity System Operator (IESO) balances the supply of, and demand for, electricity on a second-by-second basis and directs its flow across the high-voltage transmission lines.



Transmission

How electricity travels across Ontario

Once generated, electricity must be transported to electrical substations across the province. Due to the large amount of power and long distances, transmission normally takes place at high voltages with the lines suspended on large, steel towers. The province has more than 30,000 kilometres of 'electricity highway', most of which is owned and operated by Hydro One.



Local Distribution

How electricity is delivered to the end-consumer



Hydro Ottawa is responsible for the last step of the journey: distributing electricity to customers. Its local distribution system is connected to the transmission grid through its distribution stations and transformers. This allows the voltage to be decreased so it can be distributed and safely used in homes and organizations across Hydro Ottawa's service territory.

Hydro Ottawa's distribution system is complex. It consists of approximately 50,000 poles, 2,700 km of overhead power lines, 3,000 km of underground cable, and 45,000 transformers.

Representative Workbook

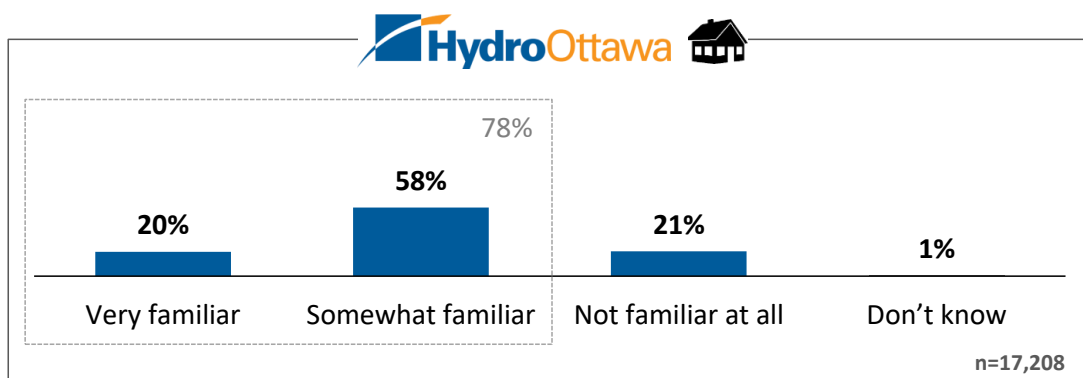
Familiarity with Ontario's electricity system

Residential



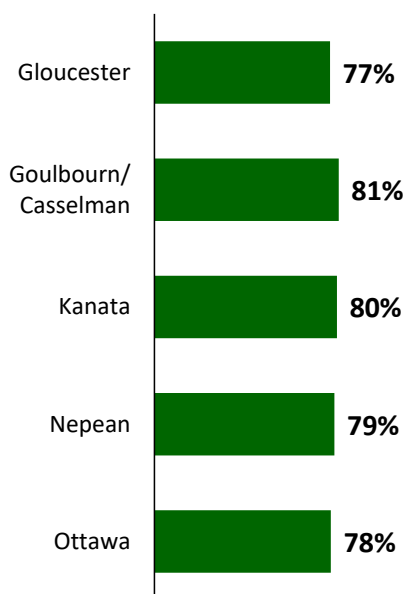
Q

Before this consultation, how familiar were you with various parts of the electricity system, how they work together, and for which services Hydro Ottawa is responsible?



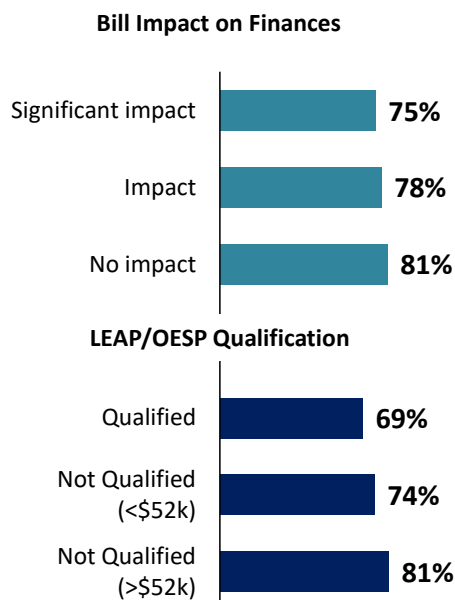
Regional Segmentation

Respondents who say "Familiar"



Vulnerable Customer Segmentation

Respondents who say "Familiar"



Representative Workbook

Residential

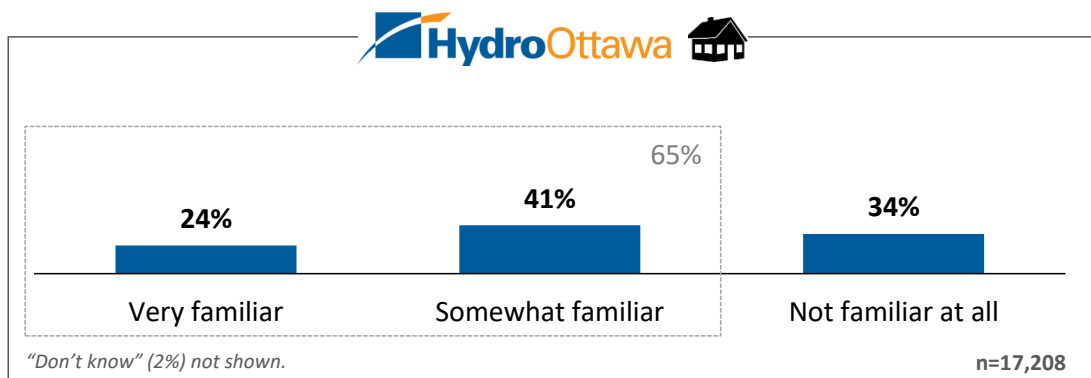


Familiarity with how Hydro Ottawa receives funding

Hydro Ottawa is entirely funded through the rates its customers pay and does not receive taxpayer money for its operations or investments.

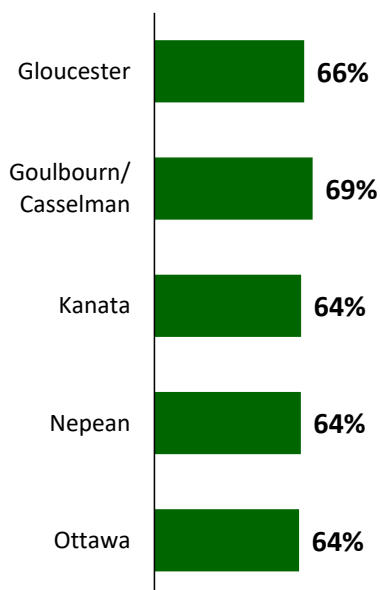
Q

Before this consultation, were you aware of how Hydro Ottawa received its funding?



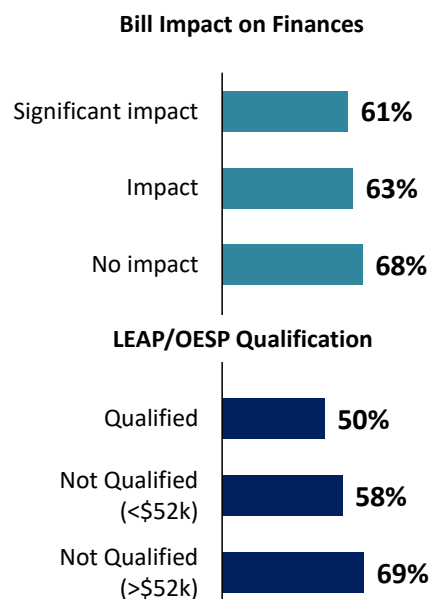
Regional Segmentation

Respondents who say "Familiar"



Vulnerable Customer Segmentation

Respondents who say "Familiar"



Representative Workbook

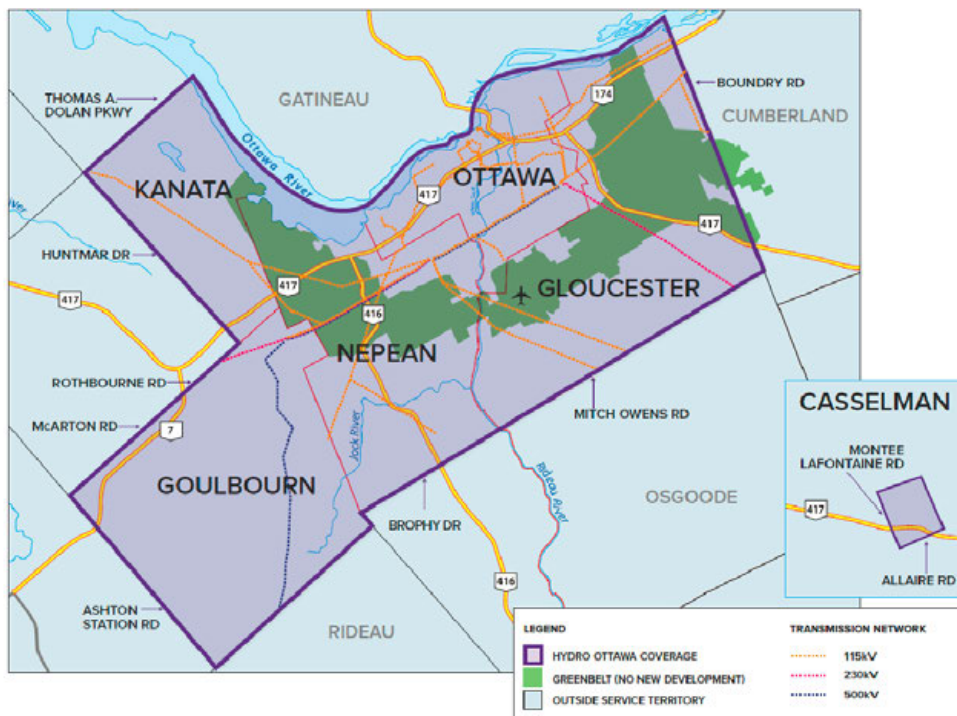
Background Information

Residential



Hydro Ottawa fast facts

- Private business corporation 100% owned by its shareholder, the City of Ottawa
- Third largest municipally-owned electricity distributor in Ontario
- Serves approximately 335,000 homes and businesses (more than one million consumers)
- Service territory of 1,116 square kilometers that includes most of the City of Ottawa and the Village of Casselman
- Over 600 employees
- Does not receive taxpayer money to fund its operations or its investments in the distribution system
- Entirely funded through the rates its customers pay



Representative Workbook

Overall Satisfaction with Hydro Ottawa

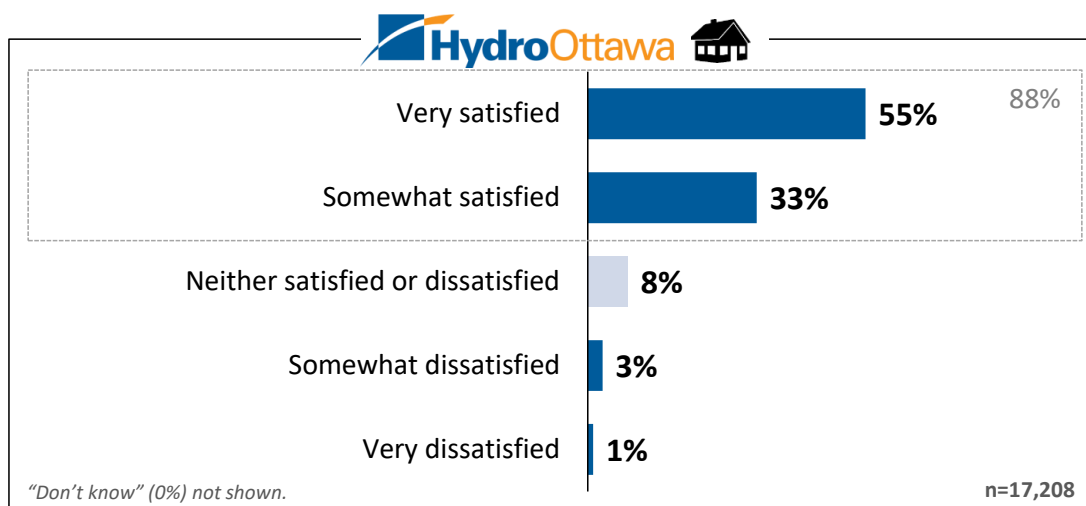
Residential



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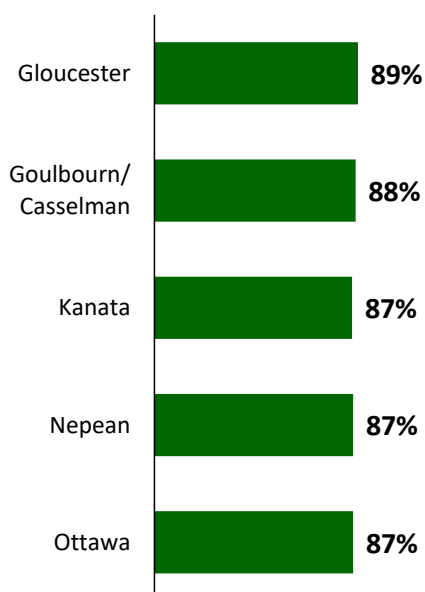
Q

Thinking specifically about the services provided to you and your community by Hydro Ottawa, how satisfied or dissatisfied are you with the services that you receive?



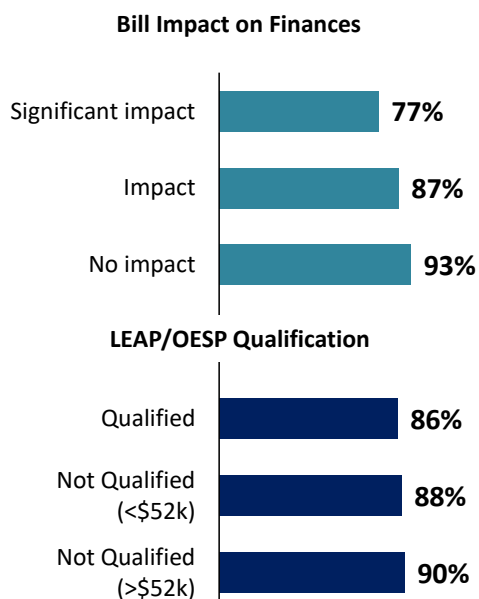
Regional Segmentation

Respondents who say "Satisfied"



Vulnerable Customer Segmentation

Respondents who say "Satisfied"



Representative Workbook

How can Hydro Ottawa Improve services?

Residential



28

Q

Is there anything in particular that Hydro Ottawa can do to improve its services to you?

Improving Services (n=7,347)	%
57% of respondents did not provide additional feedback	
Reduce rates	16%
Nothing; happy with service	6%
Reduce number of unplanned outages	6%
Move to green energy/renewables/encourage self generation	4%
Move lines underground	4%
Adjust time of use/reduce/eliminate peak rates	4%
Bill for usage; eliminate/reduce delivery charge/fixed service fees	4%
Improve communication during outages	3%
Improve reliability and power quality	3%
Maintain/upgrade infrastructure/expand service	3%
More support for low/fixed income, seniors, differently abled	3%
Improve reliability during storms; harden system against weather	3%
Do not increase rates/keep rates affordable/minimize increases	2%
Better access to usage data online/reinstate usage emails/PeakSaver	2%
Find internal efficiencies/lower operating costs/lower executive salaries	2%
Improve billing (e.g. timing, payment methods, notices, etc)	2%
Provide (more) incentives and rebates/rewards for energy saving	2%
Improve customer service/better access to CSR for complaints/outage reporting/online portal	2%
More education on conservation/energy efficiency/peak time rates	1%
Improve clarity of bills; explain charges and calculations	1%
Improve restoration times	1%
Better tree maintenance	1%
Better accountability/transparency/info on sources of energy/general communications	1%
Against privatization/payment of dividends to city/profits should go to consumer savings	1%
Improve communication before planned outages	1%
Other	5%
None	19%
Don't Know	1%

Representative Workbook

Background Information

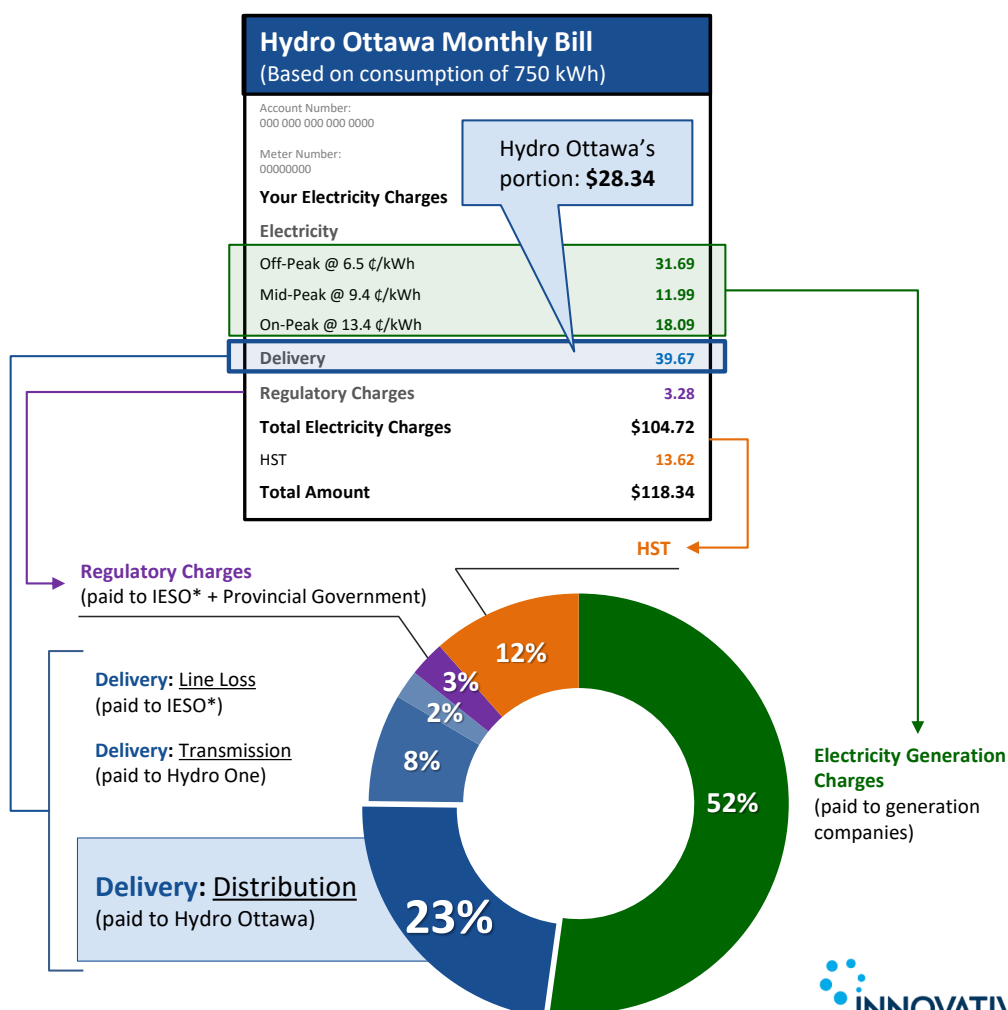
Residential



How much of your bill goes to Hydro Ottawa?

Every item and charge on your bill is mandated by the provincial government or regulated by the Ontario Energy Board (OEB), the provincial energy regulator.

- While Hydro Ottawa is responsible for collecting payment for the entire electricity bill, it retains only a portion of the delivery charge.
- Hydro Ottawa's portion makes up about 23% of a typical residential customer's bill.
- The remainder of your bill is collected for the other companies responsible for generating and transmitting electricity, and to regulatory agencies and the federal and provincial governments.



* IESO = Independent Electricity System Operator.

Representative Workbook

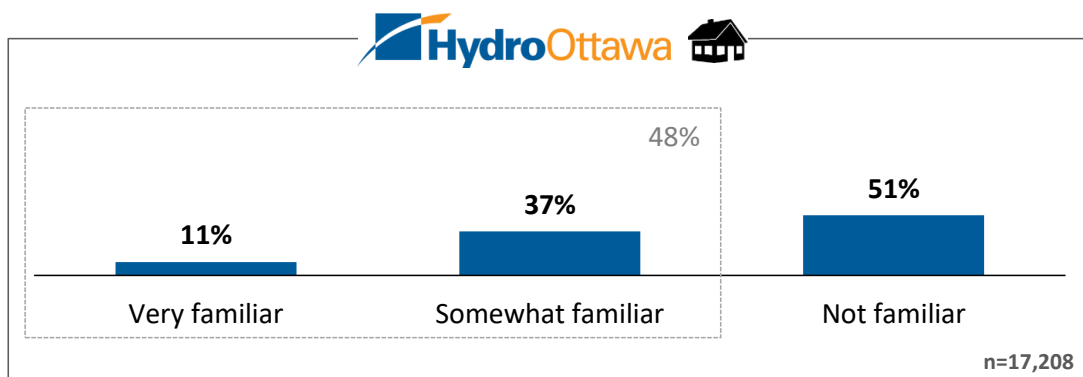
Residential



Familiarity with Portion of Bill Remitted to Hydro Ottawa

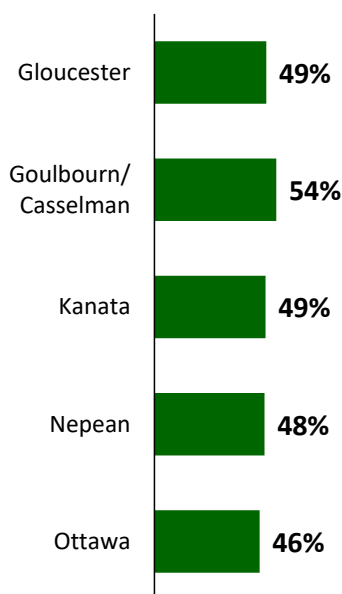
Q

Before this survey, how familiar were you with the amount of your electricity bill that went to Hydro Ottawa?



Regional Segmentation

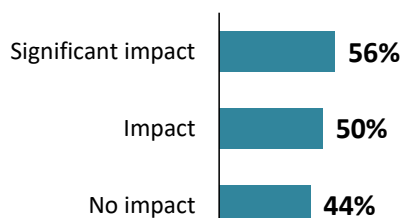
Respondents who say "Familiar"



Vulnerable Customer Segmentation

Respondents who say "Familiar"

Bill Impact on Finances



LEAP/OESP Qualification



Representative Workbook

Background Information

Residential



31

How did customer feedback shape Hydro Ottawa's preliminary plan?

Hydro Ottawa engages with its customers both in day-to-day interactions and in a variety of customer engagement surveys. **However, this consultation is unique, as it focuses on Hydro Ottawa's business plan that will cover the five year period from 2021 to 2025.**

Preliminary customer engagement found that:

- The clear majority of residential and small business customers are satisfied with the current service they receive;
- Despite being the top priorities, customers don't just expect Hydro Ottawa to focus exclusively on price and reliability;
- Among competing priorities, price, reliability, and investing in new technology are the top three priorities for both residential and small business customers.

Understanding that many customers are satisfied with the level of service they receive from Hydro Ottawa, including with the reliability of the distribution system, and value minimizing price increases above all else, Hydro Ottawa has developed a business plan that emphasizes four core principles:

1. **Minimize rate increases;**
2. **Maintain reliability and service quality;**
3. **Address key pressures to the system, including;**
 - Aging infrastructure;
 - An expanding customer base and continued population growth, and;
 - The effects of severe weather events.
4. **Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs.**

Representative Workbook

Principles of Hydro Ottawa's Plan

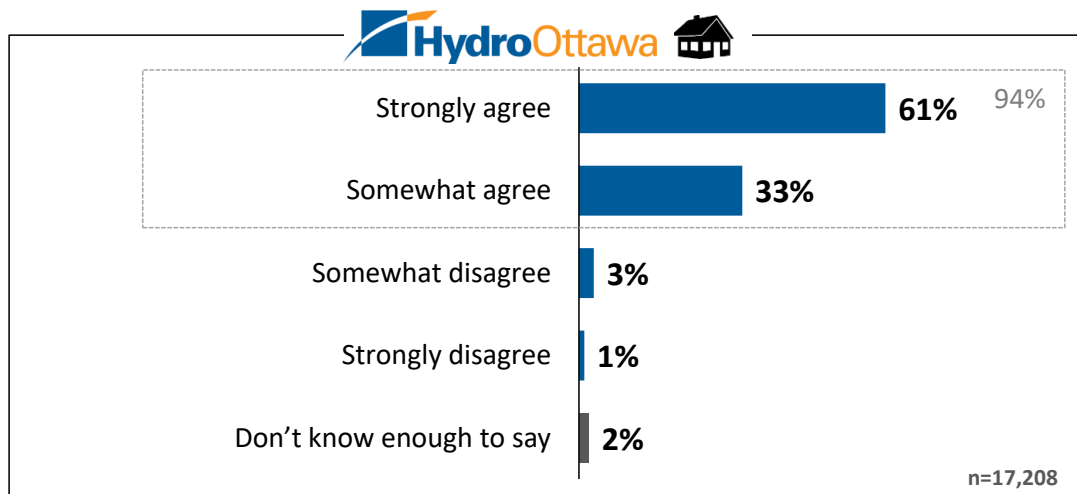
Residential



32

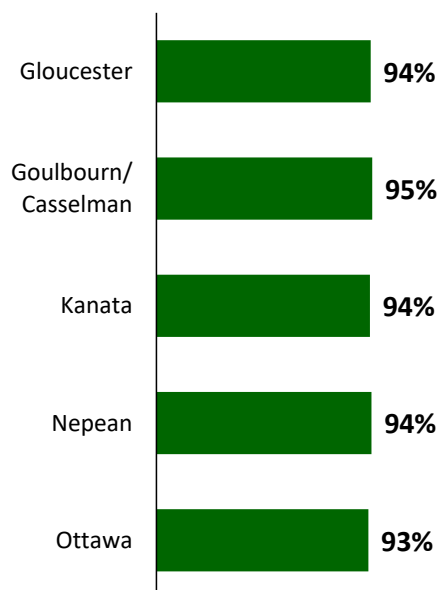
Q

Do you agree or disagree with the principles outlined above?



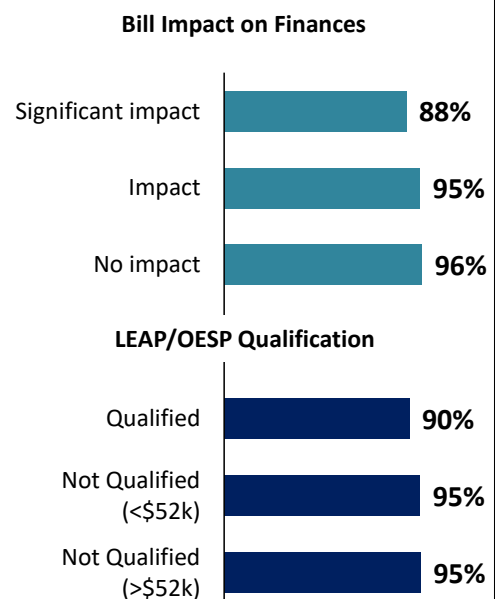
Regional Segmentation

Respondents who say "Agree"



Vulnerable Customer Segmentation

Respondents who say "Agree"



Representative Workbook

Changes to Principles of Hydro Ottawa's Plan

Residential



Q Is there anything that you would change about the four core principles outlined above? If yes, what would you change?

Additional Feedback (n=5,241)	%
70% of respondents did not provide additional feedback	
Transition to green/renewables	6%
'Freeze'/'reduce' rate increase, as opposed to 'minimize'	6%
Environment should be a (top) priority	5%
All principles are important	4%
New tech should be green focused	4%
Increasing rates is necessary for other three principles	3%
Investing in emerging tech is important/escalate priority	3%
Reducing rates/minimizing increases should be top priority	3%
Maintaining reliability and service quality should be top priority	3%
Educate, incentivize, encourage conservation	2%
Encourage EV adoption and prepare the grid	2%
Prudence is key; mistrust 'emerging' tech	2%
Prioritize hardening system against worsening weather/climate change	2%
Move lines underground	2%
Eliminate/reduce/clarify delivery charge; bill for usage	2%
Addressing key pressures should be top priority	2%
Prioritize transparency, accountability, fiscal responsibility	2%
Demo-based rates/supports (conservers, income brackets, seniors, urban vs. rural, usage, etc.)	2%
Need more information/have outstanding questions	1%
Improve' as opposed to 'maintain' reliability and service quality	1%
Alternative financing (e.g. developers, gov't, dividend to City, etc.)	1%
Find internal efficiencies	1%
Critical of question/survey (biased, leading, skeptical results will have impact, etc.)	1%
Adjust (exec) salaries	1%
Improve customer service and communication	1%
Investing in emerging tech is not a priority	1%
Eliminate/adjust Time of Use	1%
Managing aging infrastructure should be part of 'maintaining reliability and service quality'	1%
Other	8%
None	25%
Don't Know	1%

Representative Workbook

Background Information

Residential



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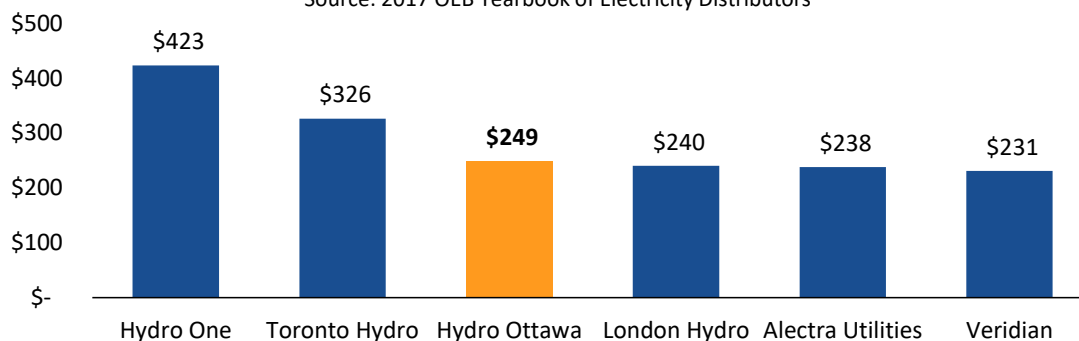
Finding efficiencies

Hydro Ottawa is continuing its focus on productivity and continuous improvement initiatives; which offset continuing costs and improves organizational effectiveness.

Hydro Ottawa's total operating costs are reported every year to the OEB and benchmarked against other distribution companies in Ontario. In the last year of publicly available data collected by the OEB, Hydro Ottawa's total operating cost per customer was **\$249**. This was, and historically has been, lower than the average Ontario distribution company cost of **\$304** per customer.

Six Largest Provincial Distributors: Operating Cost per Customer (\$)

Source: 2017 OEB Yearbook of Electricity Distributors



The choices Hydro Ottawa makes in its operating budget are primarily driven by technical analysis and expert assessments of best practices.

As promised earlier, this workbook does not ask questions that expect you to be an electricity expert.

The OEB runs an open and transparent review process where experts from the OEB and intervenor groups review and have the opportunity to question Hydro Ottawa's analyses and assessments. Anyone, including you are welcome to participate in the OEB process.

Representative Workbook

Approach to Bringing Customer Views into Plans

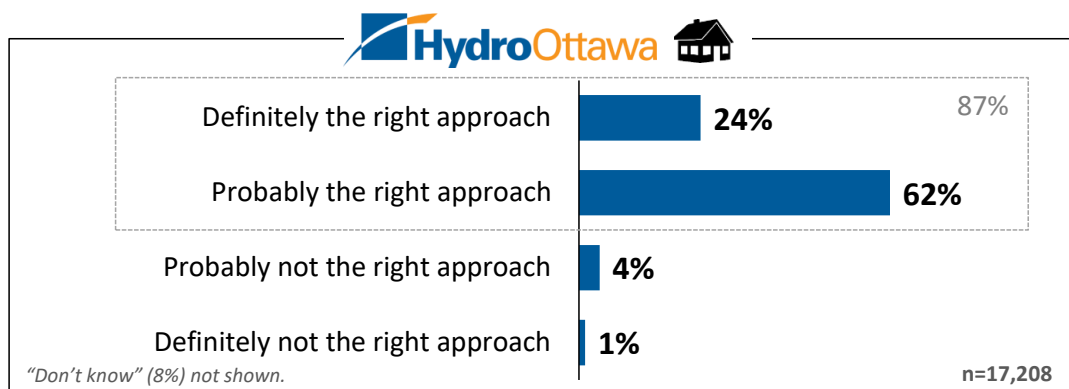
Residential



This workbook leaves detailed discussion of Hydro Ottawa's operating budget to experts from the OEB and intervenors in the formal OEB review; the workbook focuses on collecting your views on competing trade-offs in investments.

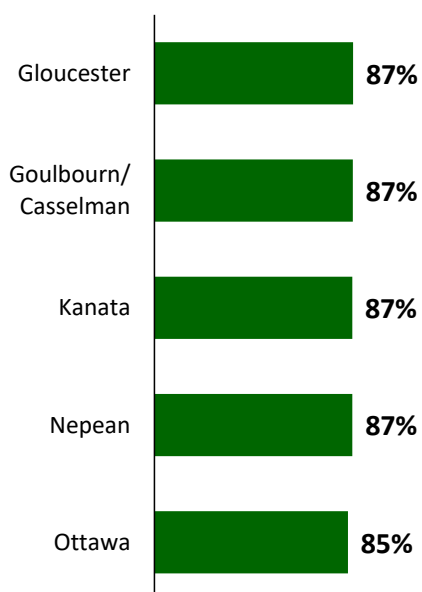
Q

Does this customer engagement process seem like the right approach to bring customer needs and preferences into Hydro Ottawa's plan?



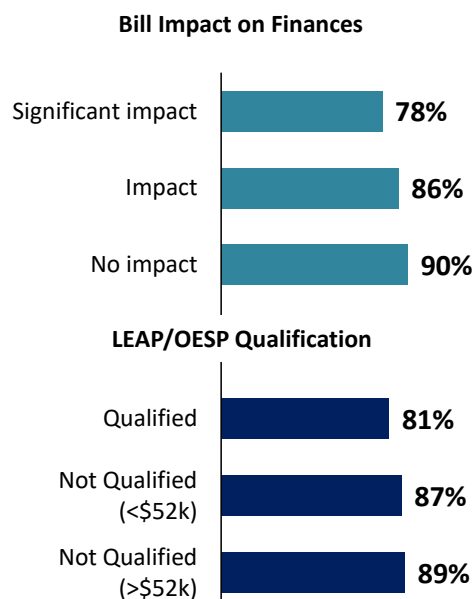
Regional Segmentation

Respondents who say "Right approach"



Vulnerable Customer Segmentation

Respondents who say "Right approach"



Representative Workbook

Residential



36

Changes to Approach to Bringing Customer Views into Plans

Q

Are there things that you would change about how Hydro Ottawa brings customer needs and preferences into Hydro Ottawa's plan? If so, what would you change?

Additional Feedback (n=3,385) 80% of respondents did not provide additional feedback	%
Continue customer engagement; ensure accessibility and representation	11%
Reduce cost/cost too high/minimize increase	6%
Critical of survey - too long/complex	5%
Ensure accountability/transparency	5%
Prioritize environment - alternatives, renewables, sustainability, carbon neutral operations, conservation etc.	4%
Follow up on survey; share results; prove customers were listened to	4%
Issue with rest of system (transmission, generation, policy, etc.)	4%
Ensure fiscal responsibility - eliminate waste, plan long-term, find efficiencies, etc.	3%
Happy with service; keep up good work	3%
Alternative financing (e.g. developers, gov't, dividend to City, etc.)	3%
Customer education is important	2%
Need more information/have outstanding questions/defer to experts	2%
Appreciated survey/opportunity to give feedback; informative	2%
Demo-based rates/support - income brackets, seniors, big users, conservers, etc.	2%
Increase should not exceed inflation/cost of living	2%
Ontario rates are highest; model off/compare to systems outside Ontario	2%
Investment should be well thought out	2%
Prioritize reliability	2%
Eliminate/adjust Time of Use	1%
Reduce/eliminate delivery charge	1%
Other	4%
None	27%
Don't Know	3%

Representative Workbook

Non-discretionary expenditures

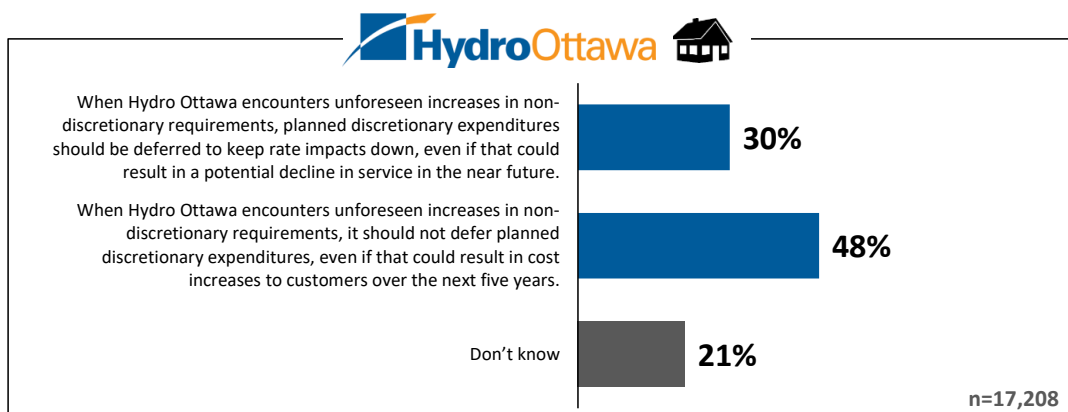
Residential



As federal, provincial and municipal demands change, Hydro Ottawa may need to implement unplanned, non-discretionary expenditures. It has a decision to make about how to accommodate unexpected non-discretionary spending which could impact other planned priorities.

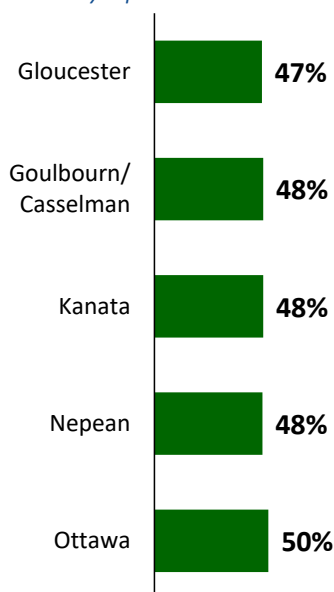
Q

Which of the following statements best represents your point of view regarding Hydro Ottawa's approach to discretionary and non-discretionary spending?



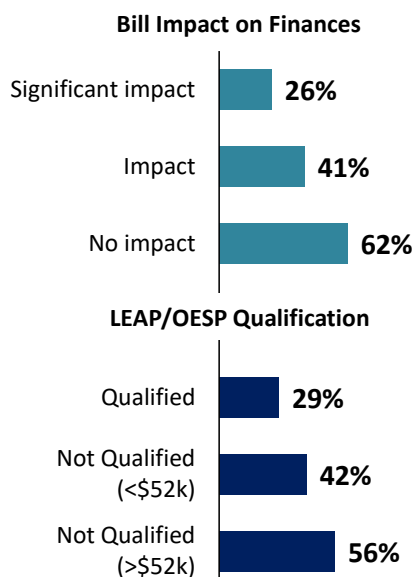
Regional Segmentation

Respondents who say "Do not defer planned discretionary expenditures"



Vulnerable Customer Segmentation

Respondents who say "Do not defer planned discretionary expenditures"



Representative Workbook

Residential



38

Additional Feedback: Non-discretionary expenditures

Q

Additional Feedback (Optional)

Additional Feedback (n=3,085) 82% of respondents did not provide additional feedback	%
There should already be a contingency plan/budget; rates shouldn't be affected	12%
Alternative financing (eg. developers, new connects, gov't, cause of expenditure, etc.)	9%
Service/reliability is more important than cost (within reason)	8%
Investing now leads to reduced future costs	7%
Depends on context; assess case-by-case	7%
Balance of options 1 and 2	7%
Plan better; there should be nothing 'unforeseen'	6%
More context required to answer	4%
Transparent communication/consultation in the event of increase/unforeseen expenditure	4%
Depends on the size of the increase	3%
Skeptical/critical (of question/options/survey)	2%
Ensure impact of decisions are fully understood/justified (eg. cost vs benefit, short vs long-term, etc.)	2%
Manage better; make do without increase or decline in service	2%
Keeping rates low is priority #1/minimize increases	2%
Reduce salaries/employee bonuses/pay from profits	2%
Lower rates	2%
Demo-based rates/supports (income brackets, seniors, usage, etc.)	1%
Survey/question too long/difficult to understand	1%
Prioritize environment - do not defer green investment	1%
Prioritize operational efficiency/minimize spending	1%
Short-term increases are fine, but should decrease in the long-term	1%
Bury lines to save in the long run	1%
Decision making should be long-term/future oriented	1%
Other	9%
Nothing	4%
Don't Know/ Refused	2%

Representative Workbook

Residential



39

Pacing investments in the overhead distribution system

Hydro Ottawa is considering three options for continued investment in the overhead distribution system:

- 1. Accelerated Approach:** Increased replacement of aging overhead transformers, switches, and poles to catch up and get ahead of growing number of poles at, or beyond, their end-of-life.
- 2. Included in Draft Plan:** Defer catch up in aging infrastructure to manage rate impact. Modest decrease of approximately \$1M per year in renewal of overhead infrastructure from 2016 to 2020 levels. Move to more targeted renewals of specific poor condition assets and less full renewals of broad areas.
- 3. Reduced Approach:** Deferral of proactive switch renewal, and pole replacement. Move to replacement of only critical assets.

Option	Outcome
Accelerated Approach <u>Additional</u> \$0.04 per bill each year (\$0.20 more per bill by 2025)	<ul style="list-style-type: none"> Increasing the replacement levels to address higher-risk assets, such as poles, which are at or near end-of-life. Increasing investments in switches to enhance operational efficiency. Reducing requirement for emergency renewals.
Included in Draft Plan <i>Within 2.5% annual increase</i>	<ul style="list-style-type: none"> Moderate slowing of asset replacement. Increased future costs to catch up on expected end-of-life infrastructure. Some increase in emergency renewal replacements, significant increase not expected for next five years. Minor increases in customer impact as targeted and emergency renewals will result in more piecemeal replacements.
Reduced Approach <u>Decrease</u> of \$0.03 per bill each year (\$0.15 less per bill by 2025)	<ul style="list-style-type: none"> Need for catch up in future years, requiring significant levels of investment. Degradation in system reliability due to lower switch renewal. Switch failures typically occur on operation, resulting in longer restoration times. Moderate increases in targeted and emergency renewal, possibly resulting in multiple service visits in certain areas.

Representative Workbook

Residential

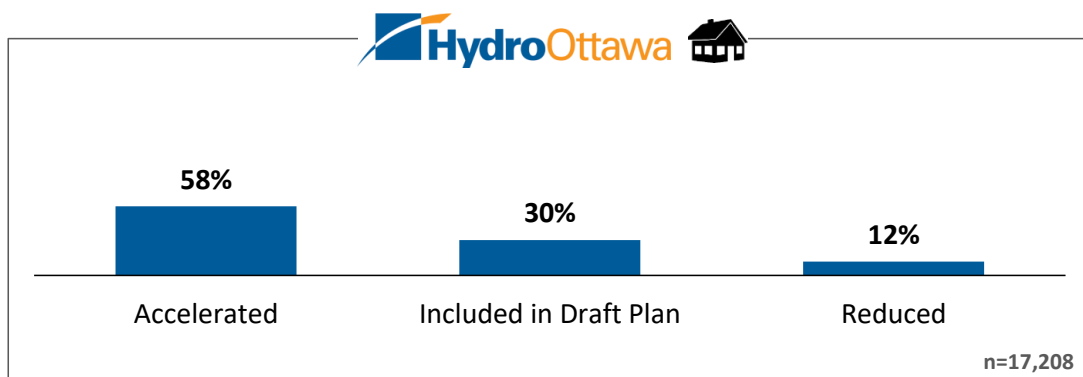


40

Pacing investments in the overhead distribution system

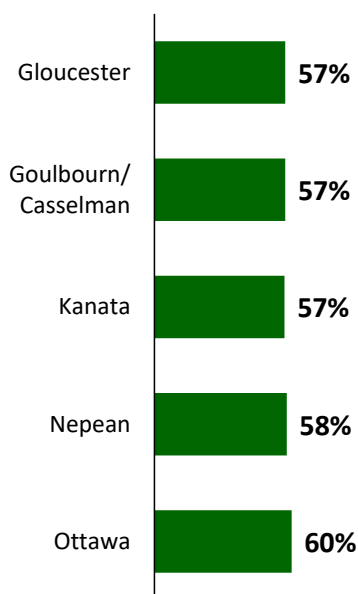
Q

Which of the following options do you prefer?



Regional Segmentation

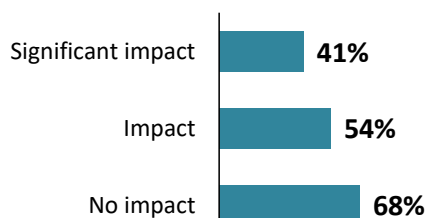
Respondents who say "Accelerated Approach"



Vulnerable Customer Segmentation

Respondents who say "Accelerated Approach"

Bill Impact on Finances



LEAP/OESP Qualification



Representative Workbook

Additional Feedback: Overhead

Residential



41



Additional Feedback (Optional)

Additional Feedback (n=2,225) 87% of respondents did not provide additional feedback	%
Move lines underground	22%
Investing now leads to reduced future cost; proactive > reactive	12%
Critical of question/options presented	7%
Maintaining/upgrading system is important	6%
Need more information/have outstanding questions/defer to the experts	5%
Increase nominal/worth it	5%
Alternative financing (eg. developers, new builds, big businesses, partnerships, etc.)	5%
Invest in pole/cable tech	4%
Harden system against climate change/extreme weather	4%
Oppose any increase; cost too high already	3%
Prioritize finding efficiencies; minimize increase	2%
Safety/reliability is crucial	2%
Demo-based rates/supports (income brackets, seniors, urban vs rural, usage, etc.)	2%
Hydro Ottawa should have planned better	2%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	2%
Increase should not exceed inflation/cost of living	1%
Stronger infrastructure is worth paying more	1%
Plan for the future (including EVs, urban growth/densification, emergency preparedness etc.)	1%
Other	10%
None	7%

Note: Don't know: <1%

Representative Workbook

Residential



42

Pacing investments in the underground distribution system

Hydro Ottawa is considering four options when it comes to underground cable renewal:

- 1. Accelerated Approach:** Renewal of aging assets with increased spending directed to underground transformers and cables.
- 2. Enhanced Approach:** Renewal of aging assets with increased spending targeted for cable replacement.
- 3. Included in Draft Plan:** Balanced investment, defer catch up in replacement of aging infrastructure to manage rate impact. Continued and modest increases in proactive replacement of assets at higher risk of failure.
- 4. Reduced Approach:** Defer any increase in proactive asset replacement, moving to only critical repairs of the system.

Option	Outcome
Accelerated Approach <u>Additional</u> \$0.14 per bill each year (\$0.70 more per bill by 2025)	<ul style="list-style-type: none"> Increasing proactive replacement of aging infrastructure with a focus on transformer and cable replacement. Reduced asset risk and future investment to catch up. Accelerating asset renewal enabling rapid roll out of increased system capacity (EVs) and improved operations (faster restoration when outages occur). Reliability improvements reducing frequency and duration of outages. Reducing maintenance costs related to oil leaks.
Enhanced Approach <u>Additional</u> \$0.07 per bill each year (\$0.35 more per bill by 2025)	<ul style="list-style-type: none"> Replacing aging cables to reduce failure risk, with slowed investment in other underground infrastructure such as switches, and transformers. Manageable future investment will be required to catch-up. Increased rate of cable replacement will provide some improvements in asset failure and outage frequency.
Included in Draft Plan <i>Within 2.5% annual increase</i>	<ul style="list-style-type: none"> Moderate rate of asset replacement, which is still higher than the 2016-2020 program Manageable level of future investment required to catch-up. Maintenance of system reliability with minor impact in service reliability.
Reduced Approach <u>Decrease</u> of \$0.07 per bill each year (\$0.35 less per bill by 2025)	<ul style="list-style-type: none"> Need for catch up in future years, requiring significant levels of investment. Potential reduction on system reliability with increasing outages in specific areas due to cable failures.

Representative Workbook

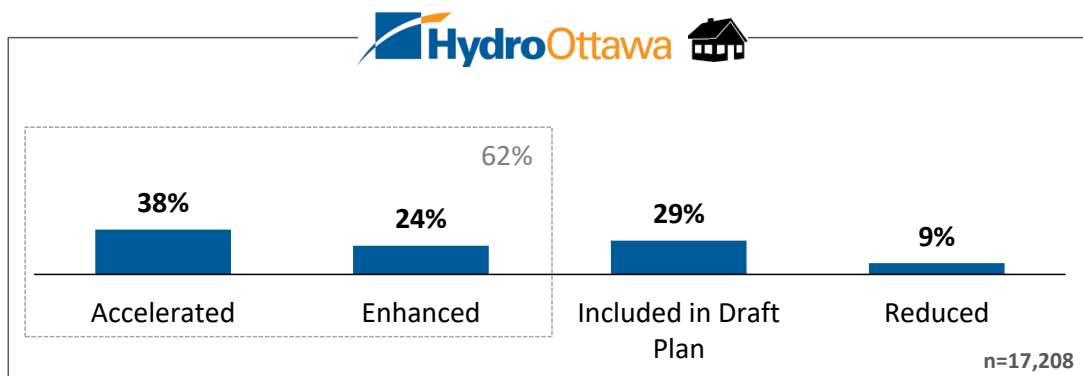
Residential



Pacing investments in the underground distribution system

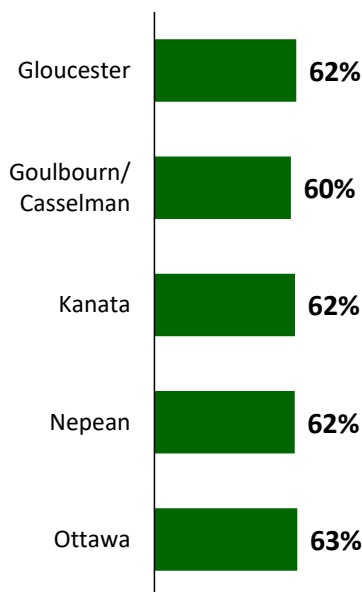
Q

Which of the following options do you prefer?



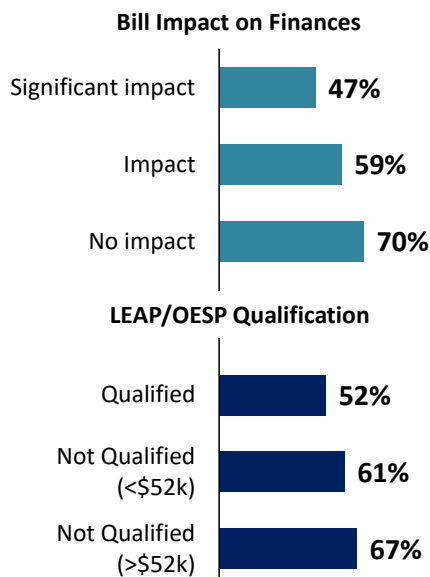
Regional Segmentation

Respondents who say "Accelerated or Enhanced"



Vulnerable Customer Segmentation

Respondents who say "Accelerated or Enhanced"



Representative Workbook

Additional Feedback: Underground

Residential



44

Q

Additional Feedback (Optional)

Final Comments (n=1,404)	%
92% of respondents did not provide additional feedback	
Investing now leads/should lead to reduced future cost; proactive > reactive	8%
Move lines underground	8%
Increase nominal/worth it	7%
Need more information/have outstanding questions	7%
Critical of question (eg. Insufficient options, leading, biased, etc.)	7%
Maintenance/replacement planning should have been done/lack of foresight	4%
Reliability/Safety is priority	4%
Prioritize finding efficiencies; minimize increase	3%
Research/investment in cabling technology necessary	3%
Harden system against worsening weather by burying cables	3%
Maintaining/upgrading the system is important	2%
Moderate/gradual approach preferred/target critical areas first/as they fail	2%
Decide based on positive ROI/cost-benefit analysis	2%
Plan for future (eg. EV adoption, urban development, future demands, emerging tech, etc.)	2%
Oppose any increase; cost too high already	2%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	2%
Only those affected should pay	2%
Alternative financing (eg. developers, new builds, big businesses, government, etc.)	2%
More transparency/accountability/don't trust	1%
Coordinate with other companies/utilities to share costs	1%
Lower rates should be a priority	1%
Not qualified to respond/use experts	1%
Pay from profits/savings/not from customers	1%
Demo-based rates/supports (income brackets, seniors, urban vs rural, usage, EV adopters, etc.)	1%
Too expensive/unnecessary/defer for now	1%
Make do with less than 2.5%	1%
Consider environment/risk assessment necessary	1%
Other	10%
None	9%

Note: Don't know: <1%

Representative Workbook

Overhead/Underground Investments by Service Type

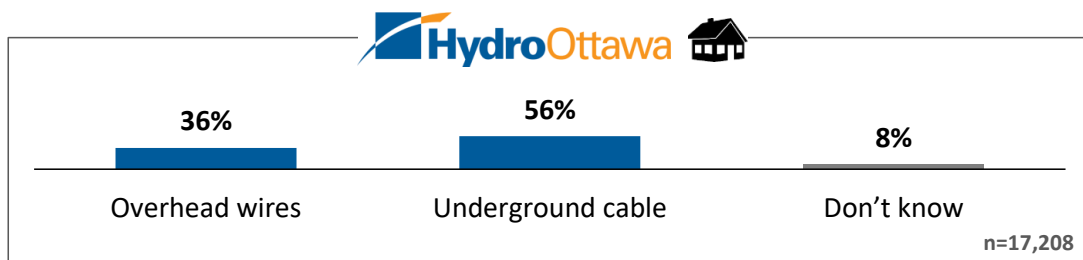
Residential



45

Q

To the best of your knowledge, how does your home receive electrical service?



Q

Pacing investments in the overhead distribution system

Investment Option	Total	Overhead	Underground
Accelerated Approach	58%	61%	58%
Included in Draft Plan	30%	28%	31%
Reduced Approach	12%	10%	11%

Q

Pacing investments in the underground distribution system

Investment Option	Total	Overhead	Underground
Accelerated Approach	38%	37%	39%
Enhanced Approach	24%	24%	24%
Included in Draft Plan	29%	30%	28%
Reduced Approach	9%	9%	8%

Representative Workbook

Background Information

Residential



Reliability experience

In order to provide feedback on Hydro Ottawa's plans, it's important to understand how the distribution system has performed in the past, as well as what's expected in the future.

A core objective of Hydro Ottawa's 2021-2025 rate application is to maintain current levels of reliability, while making targeted improvements to those areas experiencing below average service.

- The five-year average number of outages (excluding major event days and loss of supply from Hydro One) has decreased slightly between 2014 and 2018, from 1.02 to 0.84 (total number of annual outages).
- The five year average duration of outages (excluding major event days and loss of supply from Hydro One) has decreased slightly between 2014 and 2018, from 1.17 to 1.14 (total annual hours).

What is most likely to cause an outage?

Although both the number and duration of outages have decreased compared to the previous five-year average, defective equipment remains the top cause of outages within Hydro Ottawa's control.

That said, in 2018, severe weather presented a unique set of challenges for Hydro Ottawa's distribution system. One section of this consultation will focus on the impacts of severe weather, and the options for preparing the distribution system for more frequent and extreme weather.

Causes of Unscheduled Power Outages (five-year average: 2014 to 2018)



10%

Animal Contact: outages caused by animals such as birds and squirrels coming in contact with overhead power lines or transformers.



27%

Equipment Failure: unscheduled power outages from equipment failure usually occur with distribution assets that are beyond or approaching the end of their expected useful lives.



24%

Weather Related Events: adverse weather such as heavy rain, lightening, ice, snow, wind, extreme temperatures, freezing rain and frost can disrupt the distribution system.



39%

Other: includes tree contact (10%), and human interference (11%) (such as construction workers accidentally cutting power lines or motor vehicle accidents involving contact with distribution assets). 9% of outages are unknown, but most likely caused by animal contact.

Note: statistics do not include loss of supply from Hydro One.

Representative Workbook

Reliability Experience

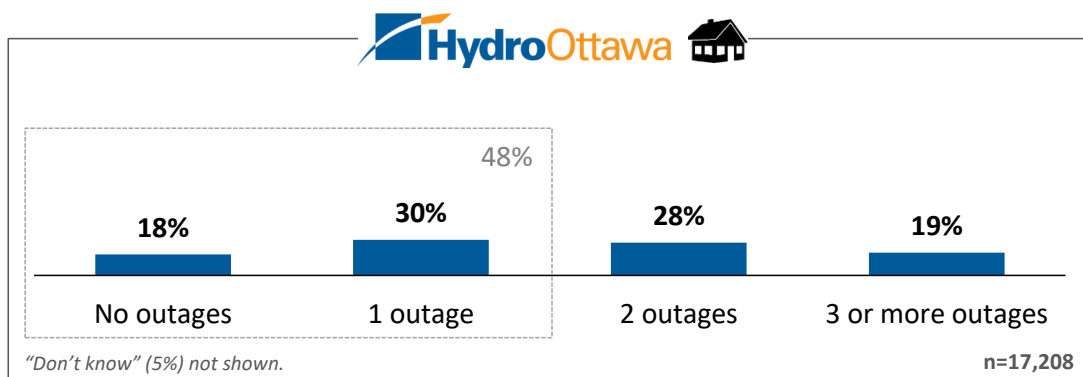
Residential



47

Q

Have you experienced any power outages at your home in the past 12 months which lasted longer than one minute?



Number of Outages	Gloucester	Goulbourn/ Casselman	Kanata	Nepean	Ottawa
No outages	19%	5%	13%	7%	31%
1 outage	29%	18%	30%	31%	34%
2 outages	27%	34%	30%	32%	21%
3 or more outages	20%	39%	21%	26%	8%
One or fewer outages	48%	23%	43%	38%	65%

Representative Workbook

Reliability Investments

Residential



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Hydro Ottawa is considering four options when it comes to reliability investments:

- 1. Accelerated Approach:** Build power lines/new connections between substations to improve reliability. Enhance monitoring of substation and distribution equipment.
- 2. Included in Draft Plan:** Only build critical connections between substations. Enhance monitoring of station and distribution equipment.
- 3. Limited Approach:** Improve reliability for neighbourhoods experiencing the most frequent number of power outages. Enhance monitoring of substation and distribution equipment.
- 4. Reduced Approach:** Only improve reliability for neighbourhoods experiencing the most frequent number of power outages.

Option	Outcome
Accelerated Approach <u>Additional</u> \$0.02 per bill each year (\$0.10 more per bill by 2025)	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Increase system resilience and performance through addition of connections on distribution network. Supports reduction in outage duration. Target investments to areas that have below average reliability.
Included in Draft Plan <i>Within 2.5% annual increase</i>	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Maintain system resilience and performance through addition of connections on distribution network. Maintains outage duration at current levels. Target investments to areas that have below average reliability.
Limited Approach <u>Decrease</u> of \$0.04 per bill each year (\$0.20 less per bill by 2025)	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Target investments to areas that have below average reliability.
Reduced Approach <u>Decrease</u> of \$0.05 per bill each year (\$0.25 less per bill by 2025)	<ul style="list-style-type: none"> Target investments to areas that have below average reliability. No investment to improve/enhance reliability.

Representative Workbook

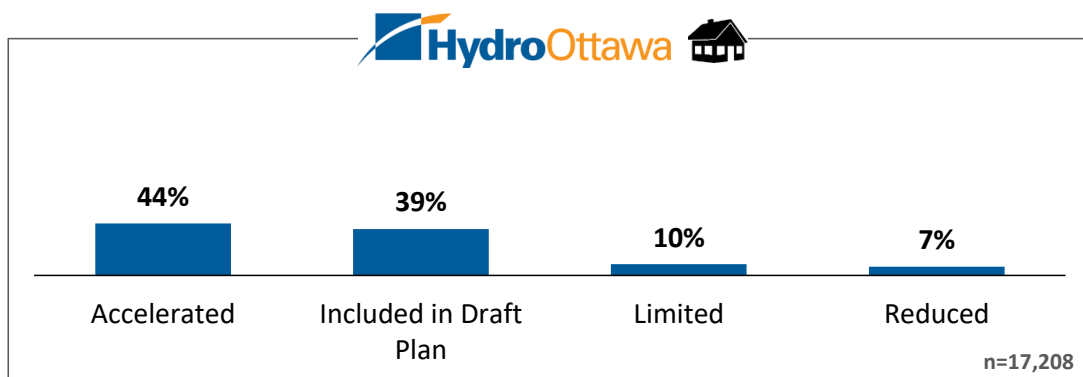
Reliability Investments

Residential



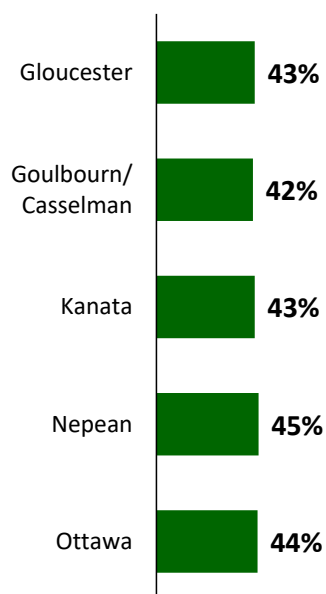
Q

Which of the following options do you prefer?



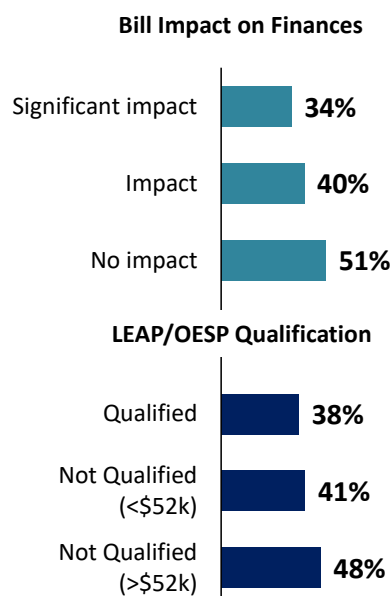
Regional Segmentation

Respondents who say "Accelerated"



Vulnerable Customer Segmentation

Respondents who say "Accelerated"



Representative Workbook

Additional Feedback: Reliability Investments

Residential



50

Q

Additional Feedback (Optional)

Additional Feedback (n=982)	%
94% of respondents did not provide additional feedback	
Reliability/short outage duration is priority #1	16%
Critical of question/options presented/biased/leading question	9%
Increase nominal/worth it	7%
Current reliability is adequate	6%
Prioritize hardening system against worsening weather	5%
Oppose any increase; cost too high already	5%
Investing now leads to reduced future cost; proactive > reactive	5%
Need more information/have outstanding questions	5%
Prioritize finding efficiencies; minimize increase	4%
Maintaining/upgrading system is important	4%
Move lines underground	4%
Alternative financing (eg. developers, new builds, big businesses, partnerships, etc.)	2%
Plan for future needs (eg. Increasing demand, EV adoption, etc.)	2%
Demo-based rates/supports (income brackets, seniors, urban vs rural, usage, etc.)	1%
Maintenance/replacement planning should have already been done/lack of foresight	1%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	1%
Other	6%
None	8%
Don't Know	3%

Representative Workbook

Background Information

Residential



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Preparing for potential increases in severe weather

Hydro Ottawa's distribution system is designed to withstand environmental stresses and impacts, however, weather-related outages have been increasing in terms of frequency and severity over recent years. During 2018 there were three major events which, combined, resulted in system asset replacements of approximately \$4M.

In addition to impacting Hydro Ottawa's equipment, these events increase the resources required to safely and quickly respond to the storm damage and coordinate and communicate restoration efforts to customers.

Hydro Ottawa is currently in the process of completing a climate change vulnerability assessment to determine what steps should be taken to mitigate the impacts of changing climates. While the recommendations from this assessment have not yet been finalized, there are a number of steps Hydro Ottawa could consider taking to prepare for an increasing frequency of severe weather events. For example, changing pole replacement practices and standards would increase overhead structure strength and provide greater clearances from trees and vegetation.

Hydro Ottawa wants to know what your preferences are with respect to making investments in system resilience for severe weather that may or may not materialize over this rate period.



Representative Workbook

Preparing for potential increases in severe weather

Residential



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Q

Which of the following options do you prefer?



I would be willing to pay \$0.05- \$0.10 more per monthly bill by 2025 for Hydro Ottawa to take measures to prepare for severe weather that may or may not occur.

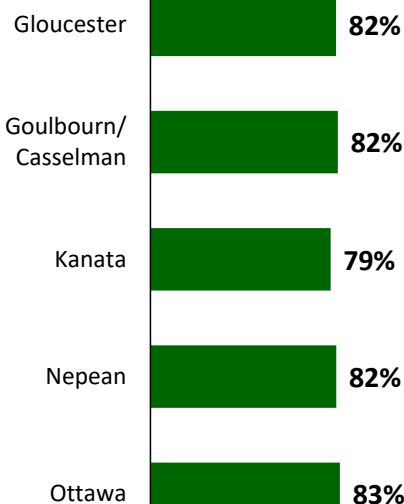
82%

Hydro Ottawa should not invest in measures to prepare for severe weather that may or may not occur.

18%

Regional Segmentation

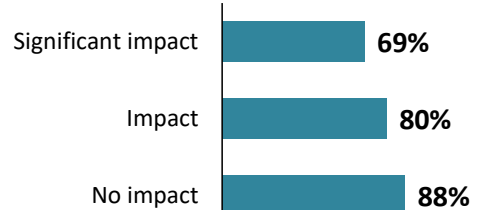
Respondents who say "Willing to pay more to take measures to prepare for severe weather"



Vulnerable Customer Segmentation

Respondents who say "Willing to pay more to take measures to prepare for severe weather"

Bill Impact on Finances



LEAP/OESP Qualification



Representative Workbook

Additional Feedback: Severe Weather

Residential



53

Q

Additional Feedback (Optional)

Additional Feedback (n=2,182)	%
87% of respondents did not provide additional feedback	
Preparing for severe weather is important/worth the cost	12%
Critical of question - insufficient options	9%
Worsening weather is inevitable AND we must be prepared	9%
Move lines underground	8%
HO should have already been preparing/ customer already paying for this	6%
Need more information/ have outstanding questions/defer to experts	6%
Worsening weather is inevitable	5%
Alternative financing - salaries, profits, City dividend, etc.	5%
Reliability is crucial; need outweighs cost	3%
No use/unable to predict and/or prepare for worsening weather	3%
Investing now leads to reduced future costs; proactive > reactive	3%
Demand transparency/accountability in spending of this fund	2%
Fund must be untouchable/carried over year-year until needed	2%
Manage/prepare without increase	2%
Worsening weather is not a problem	2%
Ensure fiscal responsibility and good management	2%
Focus on tree maintenance	1%
Smaller/minimize increase	1%
Gov't/City should step in and pay for severe weather events	1%
Invest in alternative energy sources	1%
Unused funds should go back to customer/into the system	1%
Demo-based rates (income bracket, seniors, consumption, region, etc.)	1%
Reduce cost	1%
Increase is nominal/worth it	1%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	1%
Other	4%
None	7%

Note: Don't know: <1%

Representative Workbook

Background Information

Residential



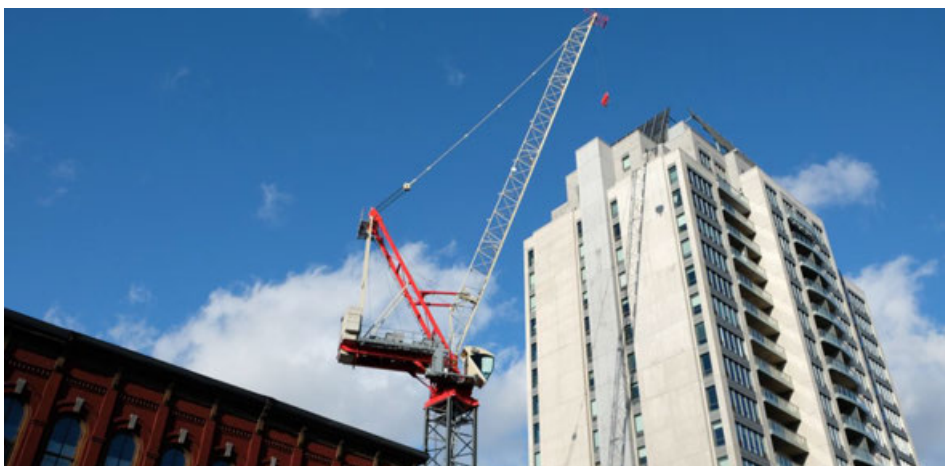
54

Serving a growing city

The population in Hydro Ottawa's service territory continues to grow. Hydro Ottawa must be prepared to serve new customers, while maintaining acceptable levels of service for existing customers. This means regularly assessing the capacity and reliability of its distribution system and its resilience to extreme weather events, and taking action when gaps are found.

A number of Hydro Ottawa's substations are approaching capacity and cannot accommodate future customer growth. Delaying planned investments could result in a decline in reliability for existing customers.

Hydro Ottawa's current plan only includes critical capacity investments; however, there is also an option to make further investments to get ahead of the growing demand for electricity supply.



Option	Outcome
Accelerated Approach Additional \$0.09 per bill each year (\$0.45 more per bill by 2025)	<ul style="list-style-type: none"> • Increase distribution system capacity investment to meet and exceed growing demand for electricity supply. • Distribution system capacity is moved ahead of the demand for electricity, eliminating reliability risk during peak demand days.
Included in Draft Plan <i>Within 2.5% annual increase</i>	<ul style="list-style-type: none"> • Slow distribution system capacity to critical investment only. • Distribution system capacity maintains pace with demand for electricity, or slightly lagging. No impact on ability to connect customers. • Results in modest increase to risk in reliability to areas of growth and increased risk of longer outages or inability to restore power to some customers if outages occur on peak demand days.

Representative Workbook

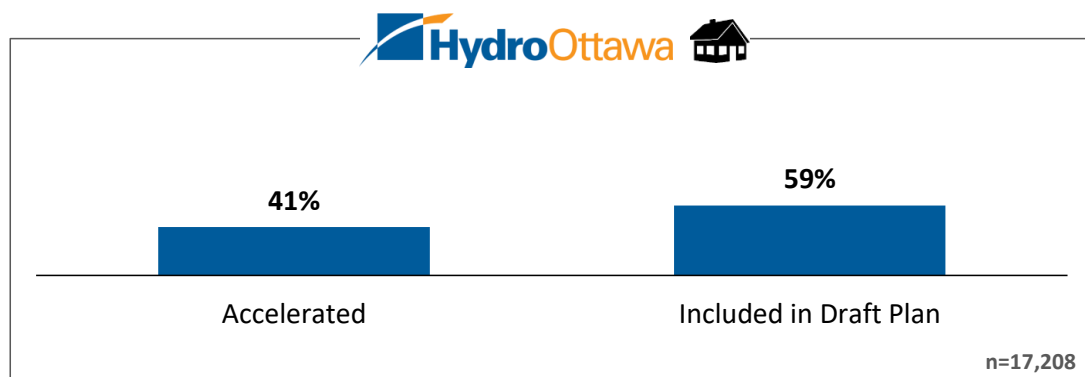
Serving a growing city

Residential



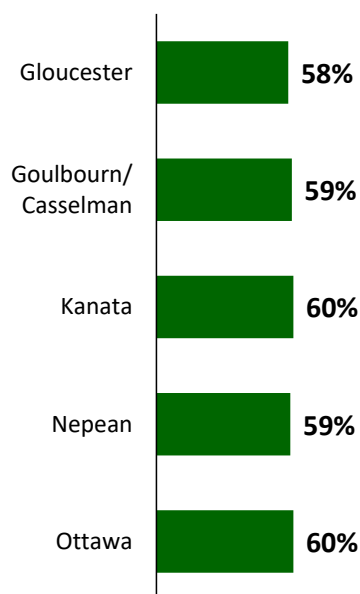
Q

Which of the following options do you prefer?



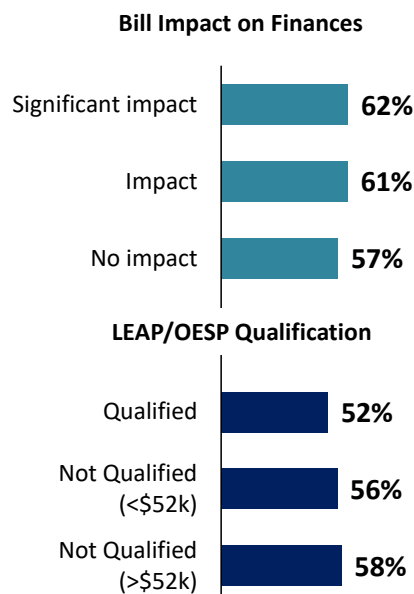
Regional Segmentation

Respondents who say "Included in Draft Plan"



Vulnerable Customer Segmentation

Respondents who say "Included in Draft Plan"



Representative Workbook

Additional Feedback: Serving a growing city

Residential



56

Q

Additional Feedback (Optional)

Additional Feedback (n=1,803)	%
90% of respondents did not provide additional feedback	
Alternative financing (eg. developers, new builds, big businesses, government, etc.)	32%
Plan for the future (including EVs, urban growth/densification, emergency preparedness etc.)	12%
Demo-based rates/supports (income brackets, seniors, urban vs rural, usage, etc.)	8%
Critical of question (insufficient options, biased, leading, etc.)	6%
Oppose any increase; cost too high already	6%
Investing now leads to reduced future cost; proactive > reactive	4%
Focus on conservation/energy efficiency vs. increased supply	4%
Safety/reliability is crucial	3%
Need more information/have outstanding questions	3%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	2%
Prioritize finding efficiencies; minimize increase	2%
Invest in existing infrastructure/not future needs	2%
Concerned about all these increases/costs adding up	1%
Increase nominal/worth it	1%
Research/Invest in methods of distribution;/self-generation/decentralisation	1%
Other	5%
None	6%
Don't Know	3%

Online Workbook

Background Information

Residential



57

Innovation: Investing for the future

Electricity distribution service is in the midst of unprecedented change – evolving towards a more decentralized, customer-centric, technologically-advanced and environmentally sustainable model.

Hydro Ottawa plans to continue engaging in research and development activities which offer value to its customers. This includes supporting the connection of Distributed Energy Resources (DERs). This small scale generation is connected to the grid close to the communities they serve. Hydro Ottawa's Great DR – phase two project (currently known as MiGen), where customers generate their own power and store what's not immediately used, is an example of innovation that is incorporated into the 2021-2025 plan.

Hydro Ottawa has also been actively involved in assessing and addressing customer needs within the emerging electric vehicle market, as well as, participating in a Battery Energy Storage Project, as part of the Smart Grid Program.

Looking forward, opportunities to develop new rate models and explore new energy services will offer customers more choice and control over their electricity needs.



Representative Workbook

Innovation: Investing for the future

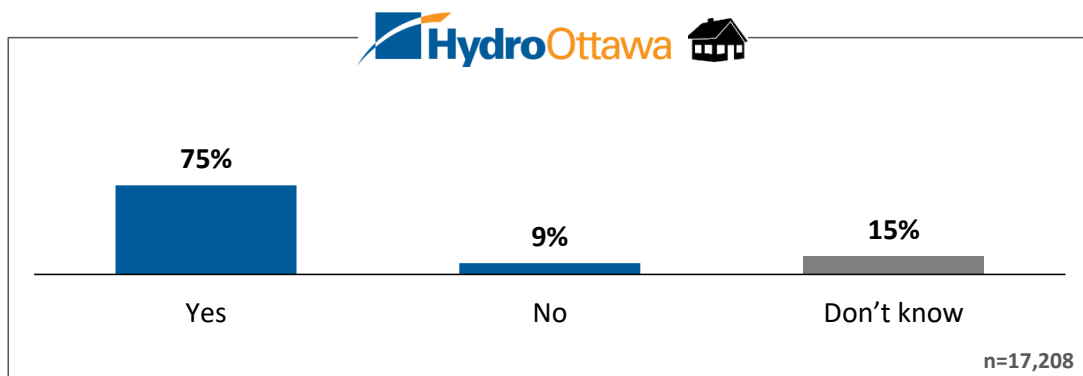
Residential



58

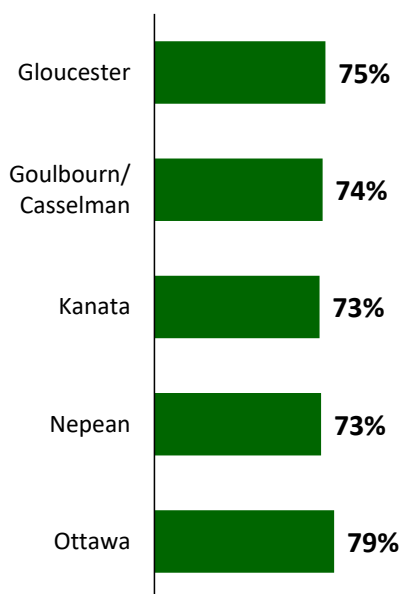
Q

Do you support Hydro Ottawa's strategy of leading change and engaging in industry projects that could shape the future of the energy marketplace?



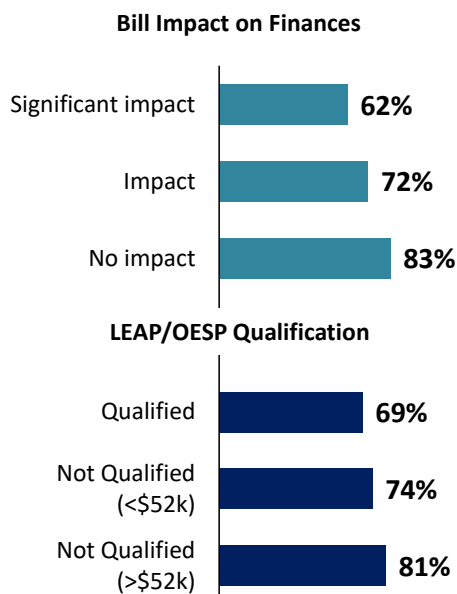
Regional Segmentation

Respondents who say "Yes"



Vulnerable Customer Segmentation

Respondents who say "Yes"



Representative Workbook

Innovation: Investing for the future

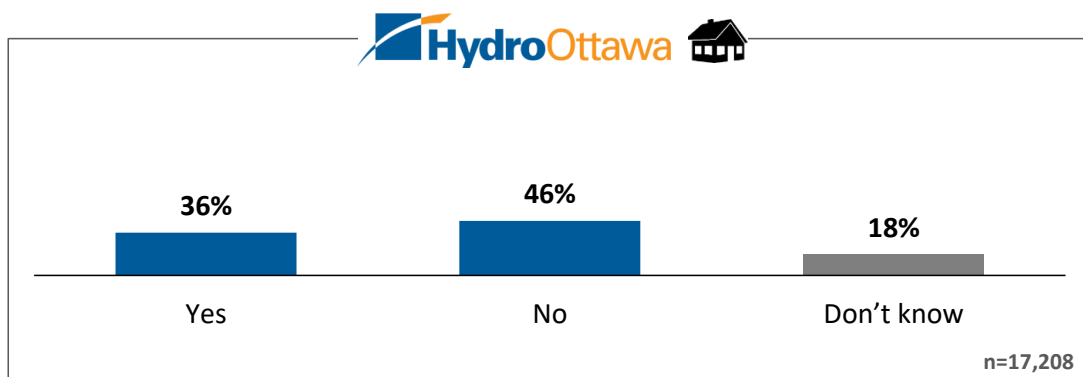
Residential



59

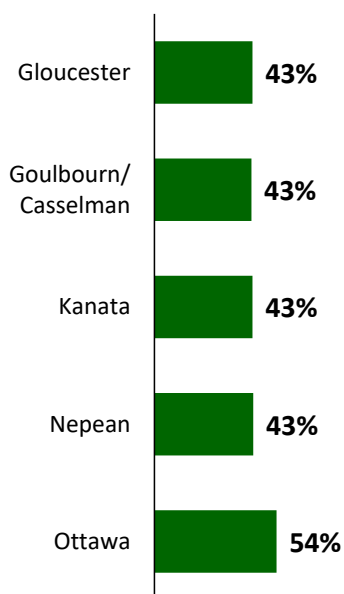
Q

Do you believe Hydro Ottawa should limit expenditures to those necessary to serve today's customers and existing needs, if this option could lower rate impacts in the short term?



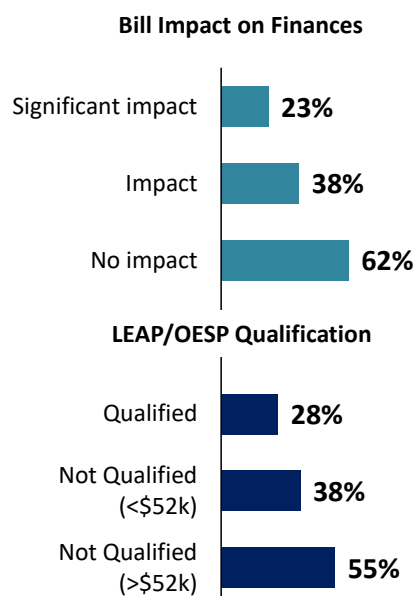
Regional Segmentation

Respondents who say "No"



Vulnerable Customer Segmentation

Respondents who say "No"



Representative Workbook

Residential



60

Additional Feedback: Innovation: Investing for the future

Q

Additional Feedback (Optional)

Additional Feedback (n=1,891) 89% of respondents did not provide additional feedback	%
Plan for future (urban growth, EV adoption, future demand, etc.)	11%
Critical of question (insufficient options, confusing, contradictory, biased, etc.)	9%
R&D, innovation is important/worth it	8%
Support alternative/renewable energy	6%
Allow opt-in funding/those interested should pay	6%
Alternative financing - partnerships, developers, gov't, dividends, etc.	5%
Support local generation and/or storage (decentralization, MiGen)	4%
Need more information/have outstanding questions	4%
Reduce rates; keep costs low	3%
Respond to markets (EV, emerging tech/innovations, etc.)	3%
Skeptical of/opposed to 'green' tech/EVs	3%
Be a leader; stay ahead/on the cusp	3%
Decide after thorough assessment (priorities, value, impact, etc.)	3%
Support investment IF it results in reduced cost	3%
Find a balance - neither lead nor lag; prudence	3%
Investing now will reduce future costs; proactive > reactive	2%
Demo-based rates (income brackets, business vs residential, those affected, etc.)	2%
Low priority/not interested/limit spending here	2%
Not worth increased rates	2%
Stay in your lane (distribution); others more qualified to research	1%
Support EVs	1%
Focus on present needs	1%
Other	7%
None	7%

Online Workbook

Background Information

Residential



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Keeping the business running

Hydro Ottawa is more than just poles and wires – it's a business that needs to invest in tools, trucks, equipment, and facilities to maintain the distribution system and service its customers.

The types of expenditures in this category are:

- **Information Technology:** Systems required to securely operate the distribution system, manage customer information and privacy, and keep employees working effectively and efficiently.
- **Vehicles:** Bucket trucks and other vehicles used to move employees, equipment, and supplies throughout Hydro Ottawa's service territory to support the safe and reliable operation of the grid.
- **Facilities:** Warehouse, operations centres and administrative office.
- **Tools and Equipment:** Specialized safety tools and equipment to mitigate the risks associated with maintaining electricity distribution infrastructure.

When deciding whether to continue to maintain existing tools or replace them, Hydro Ottawa considers whether the risks and costs of continuing to use them outweighs the benefits of waiting longer to replace them. Hydro Ottawa must also consider the lead times required to replace some utility vehicles, such as bucket trucks, which can be as long as 18 months.



Representative Workbook

Keeping the business running

Residential



62

As a company, Hydro Ottawa needs equipment to maintain its distribution system and IT systems to manage the distribution system and customer information.

Q

Which of the following statements best represents your point of view?



Hydro Ottawa should find ways to make do with the business equipment it already has.

17%

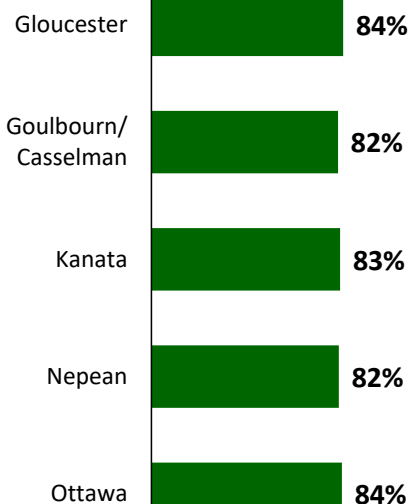
Hydro Ottawa should make the investments necessary to ensure its staff has the equipment they need to manage the distribution system efficiently and reliably.

83%

n=17,208

Regional Segmentation

Respondents who say "Hydro Ottawa should make the investment necessary"



Vulnerable Customer Segmentation

Respondents who say "Hydro Ottawa should make the investment necessary"

Bill Impact on Finances



LEAP/OESP Qualification



Representative Workbook

Additional Feedback: Keeping the business running

Residential



63

Q

Additional Feedback (Optional)

Additional Feedback (n=1,934) 89% of respondents did not provide additional feedback	%
Proper/efficient/up-to-date equipment is important	13%
Critical of question (insufficient/misleading options)	8%
Find balance between the two options (discretion, prudence, 'within reason')	8%
Ensure transparency/accountability of these expenditures	7%
Alternative financing - asset sharing, salaries, profits, internal efficiencies, etc.	7%
Safety (of work crews) is priority #1	6%
Invest when necessary/what's truly needed (need > want)	6%
Investing now leads to reduced future costs; proactive > reactive	4%
Prioritize thorough assessment	4%
Need more information/have outstanding questions	4%
Ensure cyber security	3%
Maximize asset life (regular maintenance, quality products)	3%
This should already be part of the budget/business plan/paid for	2%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	2%
Make decisions based on positive ROI/cost-benefit	2%
Ensure operational efficiency	2%
Current service is adequate; make do with what's in budget	2%
Reduce rates/cost	2%
Manage without increasing rates	2%
Minimize increases	1%
Other	6%
None	4%
Don't Know	2%

Representative Workbook

Vehicle replacement

Residential



64

Q

Which of the following vehicle replacement options do you prefer?



Option 1: Using a run-to-failure approach, replace vehicles only when they can no longer operate, knowing that some larger vehicles require an 18 month lead time to replace. This approach may impact restoration times and efficiency.

10%

Option 2: Make investments in the fleet on a vehicle-by-vehicle basis weighing age, kilometers driven, engine hours, repair history, availability of parts and internal mechanic assessments of the general vehicle condition.

83%

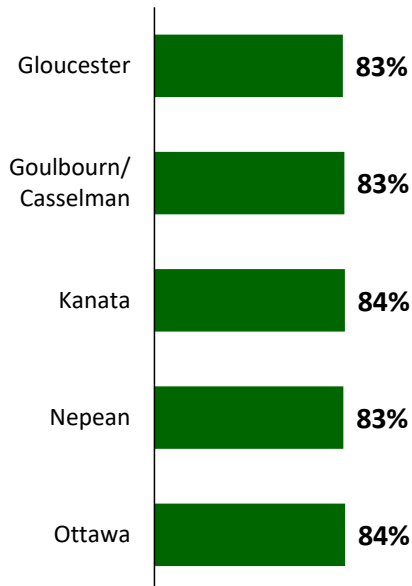
Option 3: Replace vehicles once they have reached the end of their recommended age, regardless of their condition, which is the most expensive and lowest risk option.

7%

n=17,208

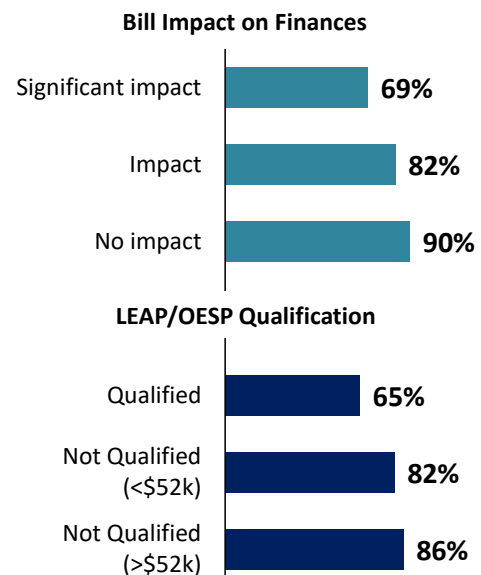
Regional Segmentation

Respondents who say "Option 2"



Vulnerable Customer Segmentation

Respondents who say "Option 2"



Representative Workbook

Additional Feedback: Vehicle Replacement

Residential



65

Q

Additional Feedback (Optional)

Additional Feedback (n=1,272)	%
93% of respondents did not provide additional feedback	
Maximize asset life (eg. no idling, rust protection, regular maintenance, skilled mechanics on staff)	13%
Transition to EV/hybrid/alternative fuel/greener fleet	12%
Critical of life cycle estimates (too low, arbitrary, etc.)	6%
Ensure effective management/planning ahead/budgeting	6%
Critical of question/survey (insufficient options, biased, leading etc.)	6%
Prioritize thorough assessment	5%
Ensure fiscal responsibility - eliminate waste, efficient spending, need > want, etc.	5%
Need more information/have outstanding questions	3%
Support run-to-failure	3%
Make decisions based on cost-benefit /ROI	3%
Prioritize safety/risk management	3%
Defer to the experts	3%
Find balance between options 1 and 2	3%
Sell retired assets	2%
Lease/rent/share the fleet/outsource	2%
Reduce rates/minimize increases	2%
Increase should be paid for by Hydro Ottawa/should have planned better/already budgeted	2%
Have spare assets ready	1%
New equipment necessary/reliable/reduces operating costs	1%
Reduce lead time (18 months seems excessive)	1%
Oppose run-to-failure	1%
Underground lines mean fewer trucks needed	1%
Find balance between options 2 and 3	1%
Explore more options (none quite right)	1%
Alternative financing - salaries, profits, asset sharing, etc.	1%
Make do with current fleet/spending here is low priority/limit spending	1%
Other	6%
None	9%

Note: Don't know: <1%

Representative Workbook

Finding efficiencies through technology investments

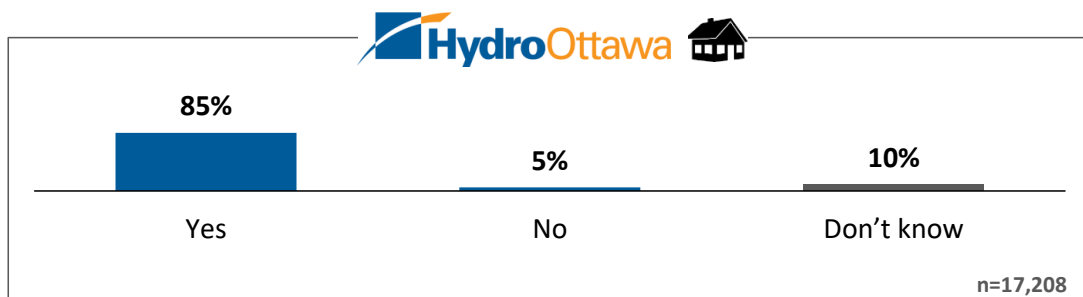
Residential



66

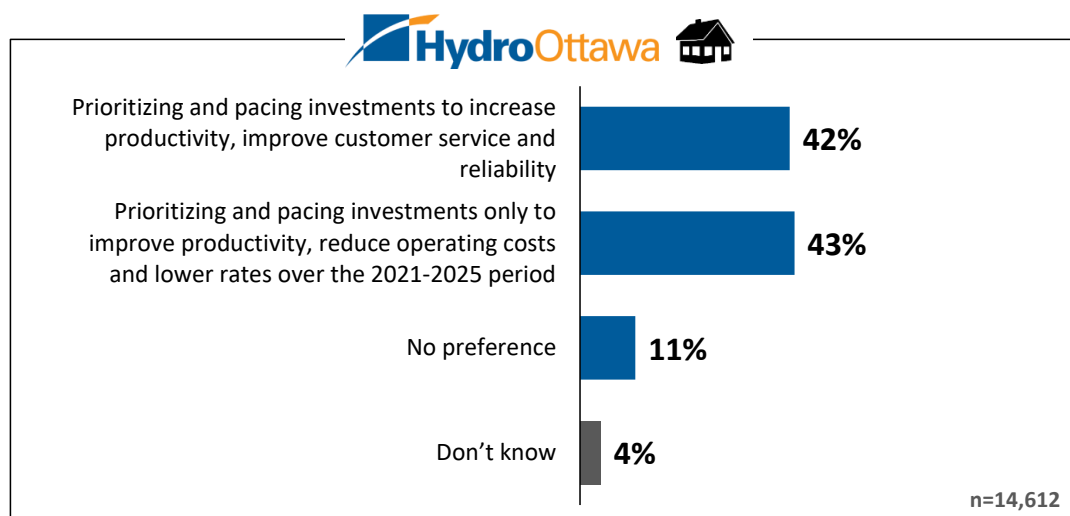
Q

Do you support Hydro Ottawa's view that prudent technological investments are necessary in order to meet its ongoing business and customer needs?



Q

[If yes to above] And which of the following options do you prefer?



Representative Workbook

Residential



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Additional Feedback: Finding efficiencies through technology

Q

Additional Feedback (Optional)

Additional Feedback (n=1,250)	%
93% of respondents did not provide additional feedback	
Support this investment - general	14%
Need more information	7%
Ensure effective managing/planning/budgeting	6%
Ensure cyber security	4%
'Personalized experience' unnecessary/wasteful/no value	4%
Find a balance between options; assess case-by-case	4%
Critical of question (insufficient options, confusing, misleading, etc.)	4%
Prudence is key; thoughtful investment	4%
Use of 'prudence' here is problematic; leaves questions	4%
Only purchase and implement proven systems to avoid poor technology ie. Phoneix	4%
Keep rates low/minimize increase	3%
Customers service already adequate	3%
No frills on bills - focus simplicity, clarity, predictability	3%
Make do without increase; find efficiencies	2%
Invest in personnel; don't cut jobs	2%
Lack confidence in survey design, questions, or Hydro Ottawa to use the data	2%
Prioritize reliability	2%
Hydro Ottawa should pay cost/make cuts from within	2%
Source alternative, renewable energy or providers/be environment, climate conscientious	2%
Invest IF it leads to reduction in bills/increase in efficiency/productivity	2%
Low priority/limit spending/service is fine	2%
Prioritize a 'green' service', e.g. self-gen	2%
Plan needs to be more strategic, longer than 5 years	1%
Make decisions based on positive ROI/cost-benefit analysis	1%
Improvements needed to website, billing, communicating outages, usage to customers	1%
Alternative financing (e.g.. developers, new builds, big businesses, partnerships, etc.)	1%
Support self-usage-monitoring	1%
Other	5%
None	7%

Note: Don't know: <1%

Representative Workbook

Investment Alternative Summary

Residential



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Investment Alternative Summary

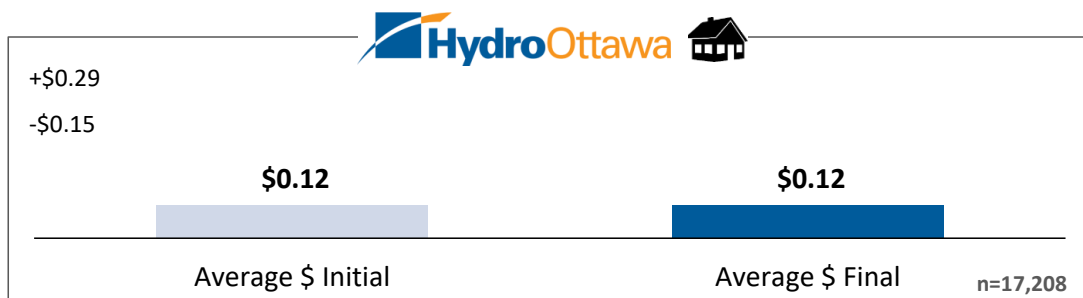
Throughout this workbook, you have been asked about some key choices that could impact your rates. Below is a summary of your answers to the questions that could impact your rates.

At the bottom of this page you will find the total bill impact of all the answers.

Having seen the total bill impact, please review your answers and change your responses if you desire; your potential rate impact will be re-calculated. You will have the opportunity to adjust your answers again until you feel you've reached the best balance for you.



Residential Customer Bill Impact Change and Magnitude of Bill Impact (MEAN)



Differences that are statistically significant at 95% are noted by an asterisk (*).

Initial Response

Monthly Rate Change	%
Maximum decrease (-\$0.15)	4%
Less than zero, less than max decrease	8%
Zero	15%
Great than zero, less than max increase	50%
Maximum increase (+\$0.29)	22%

Final Response

Monthly Rate Change	%
Maximum decrease (-\$0.15)	4%
Less than zero, less than max decrease	9%
Zero	17%
Great than zero, less than max increase	47%
Maximum increase (+\$0.29)	23%

Representative Workbook

Change in Initial Versus Final Response by Project

Residential



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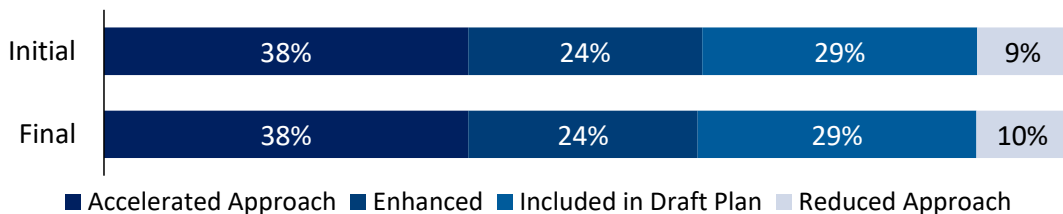
Q

Pacing investments in the overhead distribution system



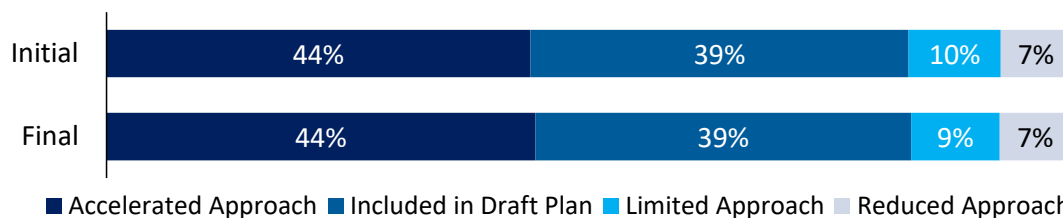
Q

Pacing Investments in the Underground Distribution System



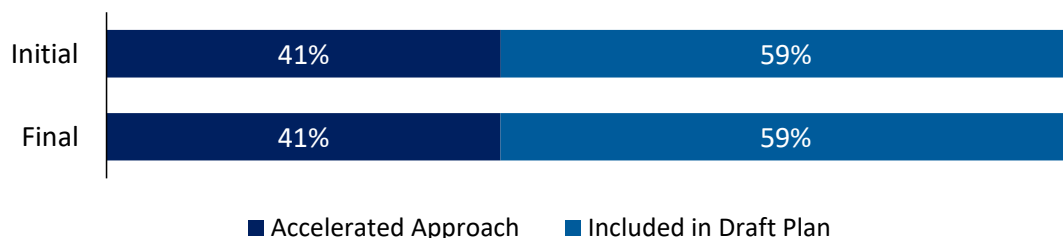
Q

Reliability Investments



Q

Serving a Growing City



Representative Workbook

Impact of Choices on Rates | Preamble

Residential



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Impact of Hydro Ottawa's Plan

Hydro Ottawa has calculated the rate impact of implementing the options recommended by its planners and included it in its draft plans.

These priorities may change based on your input but Hydro Ottawa is looking for an investment program that aims to:

- **Minimize rate increases;**
- **Maintain reliability and service quality;**
- **Address key pressures to the system, including;**
 - **Aging infrastructure;**
 - **An expanding customer base and continued population growth, and;**
 - **The effects of severe weather events.**
- **Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs.**

If Hydro Ottawa continues with its current plan, it is estimated that the distribution portion of the bill will increase an average of **2.5% per year for the period 2021-2025.**

At the end of the 5-year plan, the typical residential customer would see the distribution portion of their electricity bill increase by **\$3.74**. As a result, the distribution charges on the typical residential customer's monthly bill would increase from **\$28.47 in 2020** to **\$32.21 by 2025**.

Representative Workbook

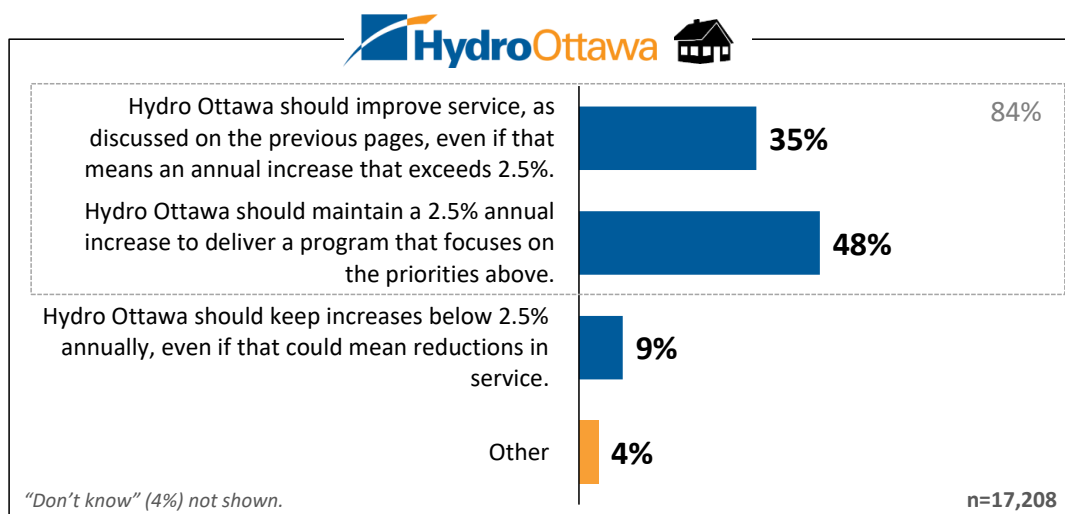
Impact of Hydro Ottawa's Plan

Residential



Q

With regards to Hydro Ottawa's draft plan, which of the following statements best represents your view?



View of Hydro Ottawa's plan	Gloucester	Goulbourn/Casselman	Kanata	Nepean	Ottawa
Hydro Ottawa should improve services	34%	33%	34%	34%	40%
Stick with 2.5% increase	50%	51%	48%	49%	45%
Keep increases below 2.5%	9%	9%	10%	9%	8%
Other	4%	4%	5%	3%	4%
Don't know	4%	4%	3%	4%	3%
Improve services or stick with 2.5% increase	83%	84%	82%	83%	85%

Representative Workbook

Impact of Hydro Ottawa's Plan

Residential



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Q

LEAP/OESP Qualification

View of Hydro Ottawa's plan	Total	Qualified	Not Qualified (<\$52k)	Not Qualified (>\$52k)
Hydro Ottawa should improve services	35%	24%	28%	43%
Stick with 2.5% increase	48%	45%	54%	45%
Keep increases below 2.5%	9%	14%	10%	7%
Other	4%	4%	3%	3%
Don't know	4%	13%	5%	1%
Improve services or stick with 2.5% increase	84%	69%	82%	89%

Q

Bill Impact on Finances

View of Hydro Ottawa's plan	Total	Significant impact	Impact	No impact
Hydro Ottawa should improve services	35%	16%	27%	50%
Stick with 2.5% increase	48%	47%	55%	43%
Keep increases below 2.5%	9%	22%	10%	3%
Other	4%	7%	4%	3%
Don't know	4%	8%	4%	2%
Improve services or stick with 2.5% increase	84%	63%	82%	93%

Representative Workbook

Impact of Hydro Ottawa's Plan

Residential



73

Q

Consumption Quartiles

View of Hydro Ottawa's plan	Total	Low	Medium-Low	Medium-High	High
Hydro Ottawa should improve services	35%	33%	35%	36%	37%
Stick with 2.5% increase	48%	49%	49%	48%	46%
Keep increases below 2.5%	9%	10%	9%	8%	9%
Other	4%	4%	3%	4%	4%
Don't know	4%	4%	4%	4%	3%
Improve services or stick with 2.5% increase	84%	82%	84%	84%	84%

Q

Customers are well served by Ontario's electricity system

View of Hydro Ottawa's plan	Total	Agree	Disagree	No opinion/DK
Hydro Ottawa should improve services	35%	37%	25%	32%
Stick with 2.5% increase	48%	49%	43%	45%
Keep increases below 2.5%	9%	7%	17%	9%
Other	4%	3%	10%	4%
Don't know	4%	3%	4%	10%
Improve services or stick with 2.5% increase	84%	87%	68%	78%

Representative Workbook

Final Comments

Residential



74

Q

Now that you have considered the various choices Hydro Ottawa has to make and the cost implications of those choices, do you have any final comments for Hydro Ottawa?

Final Comments (n=3,571) 79% of respondents did not provide additional feedback	%
Happy with service; keep up good work	8%
Skeptical/critical of survey	7%
Reduce cost/cost too high/ minimize increase	6%
Ensure fiscal responsibility - eliminate waste, plan long-term, find efficiencies, etc.	6%
Appreciated survey/opportunity to give feedback; informative	5%
Maintaining/upgrading system is important	5%
Strong infrastructure is worth paying more; do what it takes	5%
Support the plan - general	4%
More communication/transparency (planned projects, operations, bill breakdown, etc.)	4%
Demo-based rates/support (income brackets, seniors, big users, conservers, etc.)	3%
Prioritize environment - alternatives, renewables, carbon neutral operations	3%
Adjust (exec) salaries to cover increase	2%
Increase should not exceed inflation/cost of living	2%
Issue with rest of system (transmission, generation, policy, etc.)	2%
Alternative financing - developers, govt, profits, internal efficiencies, dividends to city, etc.	2%
Investing now leads to/should lead to reduced future costs	2%
Decision making should be long-term/future oriented	2%
Aim for 2.5% but adjust within reason	2%
Investment should be well thought out	2%
Encourage/incentivize conservation	1%
Prioritize investing in tech	1%
Support accelerated/aggressive approach (within reason)	1%
Encourage self-generation	1%
Eliminate/adjust Time of Use	1%
Move lines underground	1%
Reduce/eliminate delivery charge	1%
Harden system against worsening weather	1%
Other	7%
None	11%

Representative Workbook

Final Thoughts: Workbook Diagnostics

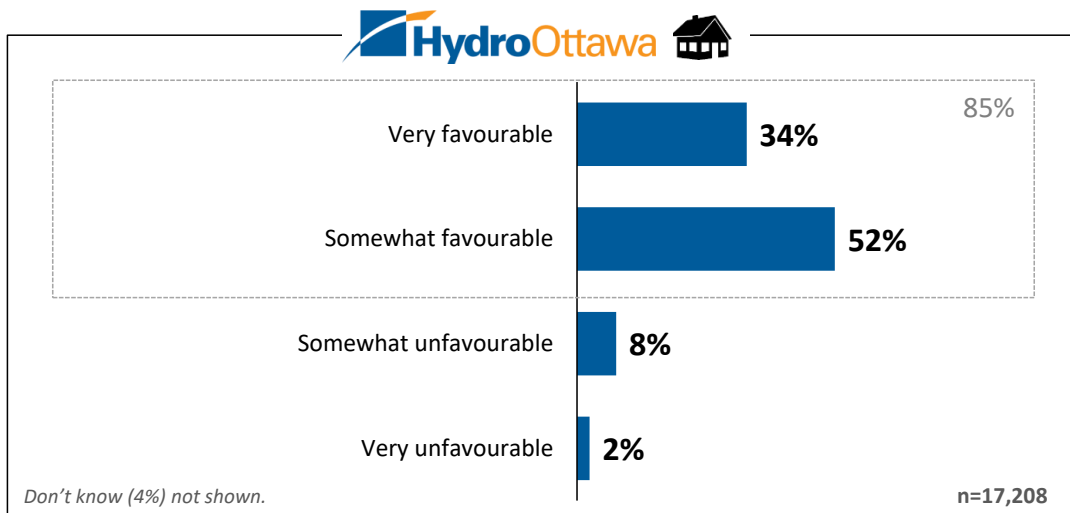
Residential



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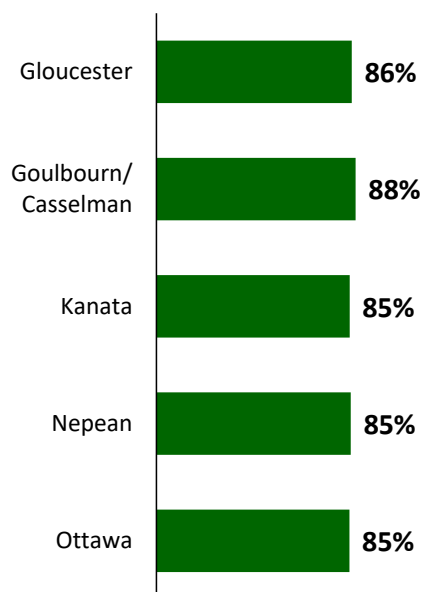
Q

Overall Impression: Did you have a favourable or unfavourable impression of the workbook you just completed?



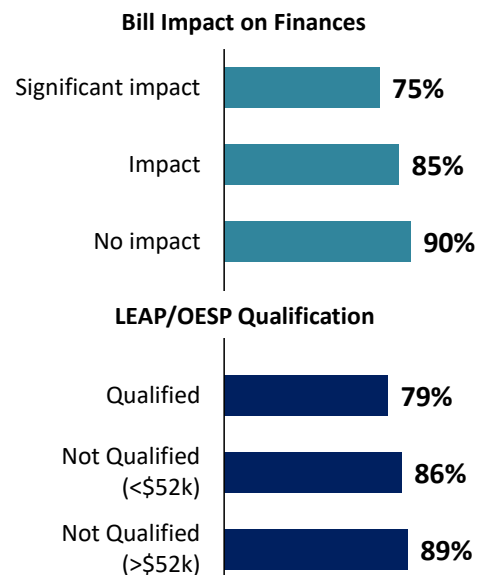
Regional Segmentation

Respondents who say "Favourable"



Vulnerable Customer Segmentation

Respondents who say "Favourable"



Representative Workbook

Final Thoughts: Workbook Diagnostics

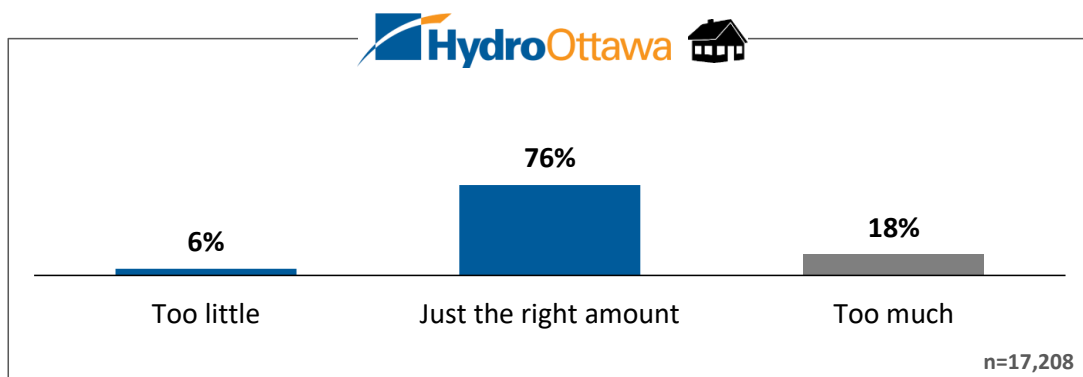
Residential



76

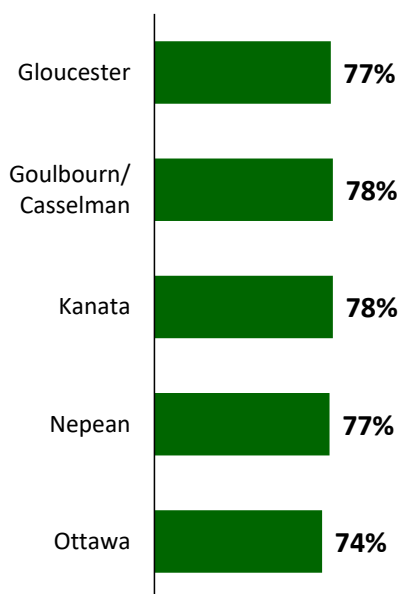
Q

Volume of Information: Did Hydro Ottawa provide too much information, not enough, or just the right amount?



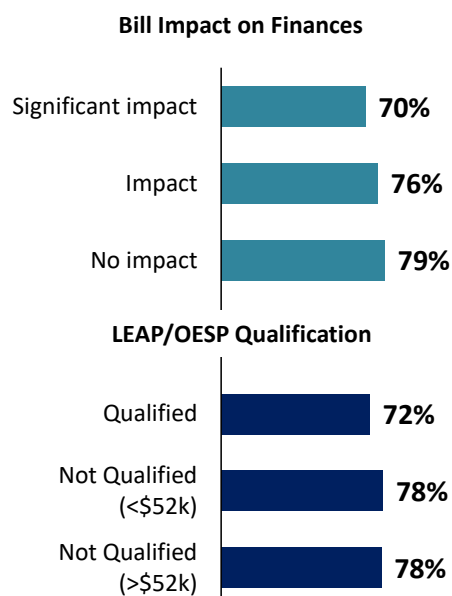
Regional Segmentation

Respondents who say "Just the right amount"



Vulnerable Customer Segmentation

Respondents who say "Just the right amount"



[illegible]

Representative Workbook

Survey Design & Methodology

Small Business



78



INNOVATIVE was engaged by Hydro Ottawa to gather input on preferences on program timing and balancing outcomes. **Pages 78 to 136** show the actual pages of the workbook that was sent and completed by customers. The only additions are the actual results.

Field Dates & Workbook Delivery

The **Small Business Online Workbook** was sent to all Hydro Ottawa small business customers who have provided the utility with an email address. Customers had an opportunity to complete the workbook between **August 20th and September 26th, 2019**.

Each customer received a unique URL that could be linked back to their annual consumption, region and rate class.

In total, the small business workbook was sent to **9,285** customers by-way-of e-blast from INNOVATIVE.

Small Business Online Workbook Completes

A total of **307** (unweighted) Hydro Ottawa small business customers completed the online workbook through a unique URL.

Sample Weighting

The small business online workbook sample has been weighted proportionately by region and consumption quartiles in order to be representative of the broader Hydro Ottawa service territory.

The table below summarizes the weighted sample breakdown by rate zone and quartile. For unweighted n-sizes, please consult page 11 of this report.

Weighted Sample	Consumption Quartiles				Total	Distribution
	Low	Medium-Low	Medium-High	High		
Gloucester	21	21	21	21	86	28%
Goulbourn/Casselman	5	5	5	5	20	6%
Kanata	9	9	9	9	34	11%
Nepean	20	20	20	20	81	26%
Ottawa	21	21	21	21	86	28%
Total	77	77	77	77	307	100%

Note: Graphs and tables may not always total 100% due to rounding values rather than any error in data. Sums are added before rounding numbers. Caution interpreting results with small n-sizes.

Representative Workbook

Firmographic Breakdown

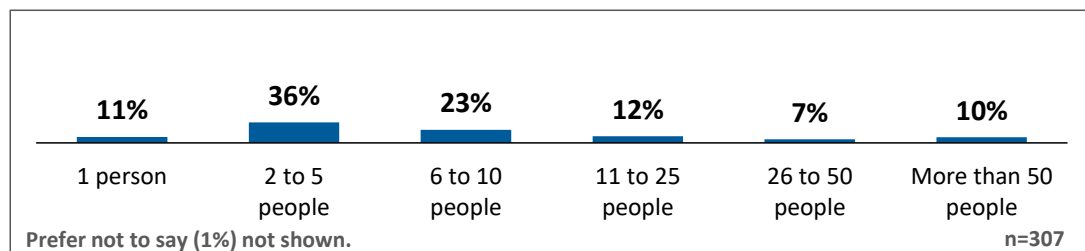
Small Business



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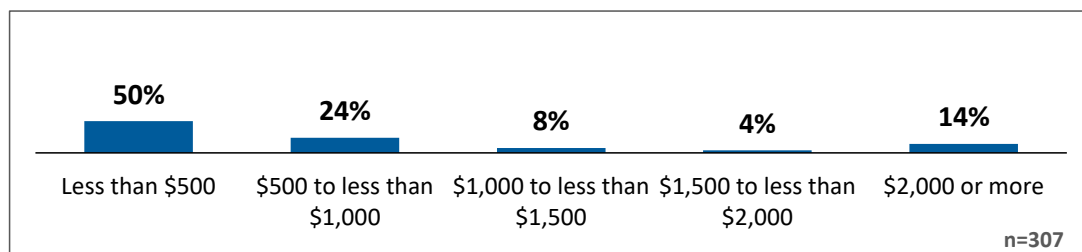
Q

Company Size



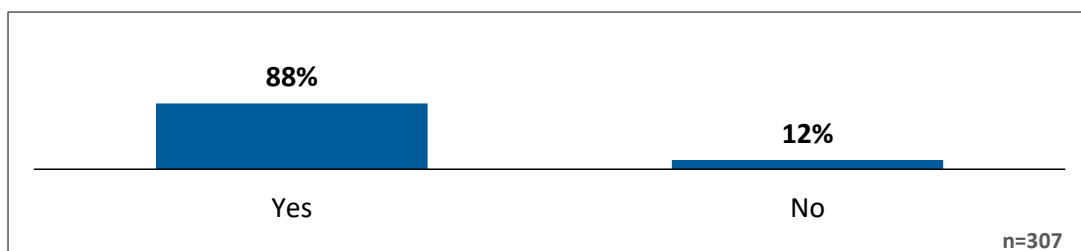
Q

Estimated Monthly Spend on Electricity



Q

As part of your job, do you make decisions or influence decisions about electricity management?



Representative Workbook

Background Information

Small Business



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Hydro Ottawa Limited (Hydro Ottawa) is looking for your input on choices that will help shape the service you receive and the price you pay.



Hydro Ottawa is developing its business plan for 2021 to 2025. This plan will determine the level of spending and investments Hydro Ottawa makes in equipment and infrastructure and the services it provides, as well as the rates you pay.



Hydro Ottawa is accountable to the provincial regulator, the **Ontario Energy Board (OEB)**, both in terms of sharing what customers say and demonstrating how they considered those views when undertaking the planning process.



You don't need to be an electricity expert to participate in this consultation. This workbook is focused on basic choices and provides the background information you need to answer the questions.

Building on previous customer feedback, the goal of this consultation is to allow Hydro Ottawa to better understand the needs and preferences of customers like you, and help them align their plan with what you have shared.

While your view may not always align exactly with the available options, please select the one that is closest to your point of view.

Those who complete the questions that follow will be invited to enter a draw to win one of four (4) \$500 cash prizes.

Depending on how much feedback you wish to provide, this consultation should take approximately 30-45 minutes to complete. If you need to pause and return at a later time to finish your feedback, your completed answers will be saved

If you are reading this on a smaller mobile device, you may want to consider accessing the survey from a tablet, desktop or laptop instead so that it is easier for you to read.

Representative Workbook

Background Information

Small Business



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This consultation is about gathering your feedback on finding the right balance between the services you receive from Hydro Ottawa over the next five years and the price you pay.

Hydro Ottawa has important decisions to make about the pace and mix of expenditures it makes in equipment and infrastructure, the services it provides you as a customer, and the rates you pay.

Every five years, Hydro Ottawa submits a plan for its proposed rates and spending to the Ontario Energy Board for approval. They are now in the process of finalizing that plan.

- Earlier in 2019, Hydro Ottawa asked thousands of customers about their priorities and preferred outcomes for electricity distribution service.
- Using the feedback shared by customers, Hydro Ottawa built a plan that is intended to align with customer preferences. Want to learn more about how Hydro Ottawa plans? [Click here](#)
- Hydro Ottawa is now coming back to its customers with a series of expenditure options in order to finalize its draft plan for the next five years.

How will this customer consultation work?



Hydro Ottawa will ask for your feedback on a number of decisions it needs to make in order to finalize their plan. These decisions will impact both the services you receive, as well as the price you pay on the distribution portion of your electricity bill.



For each decision, Hydro Ottawa has identified the option that it feels balances customer feedback received to date to limit cost impacts, while prudently investing in the distribution system. These options have been included in the current plan, but may be influenced by your feedback.



Once you have finished sharing your thoughts on these decisions, you will have an opportunity to review your responses and the estimated total rate impact of those choices. You will be able to change your responses until you feel you have found the right mix of investments and estimated rate impact.

Representative Workbook

Background Information

Small Business



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How will your views impact Hydro Ottawa's plans and rates?

The Ontario Energy Board (OEB) sets electricity rates in Ontario.



Electricity distributors like Hydro Ottawa are funded by the distribution rates paid by its customers. Electricity distributors are required to file a rate application with the OEB to request a change in distribution rates based on its plans for capital and operating costs.

As a customer, how are my interests protected?

The OEB requires all electricity distributors in Ontario, like Hydro Ottawa, to consider customer needs and preferences as they develop their business plan and distribution system plan.

The OEB then reviews Hydro Ottawa's plan and proposed rates in an open and transparent public process known as a rate hearing. Any individual or group may participate during Hydro Ottawa's application to ask questions or seek more information about Hydro Ottawa's plan and application.

Hydro Ottawa will be held accountable for the way you were consulted, the information shared with you and the ways in which the plan considers what you say.

At the end of the process, the OEB will weigh the evidence and decide on the rates Hydro Ottawa can charge its customers.

Representative Workbook

Small Business

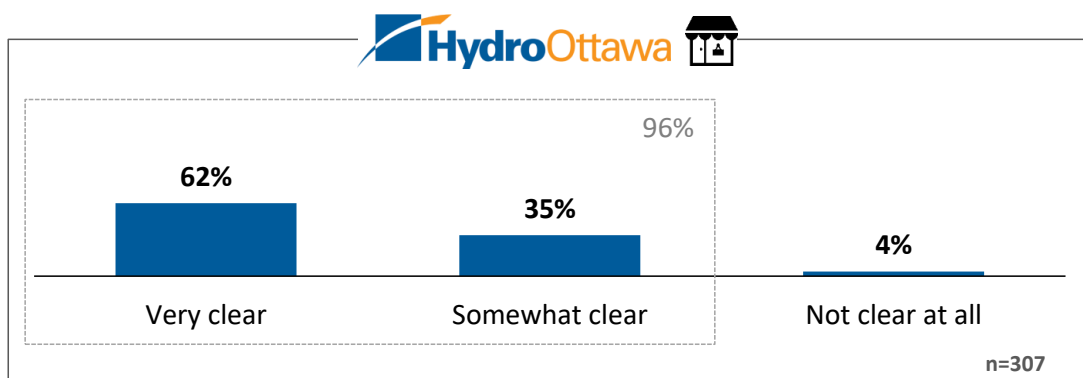


83

Purpose of Hydro Ottawa's customer consultation

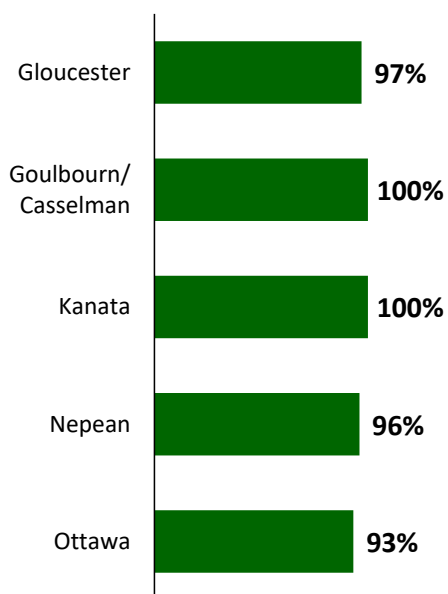
Q

Do you feel that the purpose of Hydro Ottawa's customer consultation is clear?



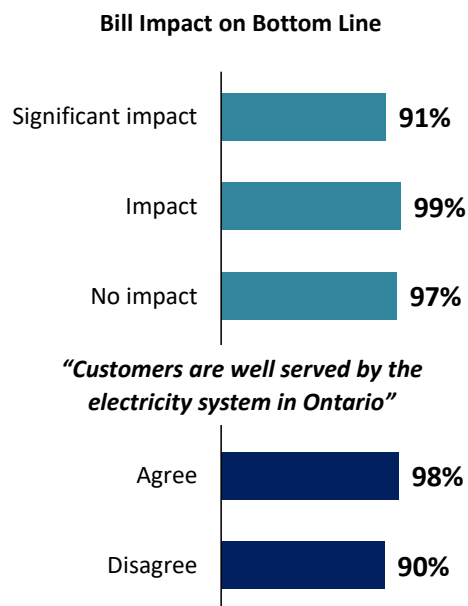
Regional Segmentation

Respondents who say "Clear"



Environmental Control Segmentation

Respondents who say "Clear"



Representative Workbook

Background Information

Small Business



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Understanding Ontario's electricity system and Hydro Ottawa's role

Ontario's electricity system is owned and operated by public, private and municipal corporations across the province. It is made up of three key components: **generation**, **transmission** and **distribution**.

Generation

Where electricity comes from

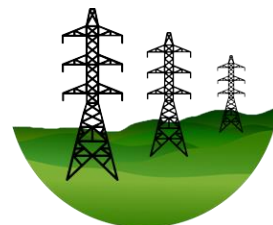
Ontario's electricity is generated using a mix of nuclear, gas-fired, and water power (hydro), as well as biomass and renewable sources such as wind and solar technology. In Ontario, a number of companies own these generating stations but approximately half of the electricity is generated by Ontario Power Generation. The Independent Electricity System Operator (IESO) balances the supply of, and demand for, electricity on a second-by-second basis and directs its flow across the high-voltage transmission lines.



Transmission

How electricity travels across Ontario

Once generated, electricity must be transported to electrical substations across the province. Due to the large amount of power and long distances, transmission normally takes place at high voltages with the lines suspended on large, steel towers. The province has more than 30,000 kilometres of 'electricity highway', most of which is owned and operated by Hydro One.



Local Distribution

How electricity is delivered to the end-consumer



Hydro Ottawa is responsible for the last step of the journey: distributing electricity to customers. Its local distribution system is connected to the transmission grid through its distribution stations and transformers. This allows the voltage to be decreased so it can be distributed and safely used in homes and organizations across Hydro Ottawa's service territory.

Hydro Ottawa's distribution system is complex. It consists of approximately 50,000 poles, 2,700 km of overhead power lines, 3,000 km of underground cable, and 45,000 transformers.

Representative Workbook

Familiarity with Ontario's electricity system

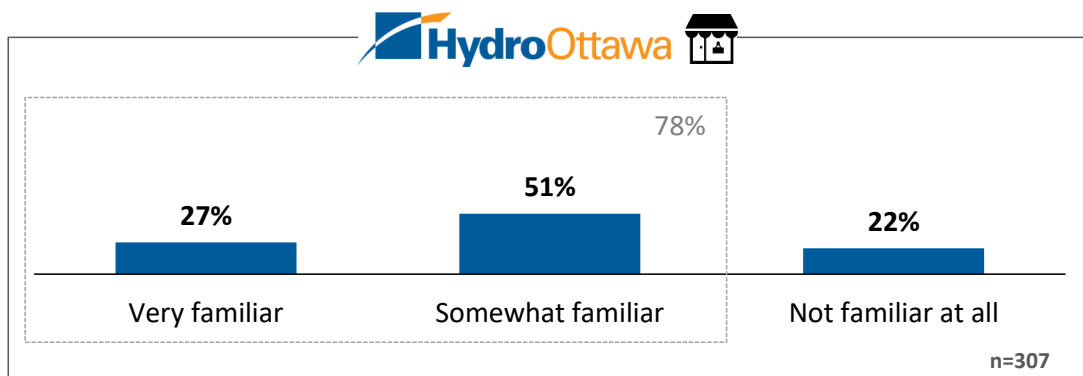
Small Business



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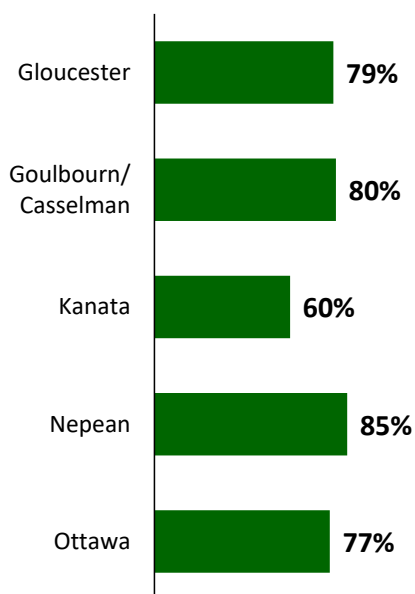
Q

Before this consultation, how familiar were you with various parts of the electricity system, how they work together, and for which services Hydro Ottawa is responsible?



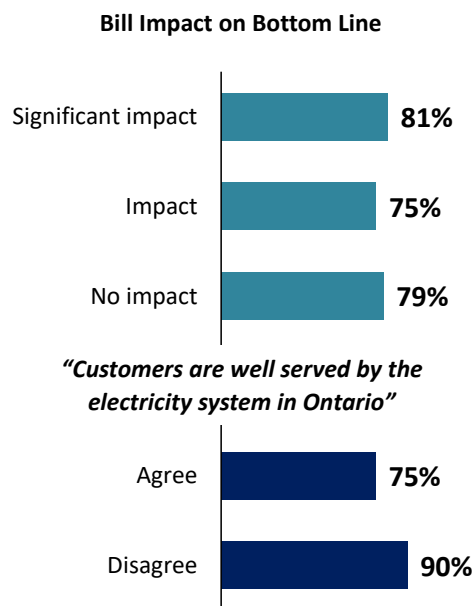
Regional Segmentation

Respondents who say "Familiar"



Environmental Control Segmentation

Respondents who say "Familiar"



Representative Workbook

Environmental Controls

Small Business

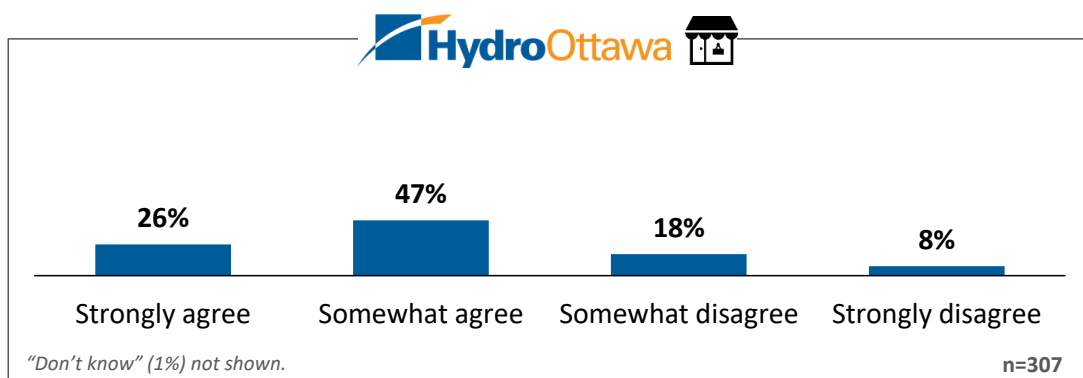


86

Thinking generally about the electricity system in Ontario, including generation, transmission and local distribution, do you agree or disagree with the following statements?

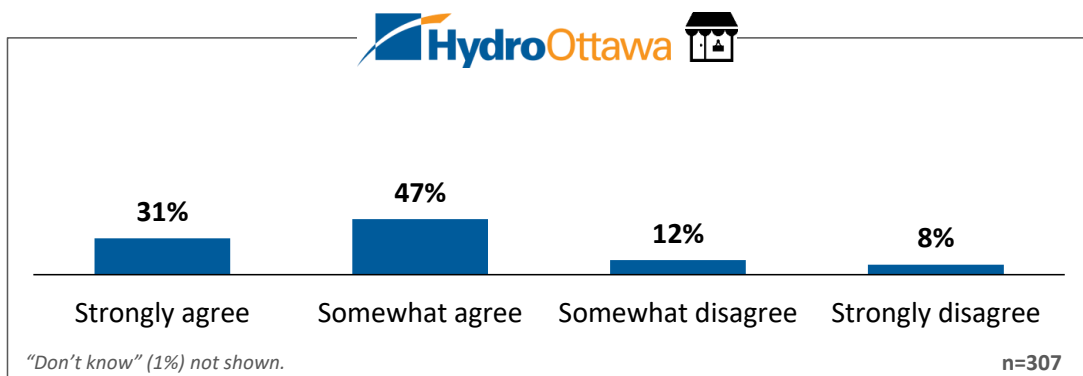
Q

The cost of my electricity bill has a major impact on my finances and requires I do without some other important priorities.



Q

Customers are well served by the electricity system in Ontario.



Representative Workbook

Small Business



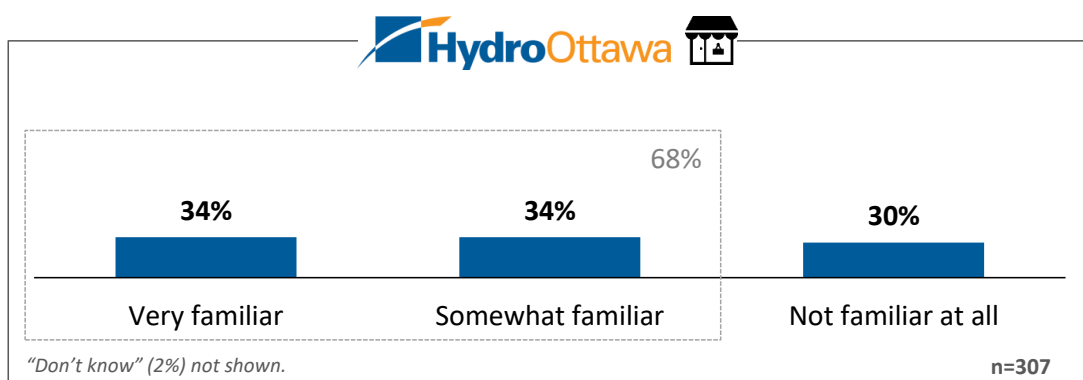
87

Familiarity with how Hydro Ottawa receives funding

Hydro Ottawa is entirely funded through the rates its customers pay and does not receive taxpayer money for its operations or investments.

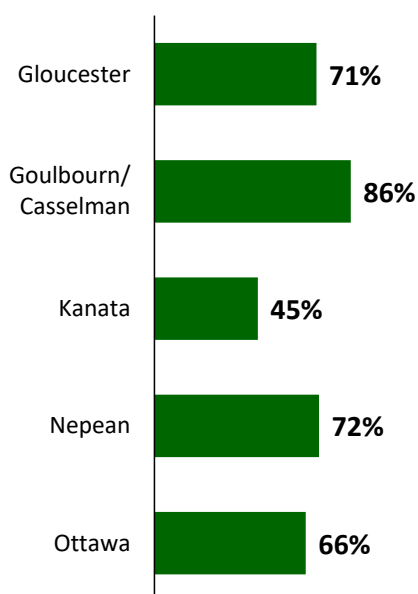
Q

Before this consultation, were you aware of how Hydro Ottawa received its funding?



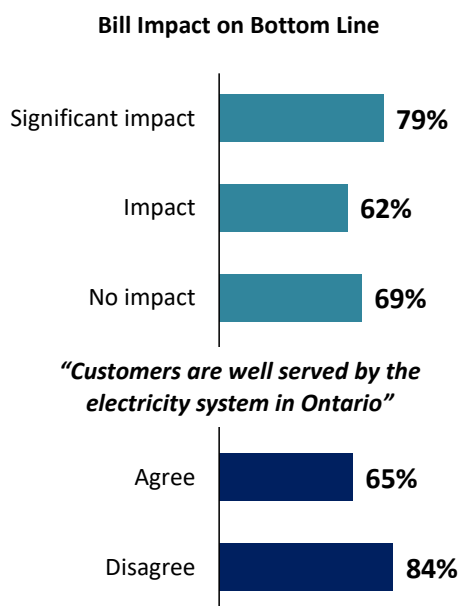
Regional Segmentation

Respondents who say "Familiar"



Environmental Control Segmentation

Respondents who say "Familiar"



Representative Workbook

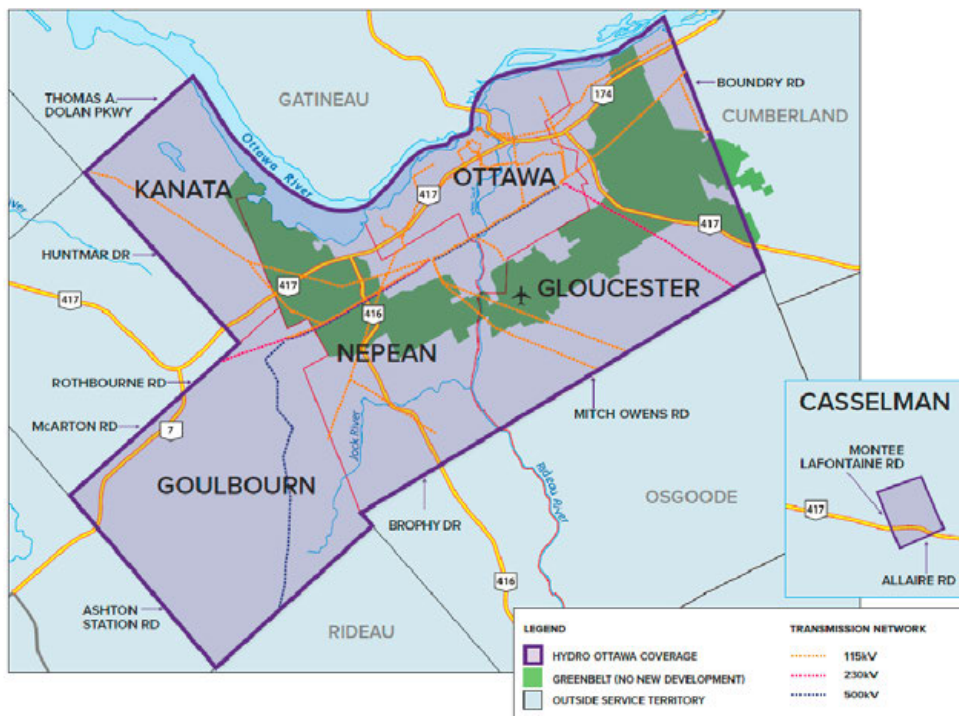
Background Information

Small Business



Hydro Ottawa fast facts

- Private business corporation 100% owned by its shareholder, the City of Ottawa
- Third largest municipally-owned electricity distributor in Ontario
- Serves approximately 335,000 homes and businesses (more than one million consumers)
- Service territory of 1,116 square kilometers that includes most of the City of Ottawa and the Village of Casselman
- Over 600 employees
- Does not receive taxpayer money to fund its operations or its investments in the distribution system
- Entirely funded through the rates its customers pay



Representative Workbook

Overall Satisfaction with Hydro Ottawa

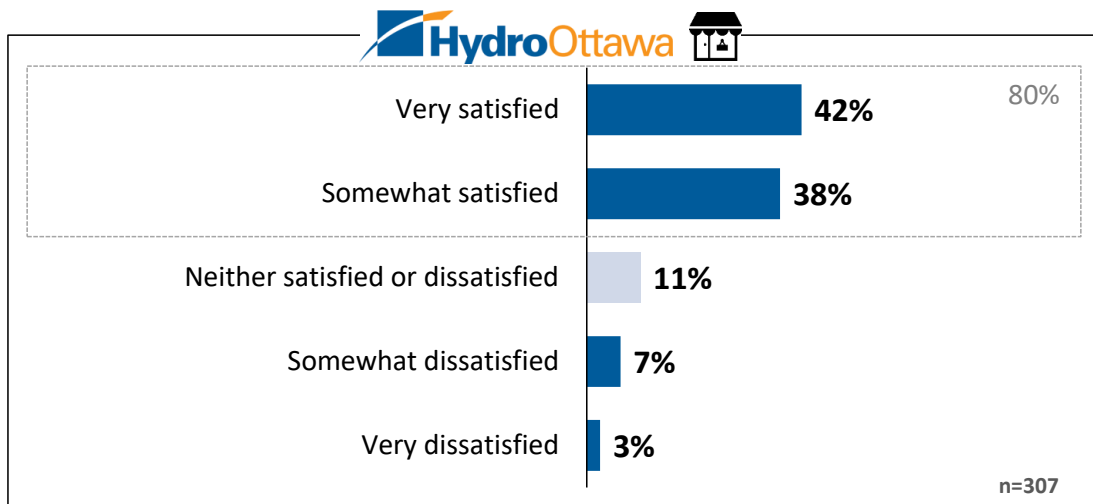
Small Business



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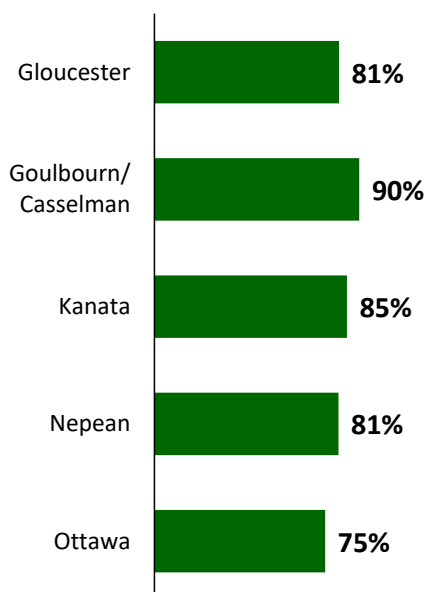
Q

Thinking specifically about the services provided to you and your community by Hydro Ottawa, how satisfied or dissatisfied are you with the services that you receive?



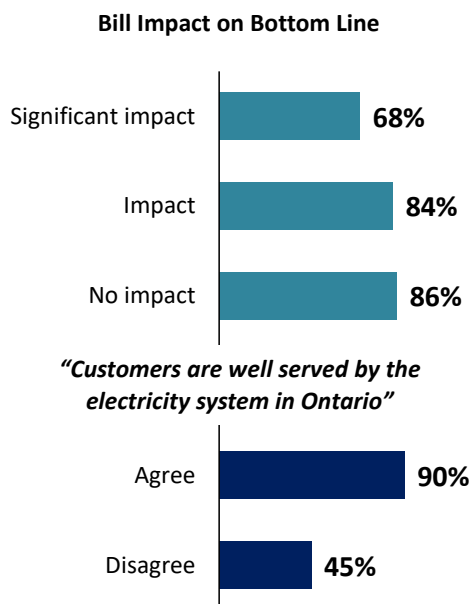
Regional Segmentation

Respondents who say "Satisfied"



Environmental Control Segmentation

Respondents who say "Satisfied"



Representative Workbook

How can Hydro Ottawa Improve services?

Small Business



90

Q

Is there anything in particular that Hydro Ottawa can do to improve its services to you?

Additional Comments (n=128) 58% of respondents did not provide additional feedback	n-size
Reduce rates	19
Reduce number of unplanned outages	10
Nothing; happy with service	8
Bill for usage; eliminate/reduce delivery charge/fixed service fees	8
Move lines underground	7
Do not increase rates/keep rates affordable/minimize increases	6
Improve reliability and power quality	6
Provide (more) incentives and rebates/rewards for energy saving	5
Move to green energy/renewables/encourage self generation	4
Better access to usage data online/reinstate usage emails/PeakSaver	3
Improve customer service/better access to CSR for complaints/outage reporting/online portal	3
Find internal efficiencies/lower operating costs/lower executive salaries	3
Improve billing (e.g. timing, payment methods, notices, etc)	2
Improve reliability during storms; harden system against weather	2
Maintain/upgrade infrastructure/expand service	2
Improve restoration times	1
Improve clarity of bills; explain charges and calculations	1
Against privatization/payment of dividends to city/profits should go to consumer savings	1
Prioritize long-term planning/management (eg. EV adoption, EV charging stations, urban growth, emerging tech, etc.)	1
More education on conservation/energy efficiency/peak time rates	1
Better accountability/transparency/info on sources of energy/general communications	1
Better tree maintenance	1
Other	12
None	20

Representative Workbook

Background Information

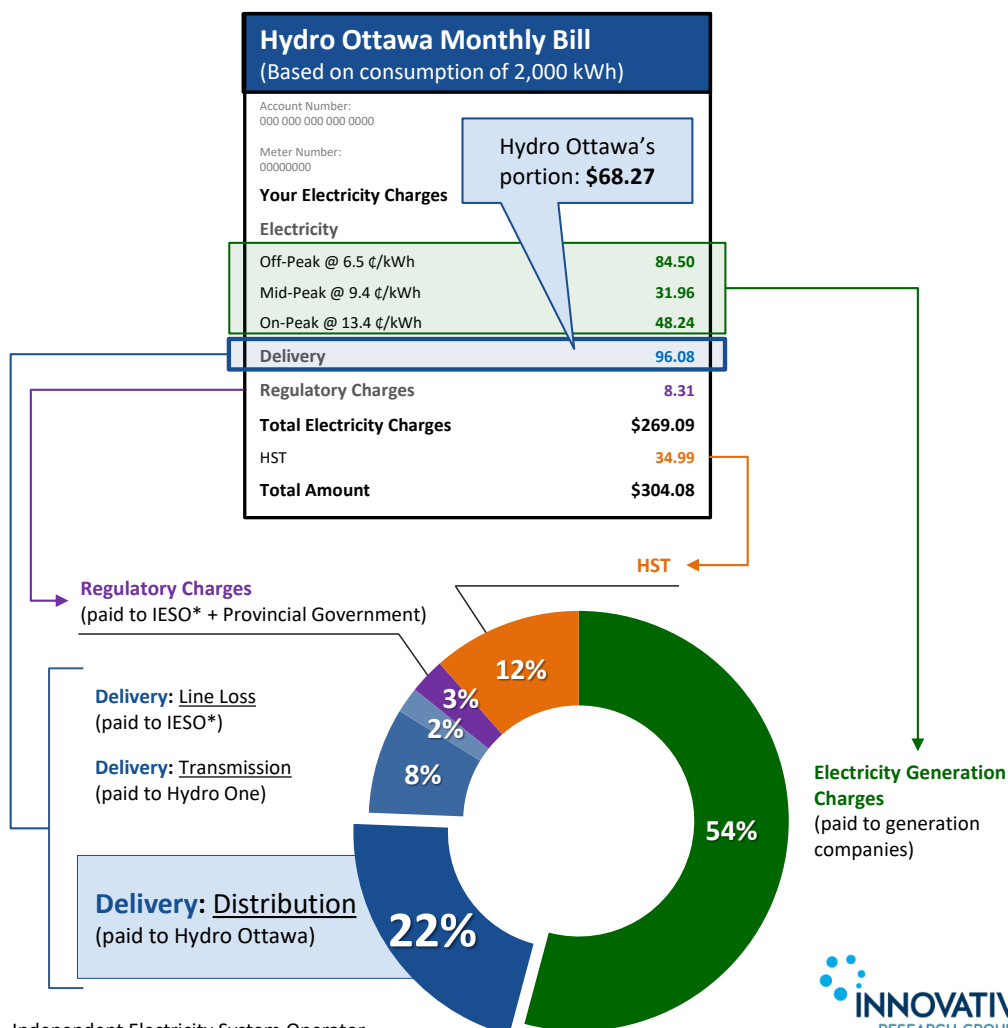
Small Business



How much of your bill goes to Hydro Ottawa?

Every item and charge on your bill is mandated by the provincial government or regulated by the Ontario Energy Board (OEB), the provincial energy regulator.

- While Hydro Ottawa is responsible for collecting payment for the entire electricity bill, it retains only a portion of the delivery charge.
- Hydro Ottawa's portion makes up about 21% of a typical small business customer's bill.
- The remainder of your bill is collected for the other companies responsible for generating and transmitting electricity, and to regulatory agencies and the federal and provincial governments.



Representative Workbook

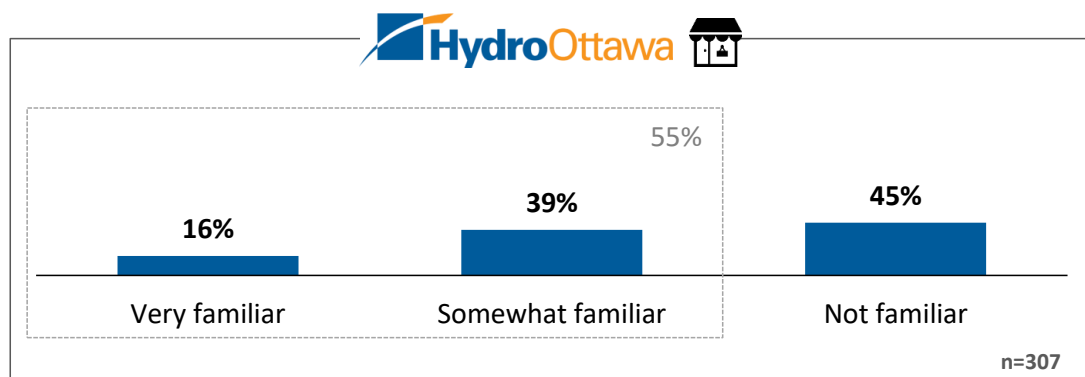
Small Business



Familiarity with Portion of Bill Remitted to Hydro Ottawa

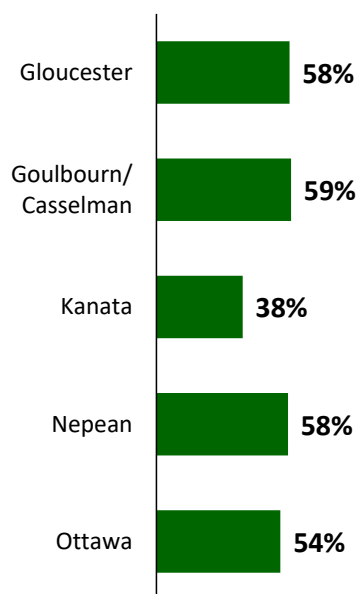
Q

Before this survey, how familiar were you with the amount of your electricity bill that went to Hydro Ottawa?



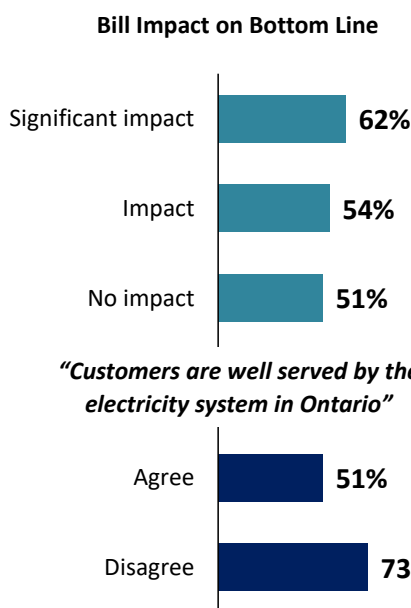
Regional Segmentation

Respondents who say "Familiar"



Environmental Control Segmentation

Respondents who say "Familiar"



Representative Workbook

Background Information

Small Business



93

How did customer feedback shape Hydro Ottawa's preliminary plan?

Hydro Ottawa engages with its customers both in day-to-day interactions and in a variety of customer engagement surveys. **However, this consultation is unique, as it focuses on Hydro Ottawa's business plan that will cover the five year period from 2021 to 2025.**

Preliminary customer engagement found that:

- The clear majority of residential and small business customers are satisfied with the current service they receive;
- Despite being the top priorities, customers don't just expect Hydro Ottawa to focus exclusively on price and reliability;
- Among competing priorities, price, reliability, and investing in new technology are the top three priorities for both residential and small business customers.

Understanding that many customers are satisfied with the level of service they receive from Hydro Ottawa, including with the reliability of the distribution system, and value minimizing price increases above all else, Hydro Ottawa has developed a business plan that emphasizes four core principles:

1. **Minimize rate increases;**
2. **Maintain reliability and service quality;**
3. **Address key pressures to the system, including;**
 - Aging infrastructure;
 - An expanding customer base and continued population growth, and;
 - The effects of severe weather events.
4. **Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs.**

Representative Workbook

Principles of Hydro Ottawa's Plan

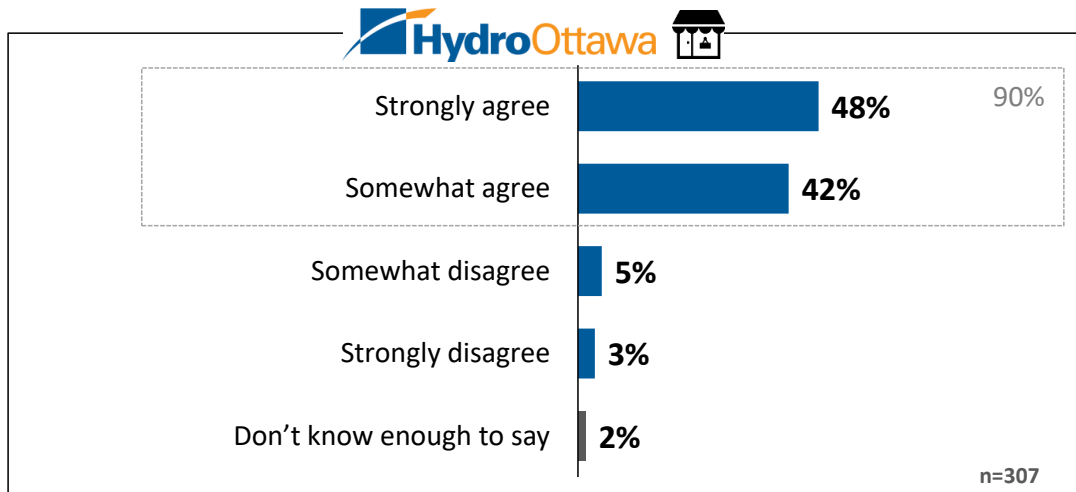
Small Business



94

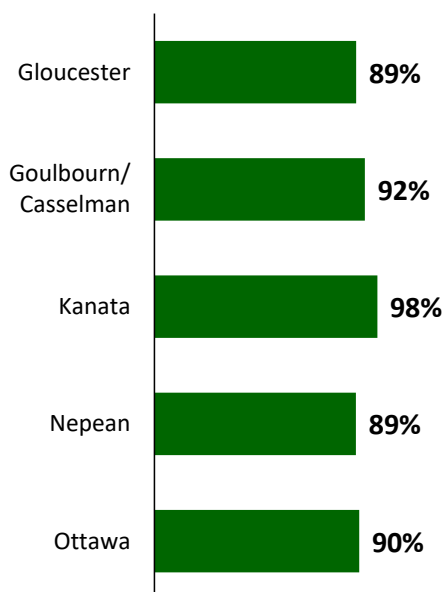
Q

Do you agree or disagree with the principles outlined above?



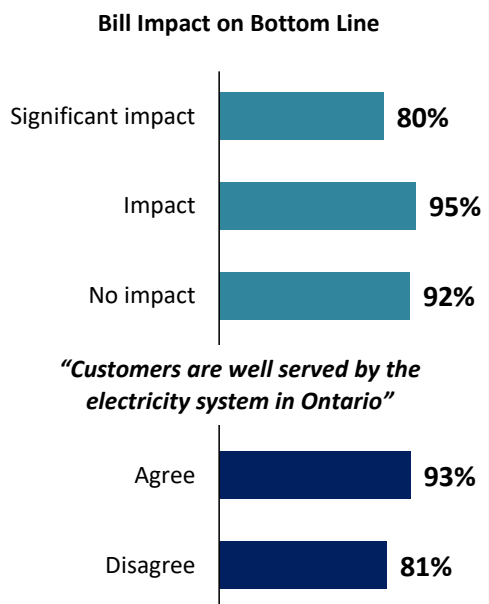
Regional Segmentation

Respondents who say "Agree"



Environmental Control Segmentation

Respondents who say "Agree"



Representative Workbook

Changes to Principles of Hydro Ottawa's Plan

Small Business



95

Q

Is there anything that you would change about the four core principles outlined above? If yes, what would you change?

Additional Comments (n=96) 69% of respondents did not provide additional feedback	n-size
Prioritize transparency, accountability, fiscal responsibility	10
'Freeze'/'reduce' rate increase, as opposed to 'minimize'	6
Environment should be a (top) priority	6
Investing in emerging tech is important/escalate priority	6
Find internal efficiencies	5
Reducing rates/minimizing increases should be top priority	5
Transition to green/renewables	4
Investing in emerging tech is not a priority	4
All principles are important	4
Addressing key pressures should be top priority	4
Eliminate/reduce/clarify delivery charge; bill for usage	4
Prudence is key; mistrust 'emerging' tech	3
Increasing rates is necessary for other three principles	3
Educate, incentivize, encourage conservation	2
Prioritize hardening system against worsening weather/climate change	2
'Improve' as opposed to 'maintain' reliability and service quality	2
Improve customer service and communication	1
Maintaining reliability and service quality should be top priority	1
Critical of question/survey (biased, leading, skeptical results will have impact, etc.)	1
Adjust (exec) salaries	1
Encourage EV adoption and prepare the grid	1
Move lines underground	1
Other	4
None	16
Don't know	1

Representative Workbook

Background Information

Small Business



96

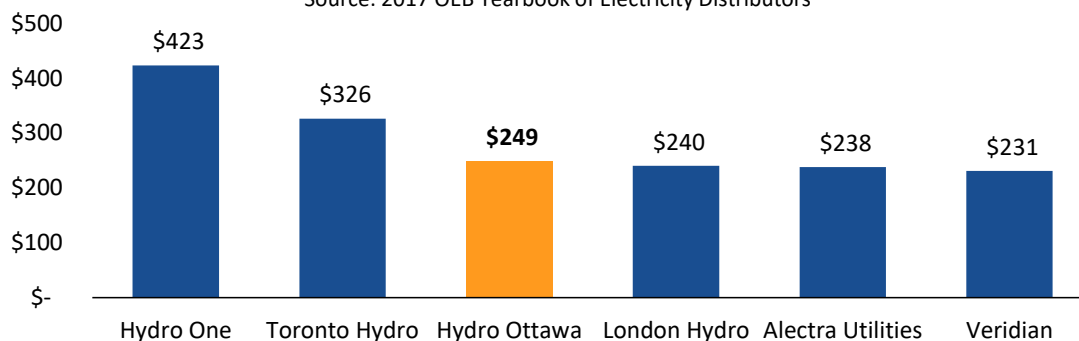
Finding efficiencies

Hydro Ottawa is continuing its focus on productivity and continuous improvement initiatives; which offset continuing costs and improves organizational effectiveness.

Hydro Ottawa's total operating costs are reported every year to the OEB and benchmarked against other distribution companies in Ontario. In the last year of publicly available data collected by the OEB, Hydro Ottawa's total operating cost per customer was **\$249**. This was, and historically has been, lower than the average Ontario distribution company cost of **\$304** per customer.

Six Largest Provincial Distributors: Operating Cost per Customer (\$)

Source: 2017 OEB Yearbook of Electricity Distributors



The choices Hydro Ottawa makes in its operating budget are primarily driven by technical analysis and expert assessments of best practices.

As promised earlier, this workbook does not ask questions that expect you to be an electricity expert.

The OEB runs an open and transparent review process where experts from the OEB and intervenor groups review and have the opportunity to question Hydro Ottawa's analyses and assessments. Anyone, including you are welcome to participate in the OEB process.

Representative Workbook

Approach to Bringing Customer Views into Plans

Small Business

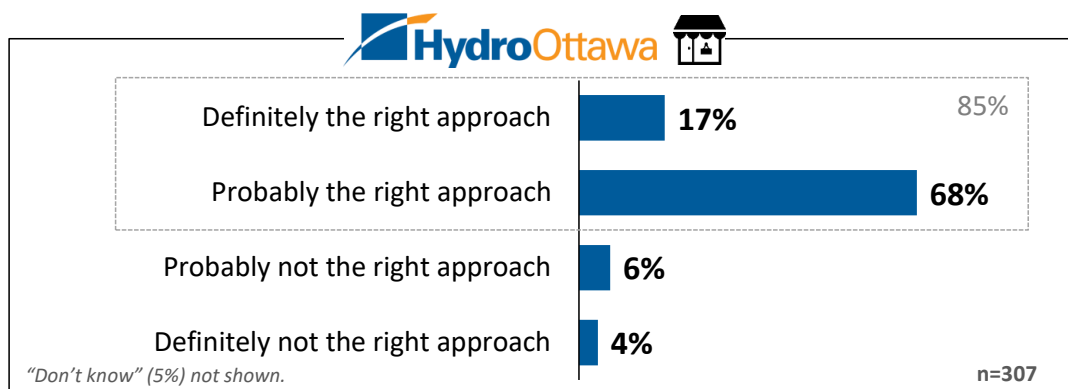


97

This workbook leaves detailed discussion of Hydro Ottawa's operating budget to experts from the OEB and intervenors in the formal OEB review; the workbook focuses on collecting your views on competing trade-offs in investments.

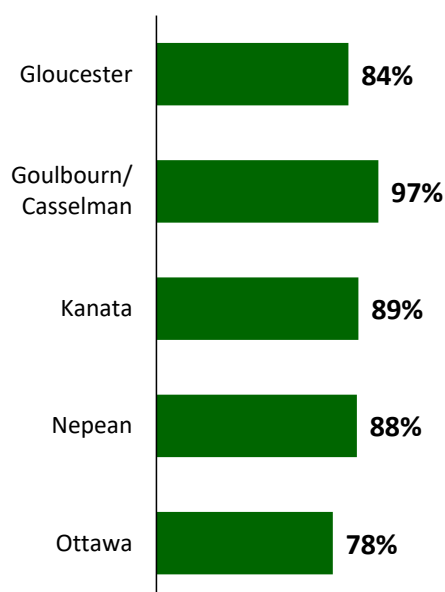
Q

Does this customer engagement process seem like the right approach to bring customer needs and preferences into Hydro Ottawa's plan?



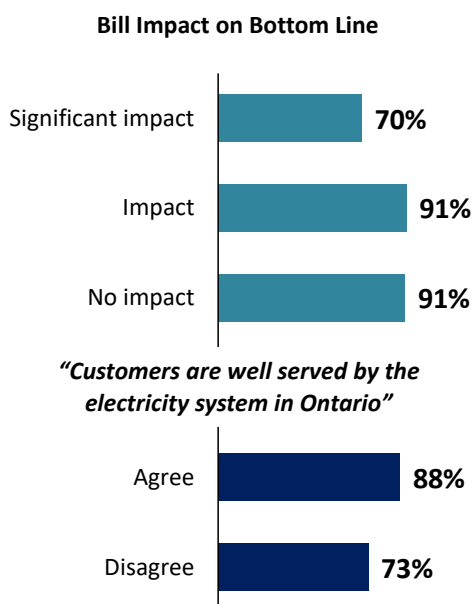
Regional Segmentation

Respondents who say "Right approach"



Environmental Control Segmentation

Respondents who say "Right approach"



Representative Workbook

Small Business



98

Changes to Approach to Bringing Customer Views into Plans

Q

Are there things that you would change about how Hydro Ottawa brings customer needs and preferences into Hydro Ottawa's plan? If so, what would you change?

Additional Comments (n=59) 81% of respondents did not provide additional feedback	n-size
Reduce cost/cost too high/minimize increase	6
Ensure accountability/transparency	5
Increase should not exceed inflation/cost of living	4
Ensure fiscal responsibility - eliminate waste, plan long-term, find efficiencies, etc.	3
Ontario rates are highest; model off/compare to systems outside Ontario	3
Issue with rest of system (transmission, generation, policy, etc.)	3
Appreciated survey/opportunity to give feedback; informative	3
Happy with service; keep up good work	3
Continue customer engagement; ensure accessibility and representation	2
Follow up on survey; share results; prove customers were listened to	2
Reduce/eliminate delivery charge	2
Demo-based rates/support - income brackets, seniors, big users, conservers, etc.	2
Customer education is important	2
Critical of survey - too long/complex	2
Prioritize environment - alternatives, renewables, sustainability, carbon neutral operations, conservation etc.	2
Other	1
Nothing	13
Don't Know	3

Representative Workbook

Non-discretionary expenditures

Small Business

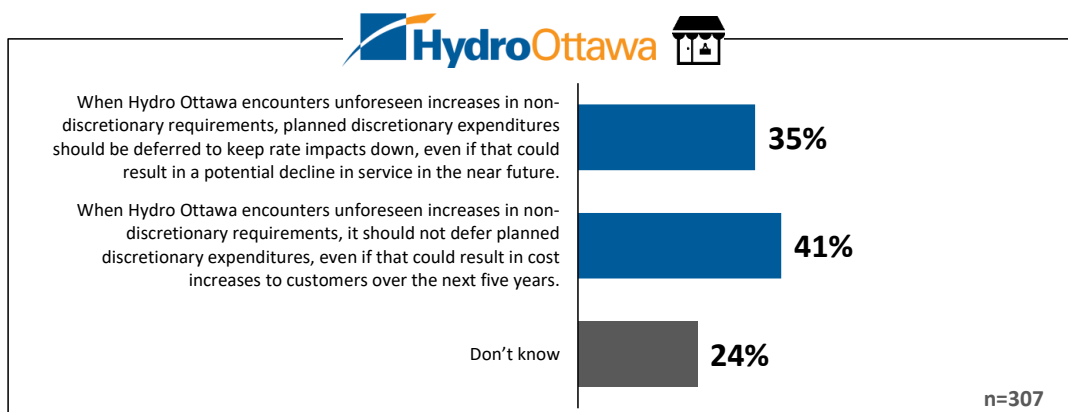


99

As federal, provincial and municipal demands change, Hydro Ottawa may need to implement unplanned, non-discretionary expenditures. It has a decision to make about how to accommodate unexpected non-discretionary spending which could impact other planned priorities.

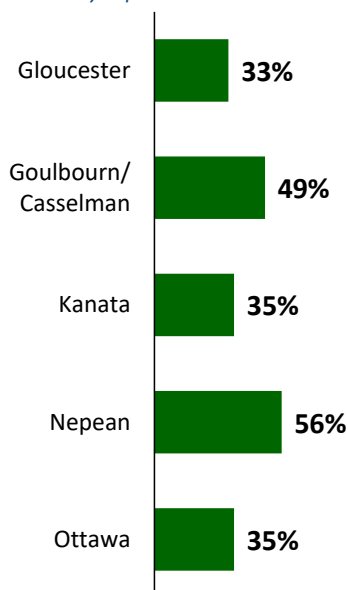
Q

Which of the following statements best represents your point of view regarding Hydro Ottawa's approach to discretionary and non-discretionary spending?



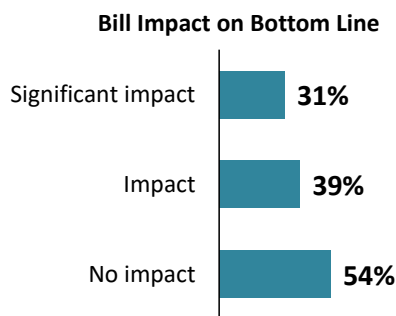
Regional Segmentation

Respondents who say "Do not defer planned discretionary expenditures"

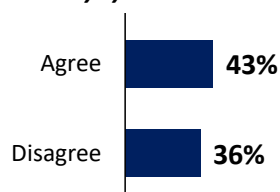


Environmental Control Segmentation

Respondents who say "Do not defer planned discretionary expenditures"



"Customers are well served by the electricity system in Ontario"



Representative Workbook

Small Business



100

Additional Feedback: Non-discretionary expenditures

Q

Additional Feedback (Optional)

Additional Comments (n=62) 80% of respondents did not provide additional feedback	n-size
There should already be a contingency plan/budget; rates shouldn't be affected	10
Alternative financing (eg. developers, new connects, gov't, cause of expenditure, etc.)	7
Investing now leads to reduced future costs	6
Service/reliability is more important than cost (within reason)	6
Depends on the size of the increase	4
Transparent communication/consultation in the event of increase/unforeseen expenditure	4
Ensure impact of decisions are fully understood/justified (eg. cost vs benefit, short vs long-term, etc.)	4
Plan better; there should be nothing 'unforeseen'	3
Balance of options 1 and 2	2
More context required to answer	2
Reduce salaries/employee bonuses/pay from profits	1
Keeping rates low is priority #1/minimize increases	1
Skeptical/critical (of question/options/survey)	1
Prioritize environment - do not defer green investment	1
Other	10
Don't know	1

Representative Workbook

Small Business



101

Pacing investments in the overhead distribution system

Hydro Ottawa is considering three options for continued investment in the overhead distribution system:

- 1. Accelerated Approach:** Increased replacement of aging overhead transformers, switches, and poles to catch up and get ahead of growing number of poles at, or beyond, their end-of-life.
- 2. Included in Draft Plan:** Defer catch up in aging infrastructure to manage rate impact. Modest decrease of approximately \$1M per year in renewal of overhead infrastructure from 2016 to 2020 levels. Move to more targeted renewals of specific poor condition assets and less full renewals of broad areas.
- 3. Reduced Approach:** Deferral of proactive switch renewal, and pole replacement. Move to replacement of only critical assets.

Option	Outcome
Accelerated Approach <u>Additional</u> \$0.13 per bill each year (\$0.65 more per bill by 2025)	<ul style="list-style-type: none"> Increasing the replacement levels to address higher-risk assets, such as poles, which are at or near end-of-life. Increasing investments in switches to enhance operational efficiency. Reducing requirement for emergency renewals.
Included in Draft Plan <i>Within 3.5% annual increase</i>	<ul style="list-style-type: none"> Moderate slowing of asset replacement. Increased future costs to catch up on expected end-of-life infrastructure. Some increase in emergency renewal replacements, significant increase not expected for next five years. Minor increases in customer impact as targeted and emergency renewals will result in more piecemeal replacements.
Reduced Approach <u>Decrease</u> of \$0.08 per bill each year (\$0.40 less per bill by 2025)	<ul style="list-style-type: none"> Need for catch up in future years, requiring significant levels of investment. Degradation in system reliability due to lower switch renewal. Switch failures typically occur on operation, resulting in longer restoration times. Moderate increases in targeted and emergency renewal, possibly resulting in multiple service visits in certain areas.

Representative Workbook

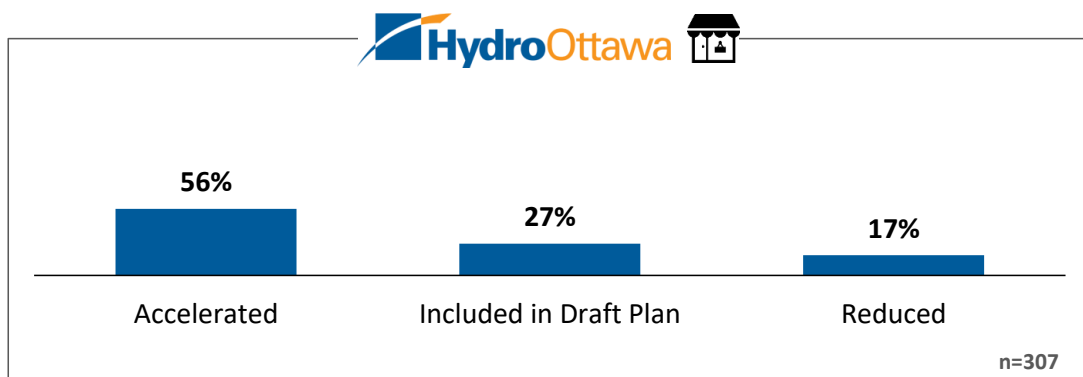
Small Business



Pacing investments in the overhead distribution system

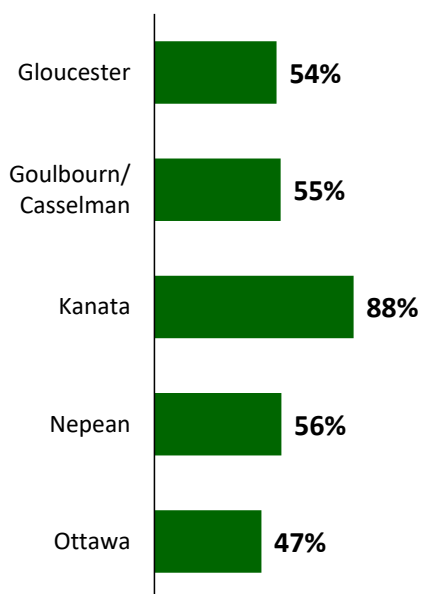
Q

Which of the following options do you prefer?



Regional Segmentation

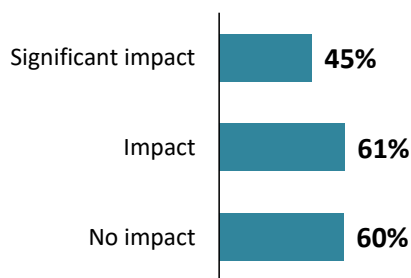
Respondents who say "Accelerated"



Environmental Control Segmentation

Respondents who say "Accelerated"

Bill Impact on Bottom Line



"Customers are well served by the electricity system in Ontario"



Representative Workbook

Additional Feedback: Overhead

Small Business



103

Q

Additional Feedback (Optional)

Additional Comments (n=39) 87% of respondents did not provide additional feedback	n-size
Move lines underground	9
Critical of question/options presented	6
Maintaining/upgrading system is important	5
Need more information/have outstanding questions/defer to the experts	4
Investing now leads to reduced future cost; proactive > reactive	3
Invest in pole/cable tech	2
Harden system against climate change/extreme weather	2
Prioritize finding efficiencies; minimize increase	1
Increase should not exceed inflation/cost of living	1
Other	3
None	1
Don't Know	1

Representative Workbook

Small Business



104

Pacing investments in the underground distribution system

Hydro Ottawa is considering four options when it comes to underground cable renewal:

- 1. Accelerated Approach:** Renewal of aging assets with increased spending directed to underground transformers and cables.
- 2. Enhanced Approach:** Renewal of aging assets with increased spending targeted for cable replacement.
- 3. Included in Draft Plan:** Balanced investment, defer catch up in replacement of aging infrastructure to manage rate impact. Continued and modest increases in proactive replacement of assets at higher risk of failure.
- 4. Reduced Approach:** Defer any increase in proactive asset replacement, moving to only critical repairs of the system.

Option	Outcome
Accelerated Approach Additional \$0.40 per bill each year (\$2.00 more per bill by 2025)	<ul style="list-style-type: none"> Increasing proactive replacement of aging infrastructure with a focus on transformer and cable replacement. Reduced asset risk and future investment to catch up. Accelerating asset renewal enabling rapid roll out of increased system capacity (EVs) and improved operations (faster restoration when outages occur). Reliability improvements reducing frequency and duration of outages. Reducing maintenance costs related to oil leaks.
Enhanced Approach Additional \$0.20 per bill each year (\$1.00 more per bill by 2025)	<ul style="list-style-type: none"> Replacing aging cables to reduce failure risk, with slowed investment in other underground infrastructure such as switches, and transformers. Manageable future investment will be required to catch-up. Increased rate of cable replacement will provide some improvements in asset failure and outage frequency.
Included in Draft Plan <i>Within 3.5% annual increase</i>	<ul style="list-style-type: none"> Moderate rate of asset replacement, which is still higher than the 2016-2020 program Manageable level of future investment required to catch-up. Maintenance of system reliability with minor impact in service reliability.
Reduced Approach Decrease of \$0.20 per bill each year (\$1.00 less per bill by 2025)	<ul style="list-style-type: none"> Need for catch up in future years, requiring significant levels of investment. Potential reduction on system reliability with increasing outages in specific areas due to cable failures.

Representative Workbook

Small Business

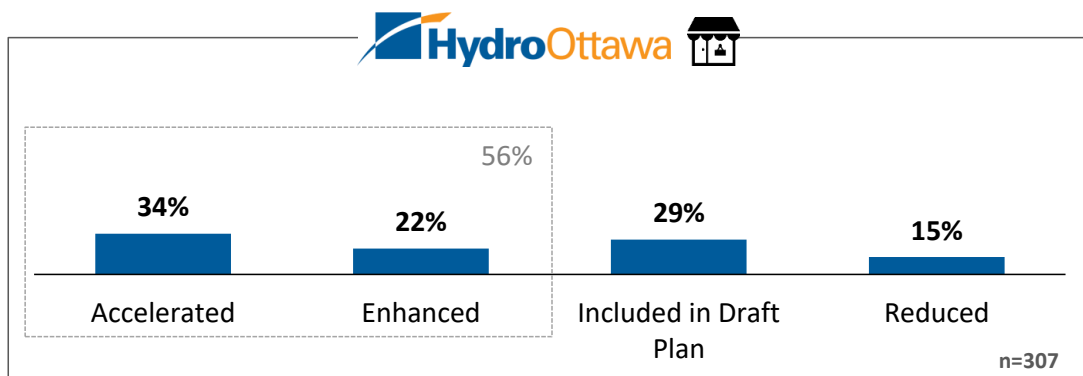


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Pacing investments in the underground distribution system

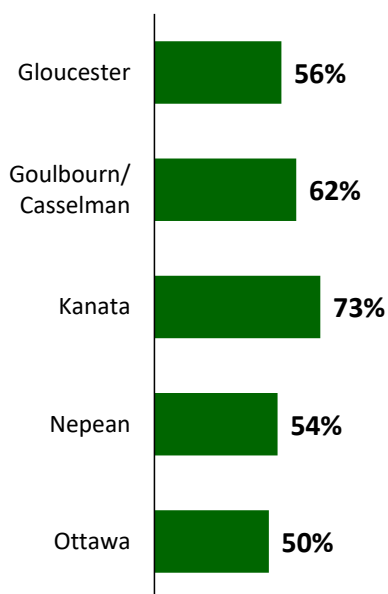
Q

Which of the following options do you prefer?



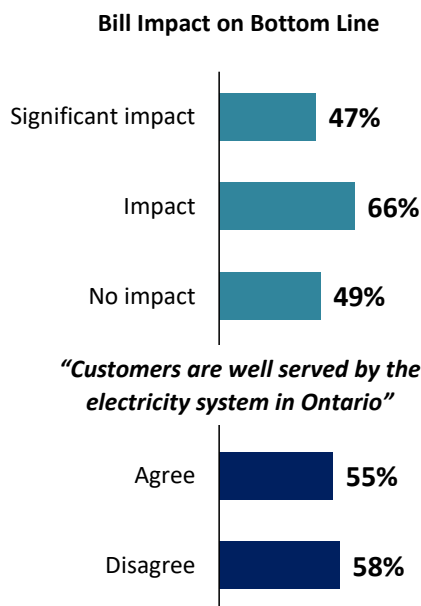
Regional Segmentation

Respondents who say "Accelerated/enhanced"



Environmental Control Segmentation

Respondents who say "Accelerated/enhanced"



Representative Workbook

Additional Feedback: Underground

Small Business



106

Q

Additional Feedback (Optional)

Additional Comments (n=25) 92% of respondents did not provide additional feedback	n-size
Critical of question (eg. Insufficient options, leading, biased, etc.)	3
Need more information/have outstanding questions	3
Prioritize finding efficiencies; minimize increase	2
Increase nominal/worth it	2
Reliability/safety is priority	2
Alternative financing (eg. developers, new builds, big businesses, government, etc.)	2
Demo-based rates/supports (income brackets, seniors, urban vs rural, usage, EV adopters, etc.)	1
Move lines underground	1
Maintenance/replacement planning should have been done/lack of foresight	1
Investing now leads/should lead to reduced future cost; proactive > reactive	1
Maintaining/upgrading the system is important	1
Too expensive/unnecessary/defer for now	1
Make do with less than 2.5%	1
Other	4
None	1

Representative Workbook

Small Business

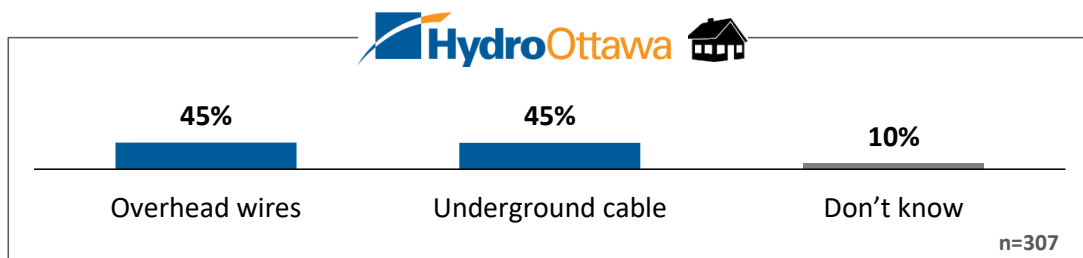


107

Overhead/Underground Investments by Service Type

Q

To the best of your knowledge, how does your organization receive electrical service?



Q

Pacing investments in the overhead distribution system

Investment Option	Total	Overhead	Underground
Accelerated Approach	56%	59%	54%
Included in Draft Plan	27%	25%	28%
Reduced Approach	17%	15%	19%

Q

Pacing investments in the underground distribution system

Investment Option	Total	Overhead	Underground
Accelerated Approach	34%	41%	29%
Enhanced Approach	22%	21%	22%
Included in Draft Plan	29%	22%	36%
Reduced Approach	15%	15%	13%

Representative Workbook

Background Information

Small Business



Reliability experience

In order to provide feedback on Hydro Ottawa's plans, it's important to understand how the distribution system has performed in the past, as well as what's expected in the future.

A core objective of Hydro Ottawa's 2021-2025 rate application is to maintain current levels of reliability, while making targeted improvements to those areas experiencing below average service.

- The five-year average number of outages (excluding major event days and loss of supply from Hydro One) has decreased slightly between 2014 and 2018, from 1.02 to 0.84 (total number of annual outages).
- The five year average duration of outages (excluding major event days and loss of supply from Hydro One) has decreased slightly between 2014 and 2018, from 1.17 to 1.14 (total annual hours).

What is most likely to cause an outage?

Although both the number and duration of outages have decreased compared to the previous five-year average, defective equipment remains the top cause of outages within Hydro Ottawa's control.

That said, in 2018, severe weather presented a unique set of challenges for Hydro Ottawa's distribution system. One section of this consultation will focus on the impacts of severe weather, and the options for preparing the distribution system for more frequent and extreme weather.

Causes of Unscheduled Power Outages (five-year average: 2014 to 2018)



10%

Animal Contact: outages caused by animals such as birds and squirrels coming in contact with overhead power lines or transformers.



27%

Equipment Failure: unscheduled power outages from equipment failure usually occur with distribution assets that are beyond or approaching the end of their expected useful lives.



24%

Weather Related Events: adverse weather such as heavy rain, lightening, ice, snow, wind, extreme temperatures, freezing rain and frost can disrupt the distribution system.



39%

Other: includes tree contact (10%), and human interference (11%) (such as construction workers accidentally cutting power lines or motor vehicle accidents involving contact with distribution assets). 9% of outages are unknown, but most likely caused by animal contact.

Note: statistics do not include loss of supply from Hydro One.

Representative Workbook

Reliability Experience

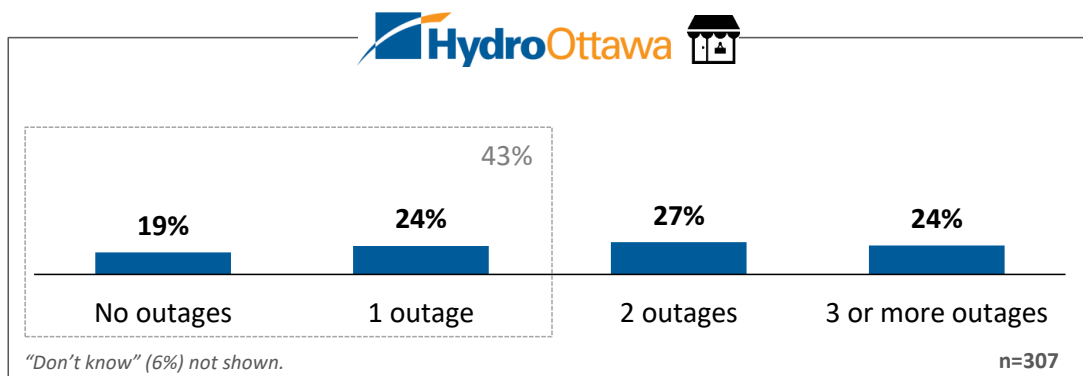
Small Business



109

Q

Have you experienced any power outages at your business in the past 12 months which lasted longer than one minute?



Number of Outages	Gloucester	Goulbourn/ Casselman	Kanata	Nepean	Ottawa
No outages	22%	5%	27%	8%	24%
1 outage	22%	18%	34%	22%	25%
2 outages	27%	24%	31%	29%	25%
3 or more outages	25%	38%	8%	39%	14%
One or fewer outages	45%	23%	61%	30%	50%

Representative Workbook

Reliability Investments

Small Business



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Hydro Ottawa is considering four options when it comes to reliability investments:

1. **Accelerated Approach:** Build power lines/new connections between substations to improve reliability. Enhance monitoring of substation and distribution equipment.
2. **Included in Draft Plan:** Only build critical connections between substations. Enhance monitoring of station and distribution equipment.
3. **Limited Approach:** Improve reliability for neighbourhoods experiencing the most frequent number of power outages. Enhance monitoring of substation and distribution equipment.
4. **Reduced Approach:** Only improve reliability for neighbourhoods experiencing the most frequent number of power outages.

Option	Outcome
Accelerated Approach <u>Additional</u> \$0.05 per bill each year (\$0.25 more per bill by 2025)	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Increase system resilience and performance through addition of connections on distribution network. Supports reduction in outage duration. Target investments to areas that have below average reliability.
Included in Draft Plan <i>Within 3.5% annual increase</i>	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Maintain system resilience and performance through addition of connections on distribution network. Maintains outage duration at current levels. Target investments to areas that have below average reliability.
Limited Approach <u>Decrease</u> of \$0.10 per bill each year (\$0.50 less per bill by 2025)	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Target investments to areas that have below average reliability.
Reduced Approach <u>Decrease</u> of \$0.15 per bill each year (\$0.75 less per bill by 2025)	<ul style="list-style-type: none"> Target investments to areas that have below average reliability. No investment to improve/enhance reliability.

Representative Workbook

Reliability Investments

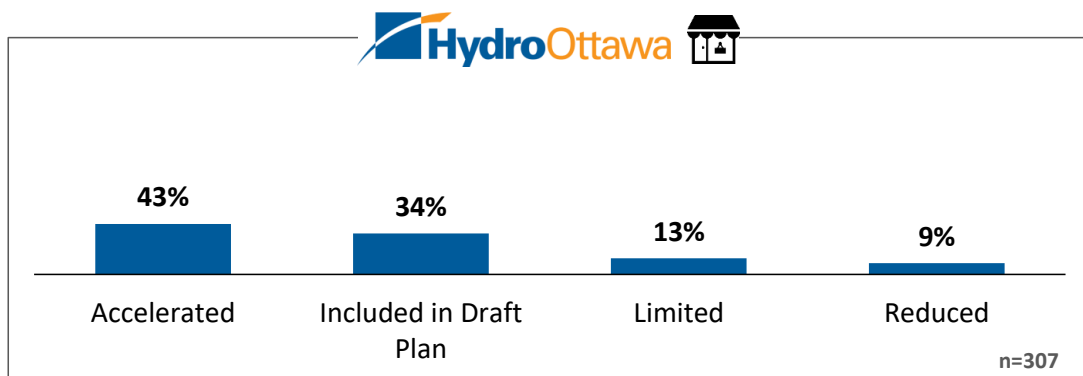
Small Business



111

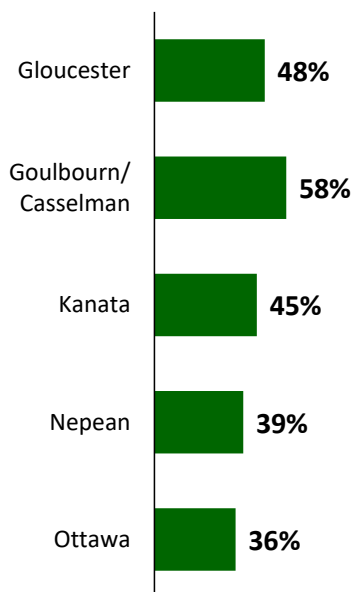
Q

Which of the following options do you prefer?



Regional Segmentation

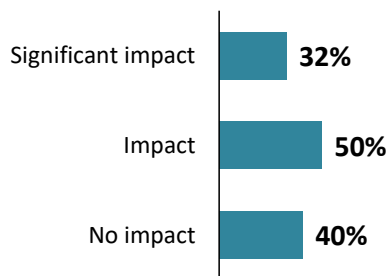
Respondents who say "Accelerated"



Environmental Control Segmentation

Respondents who say "Accelerated"

Bill Impact on Bottom Line



"Customers are well served by the electricity system in Ontario"



Representative Workbook

Additional Feedback: Reliability Investments

Small Business



112

Q

Additional Feedback (Optional)

Additional Comments (n=21) 93% of respondents did not provide additional feedback	n-size
Reliability/short outage duration is priority #1	4
Prioritize finding efficiencies; minimize increase	2
Current reliability is adequate	2
Alternative financing (eg. developers, new builds, big businesses, partnerships, etc.)	2
Investing now leads to reduced future cost; proactive > reactive	2
Critical of question/options presented/biased/leading question	1
Oppose any increase; cost too high already	1
Move lines underground	1
Prioritize hardening system against worsening weather	1
Other	2
None	4

Representative Workbook

Background Information

Small Business



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Preparing for potential increases in severe weather

Hydro Ottawa's distribution system is designed to withstand environmental stresses and impacts, however, weather-related outages have been increasing in terms of frequency and severity over recent years. During 2018 there were three major events which, combined, resulted in system asset replacements of approximately \$4M.

In addition to impacting Hydro Ottawa's equipment, these events increase the resources required to safely and quickly respond to the storm damage and coordinate and communicate restoration efforts to customers.

Hydro Ottawa is currently in the process of completing a climate change vulnerability assessment to determine what steps should be taken to mitigate the impacts of changing climates. While the recommendations from this assessment have not yet been finalized, there are a number of steps Hydro Ottawa could consider taking to prepare for an increasing frequency of severe weather events. For example, changing pole replacement practices and standards would increase overhead structure strength and provide greater clearances from trees and vegetation.

Hydro Ottawa wants to know what your preferences are with respect to making investments in system resilience for severe weather that may or may not materialize over this rate period.



Representative Workbook

Small Business



114

Preparing for potential increases in severe weather

Q

Which of the following options do you prefer?



I would be willing to pay \$0.05- \$0.10 more per monthly bill by 2025 for Hydro Ottawa to take measures to prepare for severe weather that may or may not occur.

76%

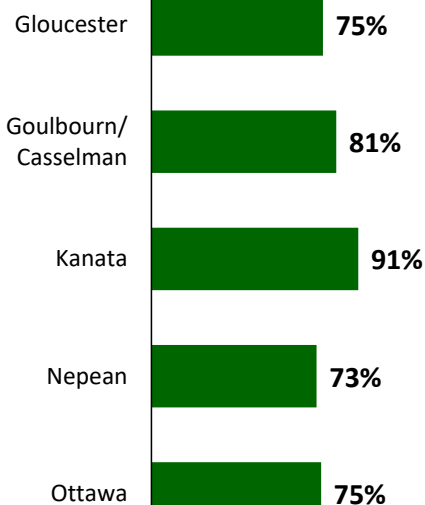
Hydro Ottawa should not invest in measures to prepare for severe weather that may or may not occur.

24%

n=307

Regional Segmentation

Respondents who say "Willing to pay more to take measures to prepare for severe weather"



Environmental Control Segmentation

Respondents who say "Willing to pay more to take measures to prepare for severe weather"

Bill Impact on Bottom Line



"Customers are well served by the electricity system in Ontario"



Representative Workbook

Additional Feedback: Severe Weather

Small Business



115

Q

Additional Feedback (Optional)

Additional Comments (n=38) 88% of respondents did not provide additional feedback	n-size
Worsening weather is inevitable AND we must be prepared	6
No use/unable to predict and/or prepare for worsening weather	6
Critical of question - insufficient options	4
Hydro Ottawa should have already been preparing/ customer already paying for this	3
Alternative financing - salaries, profits, City dividend, etc.	3
Worsening weather is inevitable	2
Preparing for severe weather is important/worth the cost	2
Manage/prepare without increase	2
Need more information/ have outstanding questions/defer to experts	1
Reduce cost	1
Fund must be untouchable/carried over year-year until needed	1
Smaller/minimize increase	1
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	1
Ensure fiscal responsibility and good management	1
Move lines underground	1
Other	1
None	3

Representative Workbook

Background Information

Small Business



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Serving a growing city

The population in Hydro Ottawa's service territory continues to grow. Hydro Ottawa must be prepared to serve new customers, while maintaining acceptable levels of service for existing customers. This means regularly assessing the capacity and reliability of its distribution system and its resilience to extreme weather events, and taking action when gaps are found.

A number of Hydro Ottawa's substations are approaching capacity and cannot accommodate future customer growth. Delaying planned investments could result in a decline in reliability for existing customers.

Hydro Ottawa's current plan only includes critical capacity investments; however, there is also an option to make further investments to get ahead of the growing demand for electricity supply.



Option	Outcome
Accelerated Approach <u>Additional</u> \$0.25 per bill each year (\$1.25 more per bill by 2025)	<ul style="list-style-type: none"> • Increase distribution system capacity investment to meet and exceed growing demand for electricity supply. • Distribution system capacity is moved ahead of the demand for electricity, eliminating reliability risk during peak demand days.
Included in Draft Plan <i>Within 3.5% annual increase</i>	<ul style="list-style-type: none"> • Slow distribution system capacity to critical investment only. • Distribution system capacity maintains pace with demand for electricity, or slightly lagging. No impact on ability to connect customers. • Results in modest increase to risk in reliability to areas of growth and increased risk of longer outages or inability to restore power to some customers if outages occur on peak demand days.

Representative Workbook

Serving a growing city

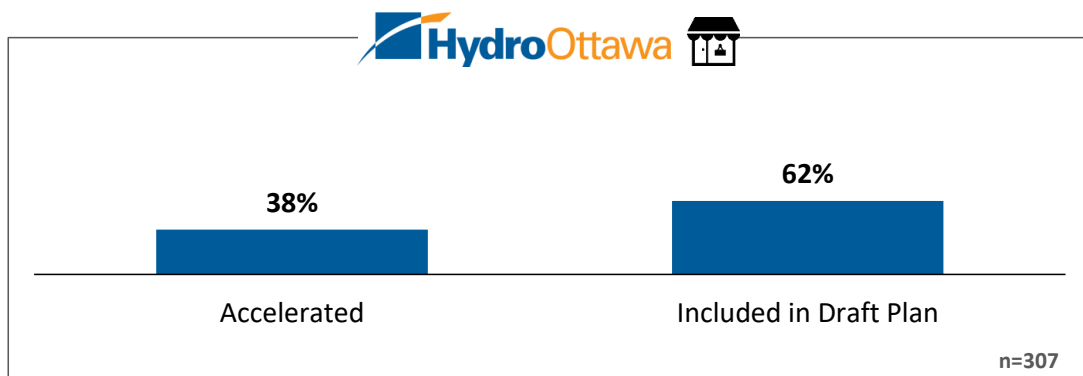
Small Business



117

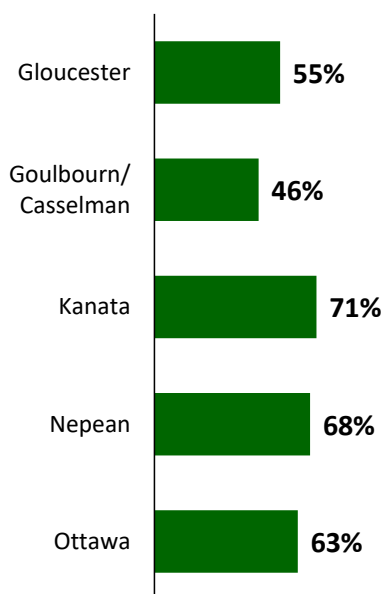
Q

Which of the following options do you prefer?



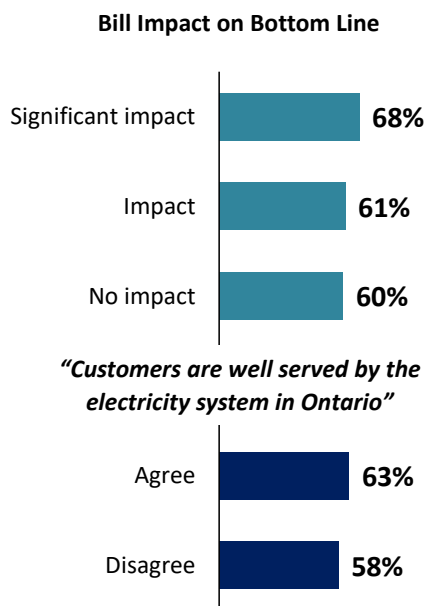
Regional Segmentation

Respondents who say "Included in Draft Plan"



Environmental Control Segmentation

Respondents who say "Included in Draft Plan"



Representative Workbook

Additional Feedback: Serving a growing city

Small Business



118

Q

Additional Feedback (Optional)

Additional Comments (n=30) 90% of respondents did not provide additional feedback	n-size
Alternative financing (eg. developers, new builds, big businesses, government, etc.)	12
Oppose any increase; cost too high already	5
Critical of question (insufficient options, biased, leading, etc.)	3
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	3
Concerned about all these increases/costs adding up	2
Plan for the future (including EVs, urban growth/densification, emergency preparedness etc.)	1
Investing now leads to reduced future cost; proactive > reactive	1
Other	2
None	1

Online Workbook

Background Information

Small Business



119

Innovation: Investing for the future

Electricity distribution service is in the midst of unprecedented change – evolving towards a more decentralized, customer-centric, technologically-advanced and environmentally sustainable model.

Hydro Ottawa plans to continue engaging in research and development activities which offer value to its customers. This includes supporting the connection of Distributed Energy Resources (DERs). This small scale generation is connected to the grid close to the communities they serve. Hydro Ottawa's Great DR – phase two project (currently known as MiGen), where customers generate their own power and store what's not immediately used, is an example of innovation that is incorporated into the 2021-2025 plan.

Hydro Ottawa has also been actively involved in assessing and addressing customer needs within the emerging electric vehicle market, as well as, participating in a Battery Energy Storage Project, as part of the Smart Grid Program.

Looking forward, opportunities to develop new rate models and explore new energy services will offer customers more choice and control over their electricity needs.



Representative Workbook

Innovation: Investing for the future

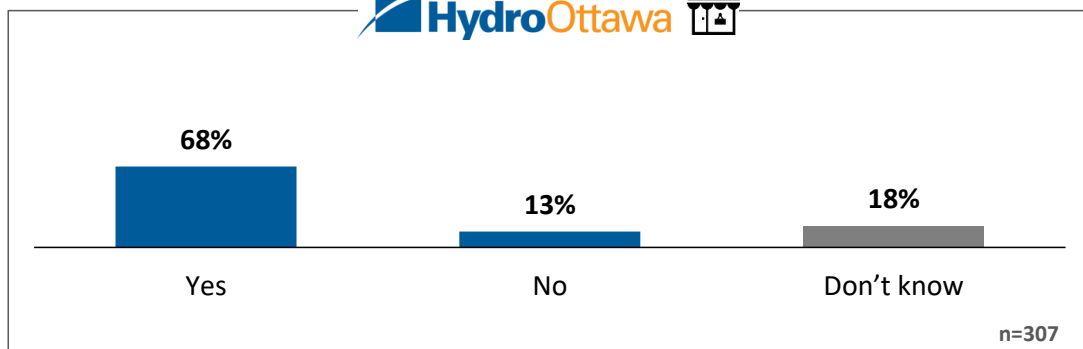
Small Business



120

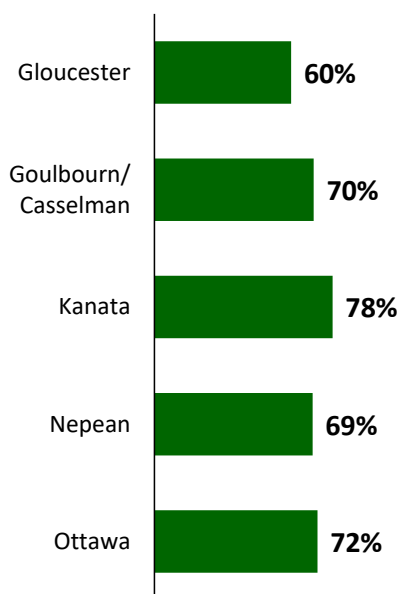
Q

Do you support Hydro Ottawa's strategy of leading change and engaging in industry projects that could shape the future of the energy marketplace?



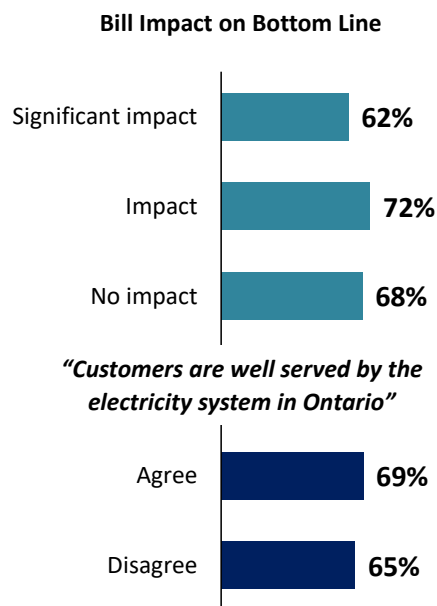
Regional Segmentation

Respondents who say "Yes"



Environmental Control Segmentation

Respondents who say "Yes"



Representative Workbook

Innovation: Investing for the future

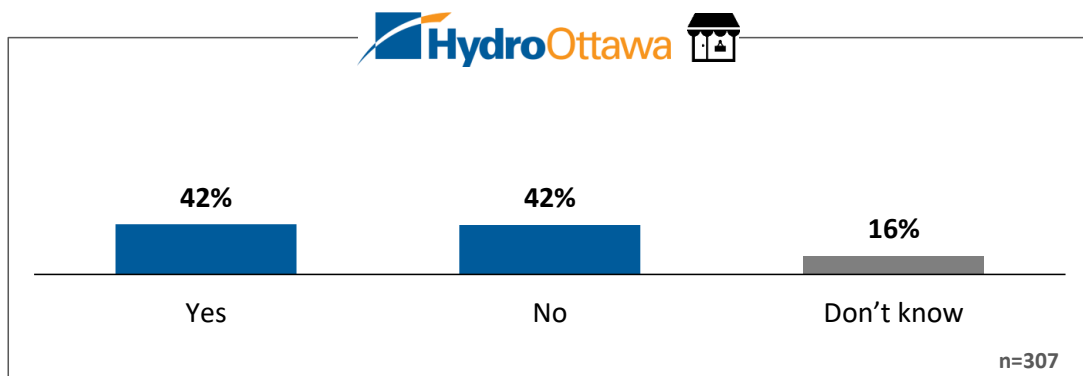
Small Business



121

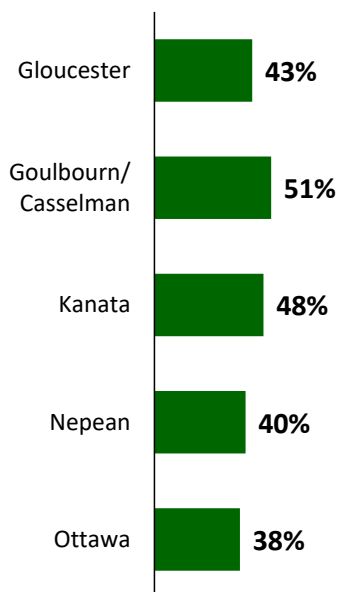
Q

Do you believe Hydro Ottawa should limit expenditures to those necessary to serve today's customers and existing needs, if this option could lower rate impacts in the short term?



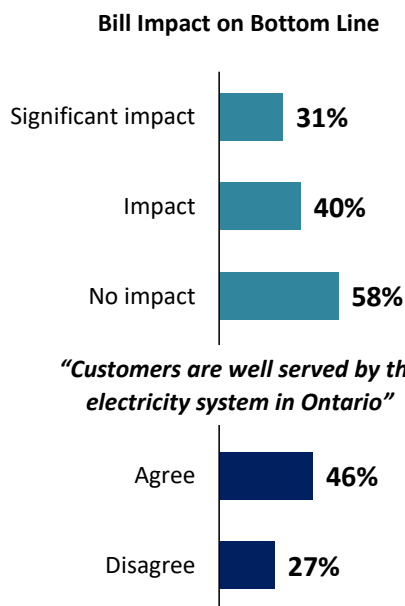
Regional Segmentation

Respondents who say "No"



Environmental Control Segmentation

Respondents who say "No"



Representative Workbook

Small Business



122

Additional Feedback: Innovation: Investing for the future

Q

Additional Feedback (Optional)

Additional Comments (n=34) 89% of respondents did not provide additional feedback	n-size
Reduce rates; keep costs low	5
Plan for future (urban growth, EV adoption, future demand, etc.)	5
Support local generation and/or storage (decentralization, MiGen)	3
Skeptical of/opposed to 'green' tech/EVs	2
Allow opt-in funding/those interested should pay	2
R&D, innovation is important/worth it	2
Decide after thorough assessment (priorities, value, impact, etc.)	2
Support alternative/renewable energy	1
Support investment IF it results in reduced cost	1
Alternative financing - partnerships, developers, gov't, dividends, etc.	1
Focus on present needs	1
Respond to markets (EV, emerging tech/ innovations, etc.)	1
Need more information/have outstanding questions	1
Critical of question (insufficient options, confusing, contradictory, biased, etc.)	1
Other	5

Online Workbook

Background Information

Small Business



123

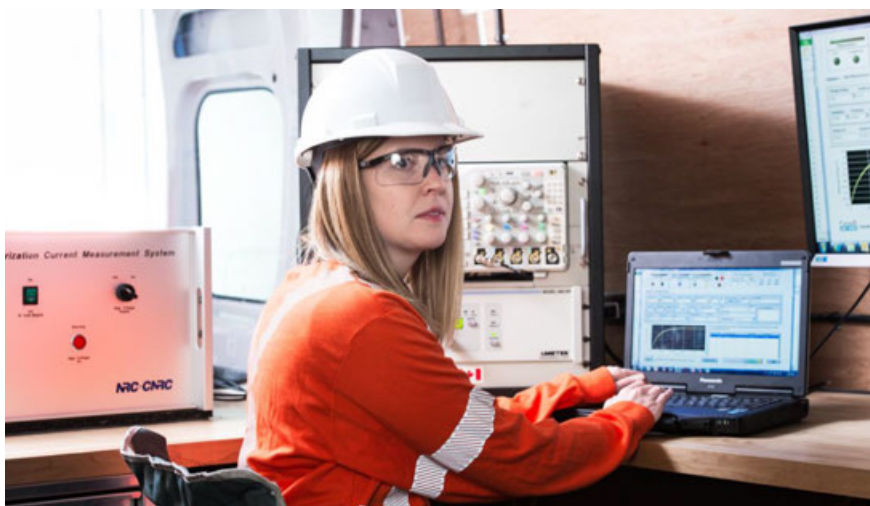
Keeping the business running

Hydro Ottawa is more than just poles and wires – it's a business that needs to invest in tools, trucks, equipment, and facilities to maintain the distribution system and service its customers.

The types of expenditures in this category are:

- **Information Technology:** Systems required to securely operate the distribution system, manage customer information and privacy, and keep employees working effectively and efficiently.
- **Vehicles:** Bucket trucks and other vehicles used to move employees, equipment, and supplies throughout Hydro Ottawa's service territory to support the safe and reliable operation of the grid.
- **Facilities:** Warehouse, operations centres and administrative office.
- **Tools and Equipment:** Specialized safety tools and equipment to mitigate the risks associated with maintaining electricity distribution infrastructure.

When deciding whether to continue to maintain existing tools or replace them, Hydro Ottawa considers whether the risks and costs of continuing to use them outweighs the benefits of waiting longer to replace them. Hydro Ottawa must also consider the lead times required to replace some utility vehicles, such as bucket trucks, which can be as long as 18 months.



Representative Workbook

Keeping the business running

Small Business



124

As a company, Hydro Ottawa needs equipment to maintain its distribution system and IT systems to manage the distribution system and customer information.

Q

Which of the following statements best represents your point of view?



Hydro Ottawa should find ways to make do with the business equipment it already has.

28%

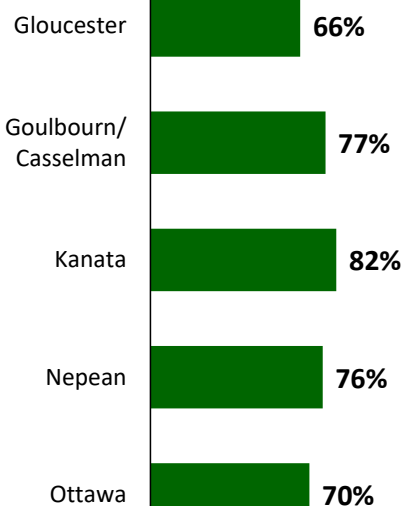
Hydro Ottawa should make the investments necessary to ensure its staff has the equipment they need to manage the distribution system efficiently and reliably.

72%

n=307

Regional Segmentation

Respondents who say "Hydro Ottawa should make the investment necessary"



Environmental Control Segmentation

Respondents who say "Hydro Ottawa should make the investment necessary"

Bill Impact on Bottom Line



"Customers are well served by the electricity system in Ontario"



Representative Workbook

Small Business



125

Additional Feedback: Keeping the business running

Q

Additional Feedback (Optional)

Additional Comments (n=29) 91% of respondents did not provide additional feedback	n-size
Alternative financing - asset sharing, salaries, profits, internal efficiencies, etc.	4
Investing now leads to reduced future costs; proactive > reactive	4
Proper/efficient/up-to-date equipment is important	3
Safety (of work crews) is priority #1	3
Find balance between the two options (discretion, prudence, 'within reason')	2
Make decisions based on positive ROI/cost-benefit	2
Critical of question (insufficient/misleading options)	2
Need more information/have outstanding questions	2
Minimize increases	1
Ensure transparency/accountability of these expenditures	1
Prioritize thorough assessment	1
Other	4

Representative Workbook

Vehicle replacement

Small Business



126

Q

Which of the following vehicle replacement options do you prefer?



Option 1: Using a run-to-failure approach, replace vehicles only when they can no longer operate, knowing that some larger vehicles require an 18 month lead time to replace. This approach may impact restoration times and efficiency.

17%

Option 2: Make investments in the fleet on a vehicle-by-vehicle basis weighing age, kilometers driven, engine hours, repair history, availability of parts and internal mechanic assessments of the general vehicle condition.

77%

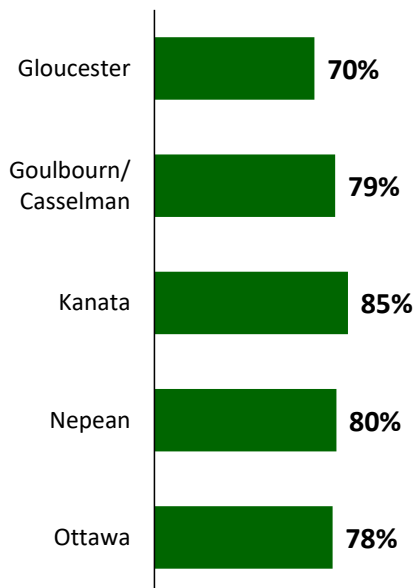
Option 3: Replace vehicles once they have reached the end of their recommended age, regardless of their condition, which is the most expensive and lowest risk option.

5%

n=307

Regional Segmentation

Respondents who say "Option 2"



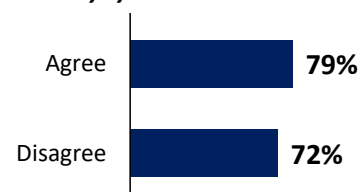
Environmental Control Segmentation

Respondents who say "Option 2"

Bill Impact on Bottom Line



"Customers are well served by the electricity system in Ontario"



Representative Workbook

Additional Feedback: Vehicle replacement

Small Business



127

Q

Additional Feedback (Optional)

Additional Comments (n=34) 89% of respondents did not provide additional feedback	n-size
Maximize asset life (eg. no idling, rust protection, regular maintenance, skilled mechanics on staff)	5
Critical of life cycle estimates (too low, arbitrary, etc.)	5
Make decisions based on cost-benefit /ROI	3
Critical of question/survey (insufficient options, biased, leading etc.)	2
Transition to EV/hybrid/alternative fuel/greener fleet	2
Ensure effective management/planning ahead/budgeting	2
Find balance between options 2 and 3	2
New equipment necessary/reliable/reduces operating costs	2
Explore more options (none quite right)	2
Support run-to-failure	2
Oppose run-to-failure	1
Lease/rent/share the fleet/outsource	1
Prioritize thorough assessment	1
Ensure fiscal responsibility - eliminate waste, efficient spending, need > want, etc.	1
Make do with current fleet/spending here is low priority/limit spending	1
Need more information/have outstanding questions	1
Other	1

Representative Workbook

Small Business

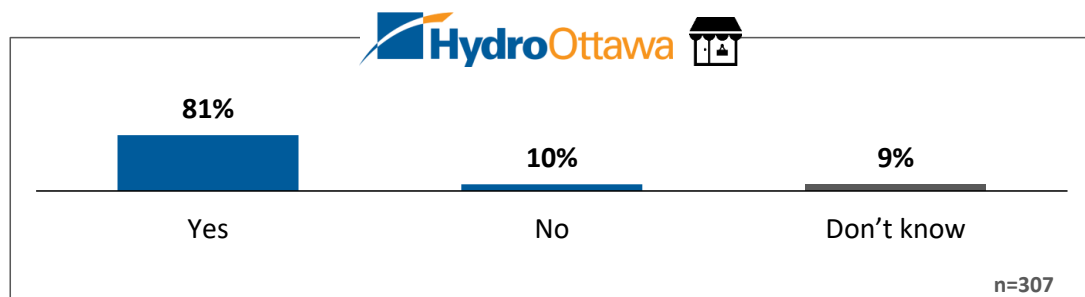


128

Additional Feedback: Finding efficiencies through technology

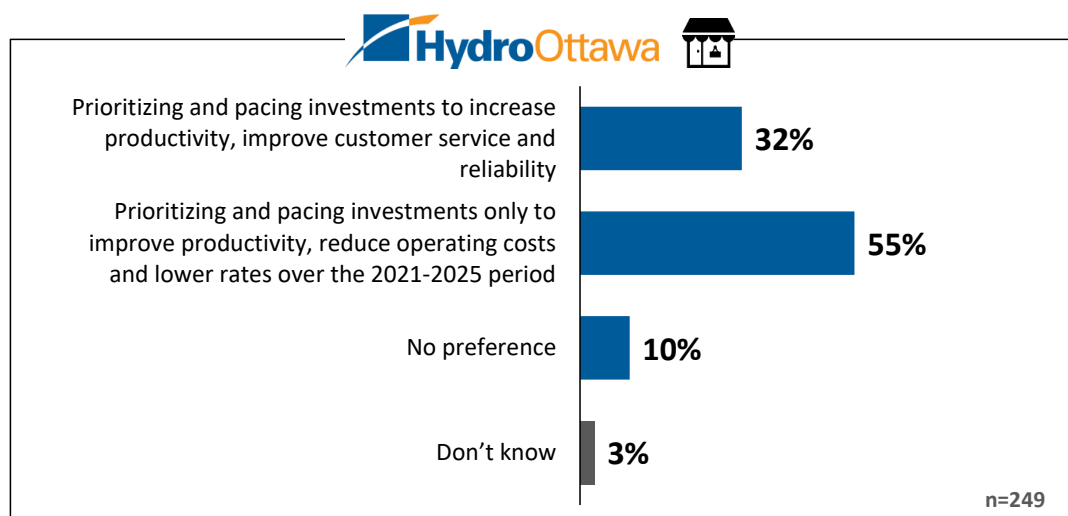
Q

Do you support Hydro Ottawa's view that prudent technological investments are necessary in order to meet its ongoing business and customer needs?



Q

[If yes to above] And which of the following options do you prefer?



Representative Workbook

Small Business



129

Additional Feedback: Finding efficiencies through technology

Q

Additional Feedback (Optional)

Additional Comments (n=19) 94% of respondents did not provide additional feedback	n-size
Support this investment - general	7
Low priority/limit spending/service is fine	3
Lack confidence in survey design, questions, or Hydro Ottawa to use the data	2
Keep rates low/minimize increase	2
Invest IF it leads to reduction in bills/increase in efficiency/productivity	1
Ensure cyber security	1
Use of 'prudence' here is problematic; leaves questions	1
Ensure effective managing/planning/budgeting	1
Other	2

Representative Workbook

Investment Alternative Summary

Small Business



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Investment Alternative Summary

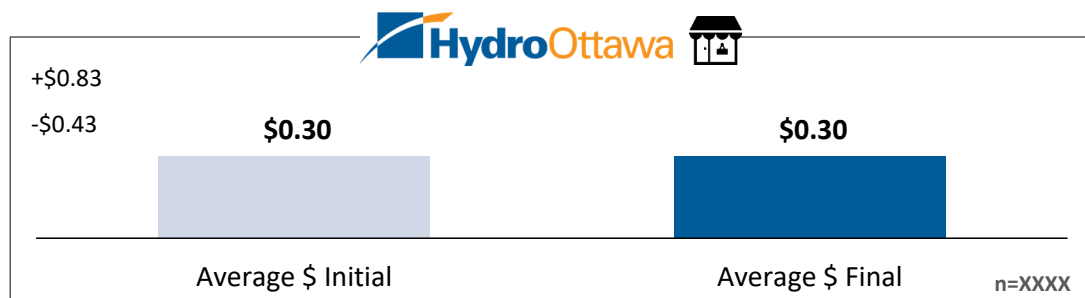
Throughout this workbook, you have been asked about some key choices that could impact your rates. Below is a summary of your answers to the questions that could impact your rates.

At the bottom of this page you will find the total bill impact of all the answers.

Having seen the total bill impact, please review your answers and change your responses if you desire; your potential rate impact will be re-calculated. You will have the opportunity to adjust your answers again until you feel you've reached the best balance for you.



Small Business Customer Bill Impact Change and Magnitude of Bill Impact (MEAN)



Differences that are statistically significant at 95% are noted by an asterisk (*).

Initial Response

Monthly Rate Change	%
Maximum decrease (-\$0.43)	6%
Less than zero, less than max decrease	12%
Zero	14%
Great than zero, less than max increase	49%
Maximum increase (+\$0.83)	20%

Final Response

Monthly Rate Change	%
Maximum decrease (-\$0.43)	7%
Less than zero, less than max decrease	11%
Zero	17%
Great than zero, less than max increase	45%
Maximum increase (+\$0.83)	20%

Representative Workbook

Change in Initial Versus Final Response by Project

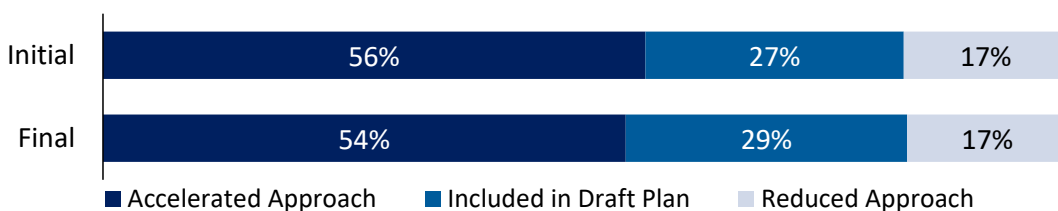
Small Business



131

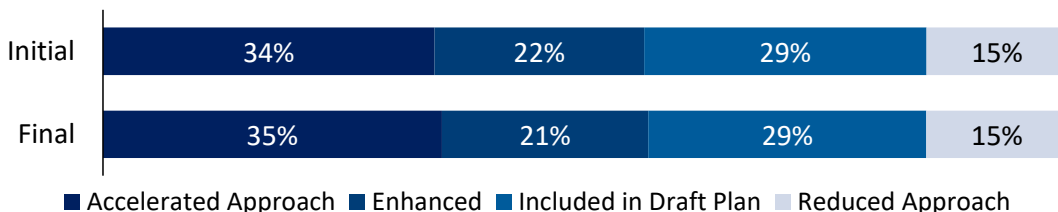
Q

Pacing investments in the overhead distribution system



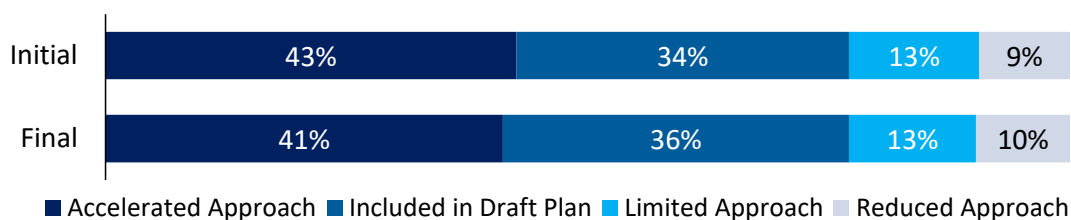
Q

Pacing Investments in the Underground Distribution System



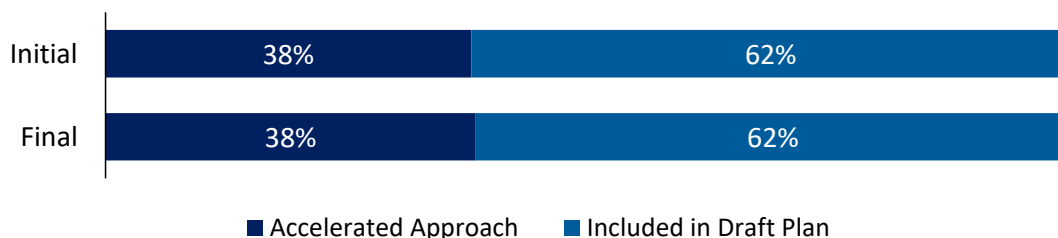
Q

Reliability Investments



Q

Serving a Growing City



Representative Workbook

Impact of Choices on Rates | Preamble

Small Business



132

Impact of Hydro Ottawa's Plan

Hydro Ottawa has calculated the rate impact of implementing the options recommended by its planners and included it in its draft plans.

These priorities may change based on your input but Hydro Ottawa is looking for an investment program that aims to:

- **Minimize rate increases;**
- **Maintain reliability and service quality;**
- **Address key pressures to the system, including;**
 - **Aging infrastructure;**
 - **An expanding customer base and continued population growth, and;**
 - **The effects of severe weather events.**
- **Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs.**

If Hydro Ottawa continues with its current plan, it is estimated that the distribution portion of the bill will increase an average of **3.5% per year for the period 2021-2025.**

At the end of the 5-year plan, the typical small business customer would see the distribution portion of their electricity bill increase by **\$13.27**. As a result, the distribution charges on the typical small business customer's monthly bill would increase from **\$70.72 in 2020** to **\$83.99 by 2025**.

Representative Workbook

Impact of Hydro Ottawa's Plan

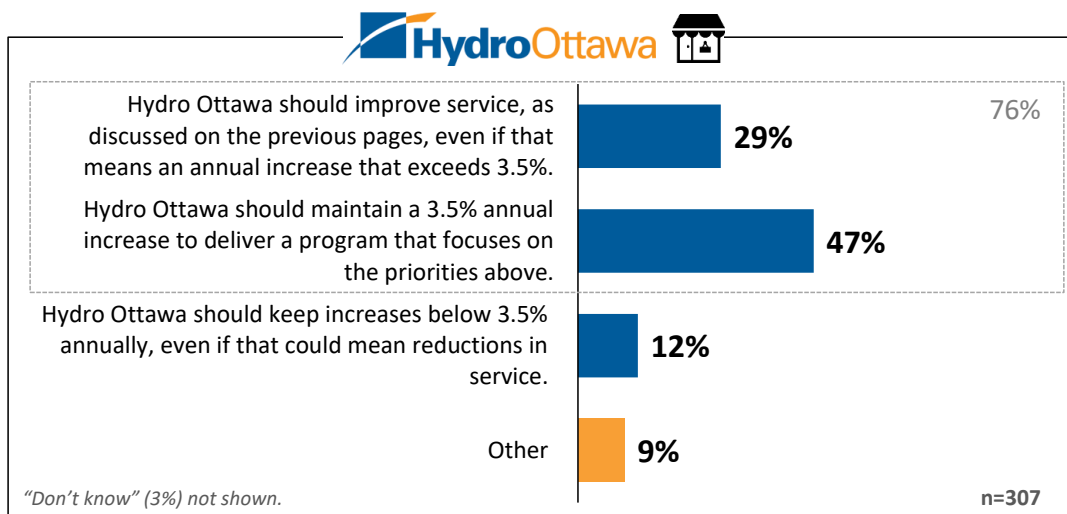
Small Business



133

Q

With regards to Hydro Ottawa's draft plan, which of the following statements best represents your view?



View of Hydro Ottawa's plan	Gloucester	Goulbourn/Casselman	Kanata	Nepean	Ottawa
Hydro Ottawa should improve services	23%	44%	31%	28%	30%
Stick with 3.5% increase	45%	46%	61%	46%	44%
Keep increases below 3.5%	15%	3%	6%	13%	12%
Other	11%	5%	-	13%	9%
Don't know	6%	3%	2%	-	3%
Improve services or stick with 3.5% increase	68%	90%	92%	74%	75%

Representative Workbook

Impact of Hydro Ottawa's Plan

Small Business



134

Q

"Customers are well served by the electricity system in Ontario"

View of Hydro Ottawa's plan	Agree	Disagree
Hydro Ottawa should improve services	31%	21%
Stick with 3.5% increase	50%	33%
Keep increases below 3.5%	12%	13%
Other	4%	28%
Don't know	2%	6%
Improve services or stick with 3.5% increase	82%	54%

Q

Bill Impact on Bottom Line

View of Hydro Ottawa's plan	Significant impact	Impact	No impact
Hydro Ottawa should improve services	17%	31%	38%
Stick with 3.5% increase	44%	50%	47%
Keep increases below 3.5%	15%	10%	11%
Other	21%	6%	4%
Don't know	3%	4%	-
Improve services or stick with 3.5% increase	61%	80%	85%

Representative Workbook

Final Comments

Small Business



135

Q

Now that you have considered the various choices Hydro Ottawa has to make and the cost implications of those choices, do you have any final comments for Hydro Ottawa?

Final Comments (n=59) 81% of respondents did not provide additional feedback	n-size
Ensure fiscal responsibility - eliminate waste, plan long-term, find efficiencies, etc.	7
Issue with rest of system (transmission, generation, policy, etc.)	6
Reduce cost/cost too high/ minimize increase	5
Alternative financing - developers, govt, profits, internal efficiencies, dividends to city, etc.	5
Skeptical/critical of survey	4
More communication/transparency (planned projects, operations, bill breakdown, etc.)	3
Maintaining/upgrading system is important	3
Increase should not exceed inflation/cost of living	2
Decision making should be long-term/future oriented	2
Encourage/incentivize conservation	2
Happy with service; keep up good work	2
Appreciated survey/opportunity to give feedback; informative	2
Aim for 3.5% but adjust within reason	2
Strong infrastructure is worth paying more; do what it takes	1
Investment should be well thought out	1
Demo-based rates/support (income brackets, seniors, big users, conservers, etc.)	1
Other	3
None	7
Don't Know	2

Representative Workbook

Final Thoughts: Workbook Diagnostics

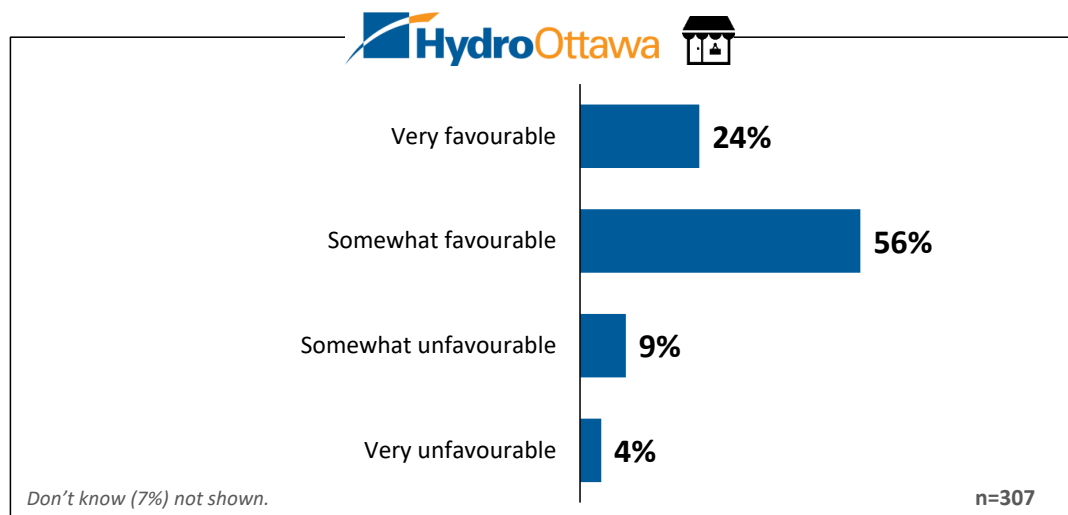
Small Business



136

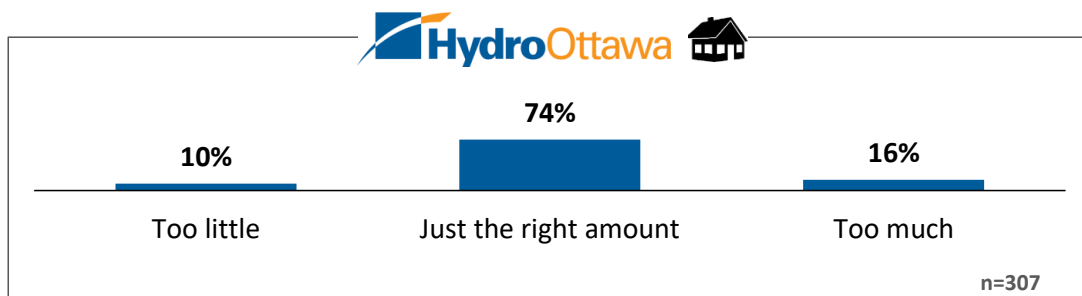
Q

Overall Impression: Did you have a favourable or unfavourable impression of the workbook you just completed?



Q

Volume of Information: Did Hydro Ottawa provide too much information, not enough, or just the right amount?





Building Understanding.

Personalized research to connect you and your audiences.

For more information, please contact:

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Jason Lockhart

Vice President

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(e) jlockhart@innovativeresearch.ca

Appendix 6.0



2021-2025 Rate Application

Voluntary Report



This report and all of the information and data contained within it may not be released, shared or otherwise disclosed to any other party, without the prior, written consent of Hydro Ottawa Limited.

November 2019

STRICTLY PRIVILEGED AND CONFIDENTIAL

Voluntary Workbook

Survey Design & Methodology

Residential &
Small Business



2



INNOVATIVE was engaged by Hydro Ottawa to gather input on preferences on program timing and balancing outcomes. **Pages 3 to 60** show the actual pages of the workbook completed by customers (for illustration, the residential version has been used. Refer to the Representative Report for the small business version). The only additions are the actual results.

Field Dates & Workbook Delivery

The **Voluntary Online Workbook** was accessible to all Hydro Ottawa residential and small business customers between **August 20th and September 26th, 2019**.

INNOVATIVE hosted the online portal at the following URLs: *HydroOttawa.ca/survey* and in French at *HydroOttawa.ca/sondage*.

Hydro Ottawa promoted the voluntary workbook through their website, social media, bill inserts, digital advertisements and other tactics.

Each customer was able to select their rate class, ultimately providing them with a workbook customized for whether they were a residential or small business customer. The website saved their progress as they answered each question, thus preventing customers from completing questions repeatedly. Upon completion, the site was no longer accessible at the web address given.

Voluntary Online Workbook Completes

A total of **1,711** (unweighted) Hydro Ottawa residential and small business customers completed the voluntary online workbook through the generic website link. Due to the small number of Hydro Ottawa small business customers who completed the voluntary workbook, results from both rate classes have been combined for analysis purposes.

The voluntary online workbook sample has not been weighted, therefore, is not representative of the broader Hydro Ottawa customer base.

Unweighted Sample	Rate Class		Total	Workbook Distribution
	Residential	Small Business		
Gloucester	478	2	480	28%
Goulbourn/Casselman	124	0	124	7%
Kanata	160	1	161	9%
Nepean	402	2	404	24%
Ottawa	536	6	542	32%
Total	1,700	11	1,711	100%

Note: Graphs and tables may not always total 100% due to rounding values rather than any error in data. Sums are added before rounding numbers. Caution interpreting results with small n-sizes.

Voluntary Workbook

Demographic Breakdown

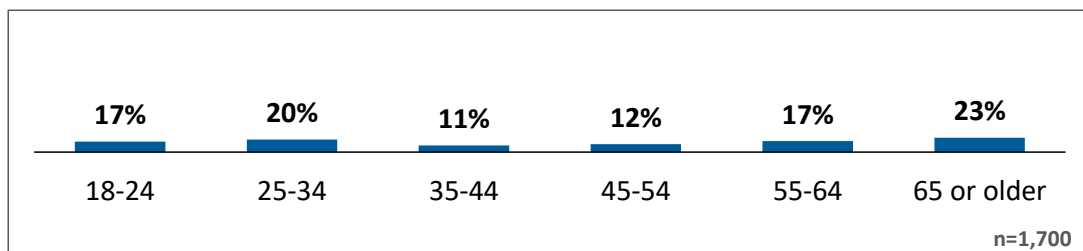
Residential &
Small Business



3

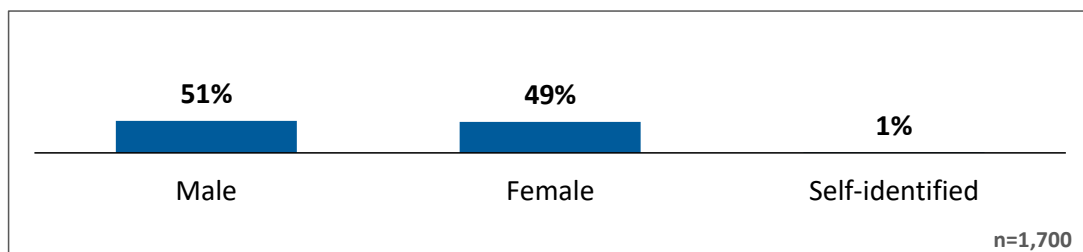
Q

Age (Residential Only)



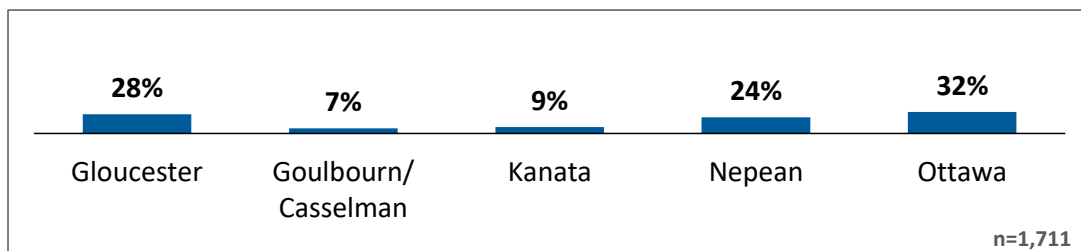
Q

Gender (Residential Only)



Q

Region (Residential & Small Business)



Voluntary Workbook

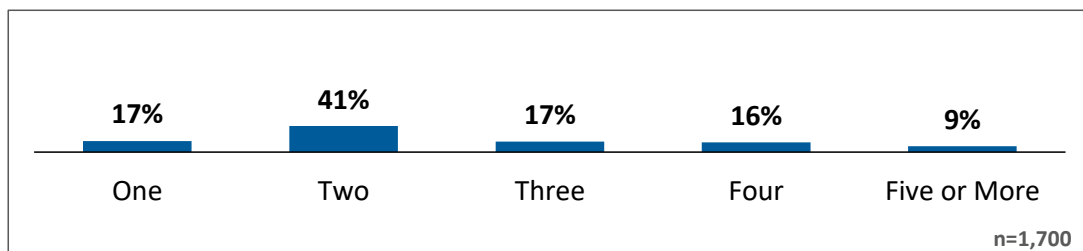
Demographic Breakdown

Residential &
Small Business

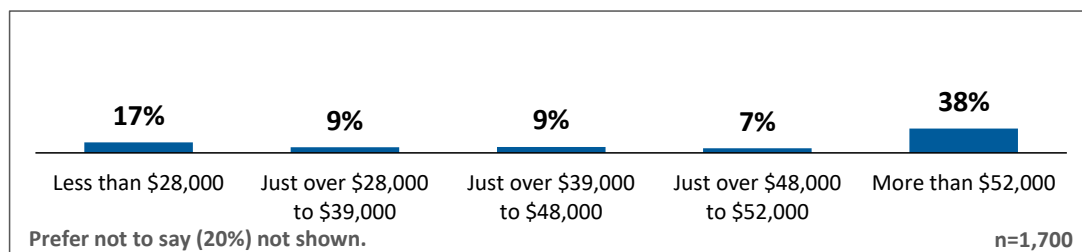


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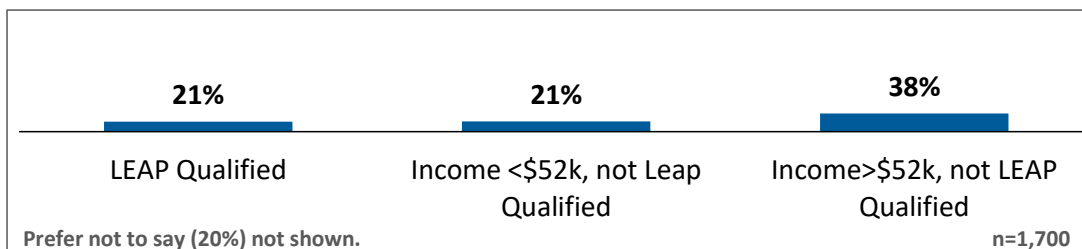
Q Household Size (Residential Only)



Q After Tax Household Income (Residential Only)



Q LEAP Qualification (calculated based on household size and income)



Voluntary Workbook

Environmental Controls

Residential &
Small Business

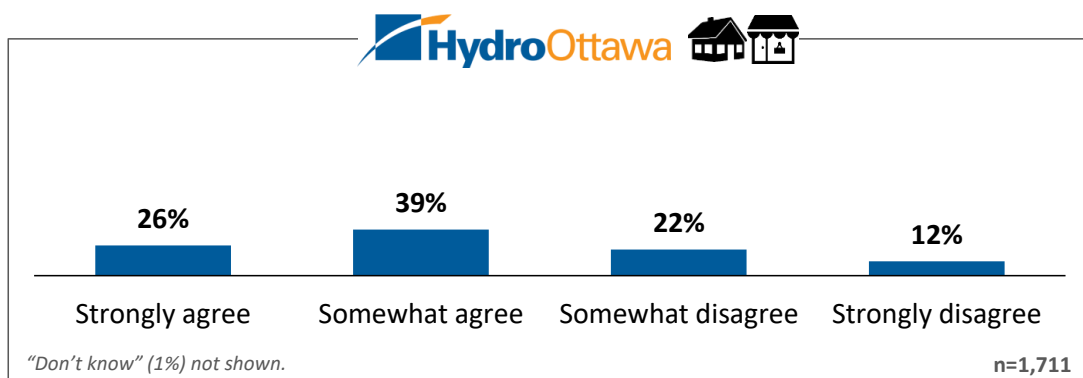


5

Thinking generally about the electricity system in Ontario, including generation, transmission and local distribution, do you agree or disagree with the following statements?

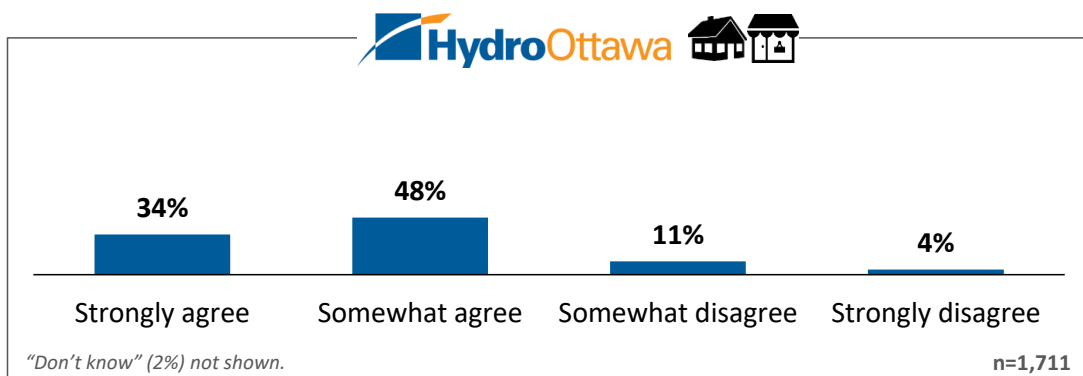
Q

The cost of my electricity bill has a major impact on my finances and requires I do without some other important priorities.



Q

Customers are well served by the electricity system in Ontario.



Voluntary Workbook

Background Information

Residential &
Small Business



6

Hydro Ottawa Limited (Hydro Ottawa) is looking for your input on choices that will help shape the service you receive and the price you pay.



Hydro Ottawa is developing its business plan for 2021 to 2025. This plan will determine the level of spending and investments Hydro Ottawa makes in equipment and infrastructure and the services it provides, as well as the rates you pay.



Hydro Ottawa is accountable to the provincial regulator, the **Ontario Energy Board (OEB)**, both in terms of sharing what customers say and demonstrating how they considered those views when undertaking the planning process.



You don't need to be an electricity expert to participate in this consultation. This workbook is focused on basic choices and provides the background information you need to answer the questions.

Building on previous customer feedback, the goal of this consultation is to allow Hydro Ottawa to better understand the needs and preferences of customers like you, and help them align their plan with what you have shared.

While your view may not always align exactly with the available options, please select the one that is closest to your point of view.

Those who complete the questions that follow will be invited to enter a draw to win one of four (4) \$500 cash prizes.

Depending on how much feedback you wish to provide, this consultation should take approximately 30-45 minutes to complete. If you need to pause and return at a later time to finish your feedback, your completed answers will be saved

If you are reading this on a smaller mobile device, you may want to consider accessing the survey from a tablet, desktop or laptop instead so that it is easier for you to read.

Voluntary Workbook

Background Information

Residential &
Small Business



7

This consultation is about gathering your feedback on finding the right balance between the services you receive from Hydro Ottawa over the next five years and the price you pay.

Hydro Ottawa has important decisions to make about the pace and mix of expenditures it makes in equipment and infrastructure, the services it provides you as a customer, and the rates you pay.

Every five years, Hydro Ottawa submits a plan for its proposed rates and spending to the Ontario Energy Board for approval. They are now in the process of finalizing that plan.

- Earlier in 2019, Hydro Ottawa asked thousands of customers about their priorities and preferred outcomes for electricity distribution service.
- Using the feedback shared by customers, Hydro Ottawa built a plan that is intended to align with customer preferences. Want to learn more about how Hydro Ottawa plans? [Click here](#)
- Hydro Ottawa is now coming back to its customers with a series of expenditure options in order to finalize its draft plan for the next five years.

How will this customer consultation work?



Hydro Ottawa will ask for your feedback on a number of decisions it needs to make in order to finalize their plan. These decisions will impact both the services you receive, as well as the price you pay on the distribution portion of your electricity bill.



For each decision, Hydro Ottawa has identified the option that it feels balances customer feedback received to date to limit cost impacts, while prudently investing in the distribution system. These options have been included in the current plan, but may be influenced by your feedback.



Once you have finished sharing your thoughts on these decisions, you will have an opportunity to review your responses and the estimated total rate impact of those choices. You will be able to change your responses until you feel you have found the right mix of investments and estimated rate impact.

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How will your views impact Hydro Ottawa's plans and rates?

The Ontario Energy Board (OEB) sets electricity rates in Ontario.



Electricity distributors like Hydro Ottawa are funded by the distribution rates paid by its customers. Electricity distributors are required to file a rate application with the OEB to request a change in distribution rates based on its plans for capital and operating costs.

As a customer, how are my interests protected?

The OEB requires all electricity distributors in Ontario, like Hydro Ottawa, to consider customer needs and preferences as they develop their business plan and distribution system plan.

The OEB then reviews Hydro Ottawa's plan and proposed rates in an open and transparent public process known as a rate hearing. Any individual or group may participate during Hydro Ottawa's application to ask questions or seek more information about Hydro Ottawa's plan and application.

Hydro Ottawa will be held accountable for the way you were consulted, the information shared with you and the ways in which the plan considers what you say.

At the end of the process, the OEB will weigh the evidence and decide on the rates Hydro Ottawa can charge its customers.

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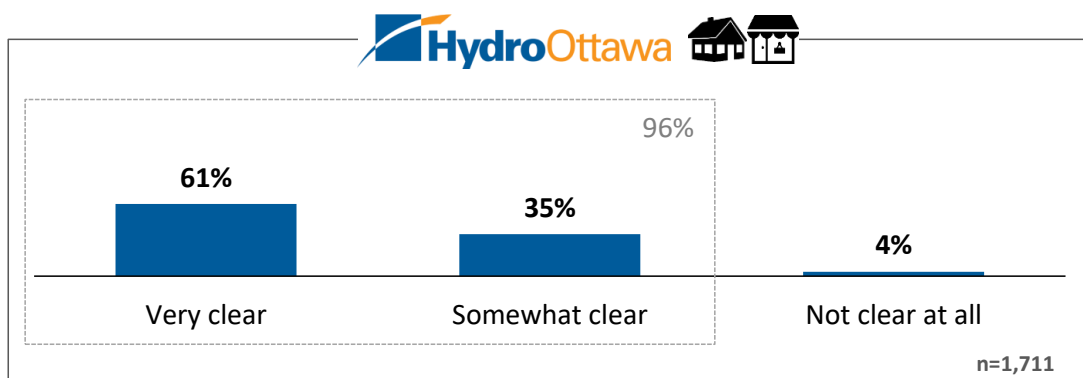


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Purpose of Hydro Ottawa's customer consultation

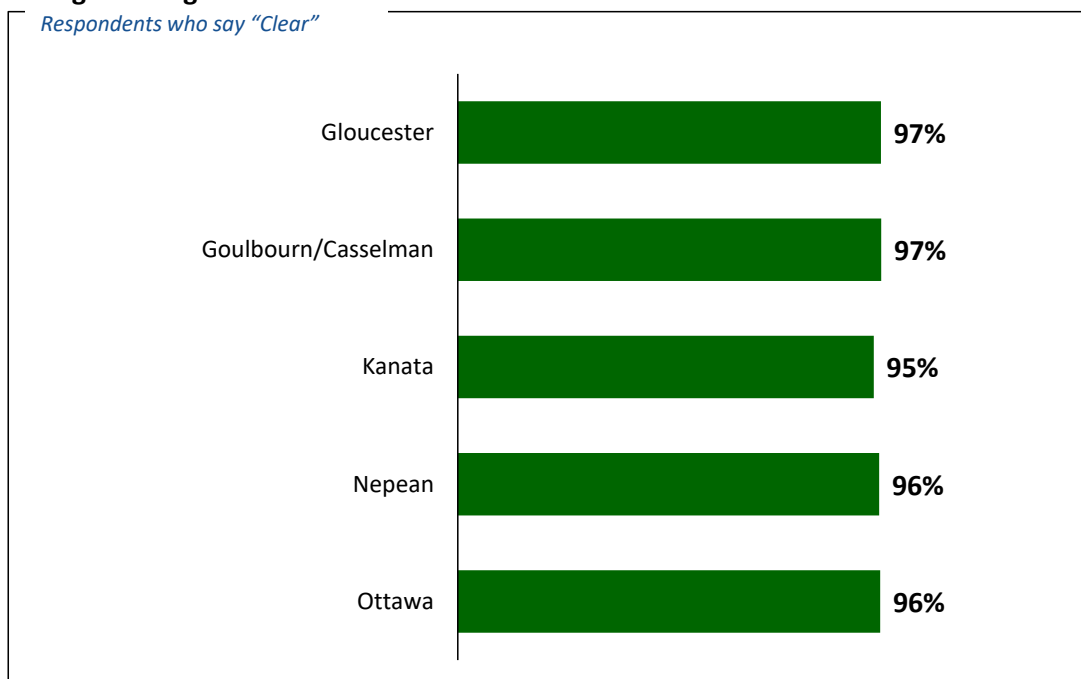
Q

Do you feel that the purpose of Hydro Ottawa's customer consultation is clear?



Regional Segmentation

Respondents who say "Clear"



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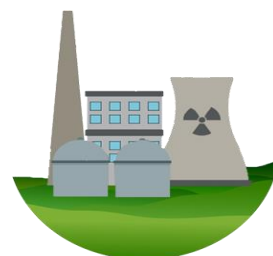
Understanding Ontario's electricity system and Hydro Ottawa's role

Ontario's electricity system is owned and operated by public, private and municipal corporations across the province. It is made up of three key components: **generation**, **transmission** and **distribution**.

Generation

Where electricity comes from

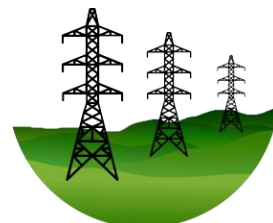
Ontario's electricity is generated using a mix of nuclear, gas-fired, and water power (hydro), as well as biomass and renewable sources such as wind and solar technology. In Ontario, a number of companies own these generating stations but approximately half of the electricity is generated by Ontario Power Generation. The Independent Electricity System Operator (IESO) balances the supply of, and demand for, electricity on a second-by-second basis and directs its flow across the high-voltage transmission lines.



Transmission

How electricity travels across Ontario

Once generated, electricity must be transported to electrical substations across the province. Due to the large amount of power and long distances, transmission normally takes place at high voltages with the lines suspended on large, steel towers. The province has more than 30,000 kilometres of 'electricity highway', most of which is owned and operated by Hydro One.



Local Distribution

How electricity is delivered to the end-consumer



Hydro Ottawa is responsible for the last step of the journey: distributing electricity to customers. Its local distribution system is connected to the transmission grid through its distribution stations and transformers. This allows the voltage to be decreased so it can be distributed and safely used in homes and organizations across Hydro Ottawa's service territory.

Hydro Ottawa's distribution system is complex. It consists of approximately 50,000 poles, 2,700 km of overhead power lines, 3,000 km of underground cable, and 45,000 transformers.

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Familiarity with Ontario's electricity system

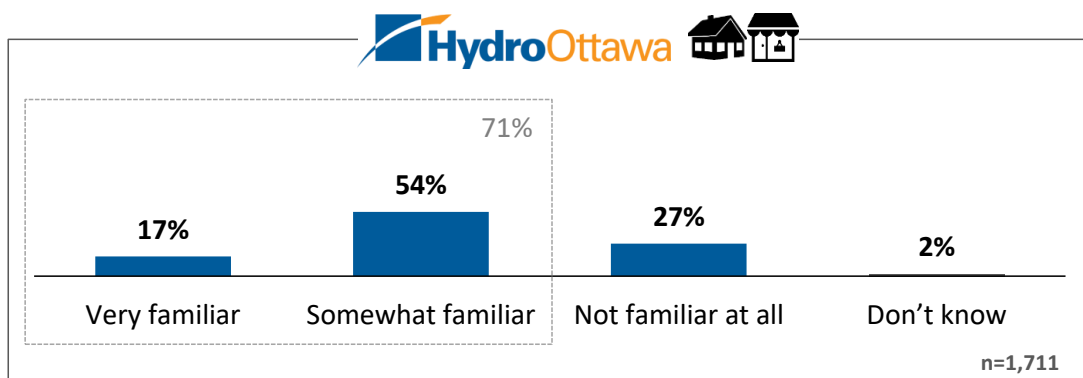
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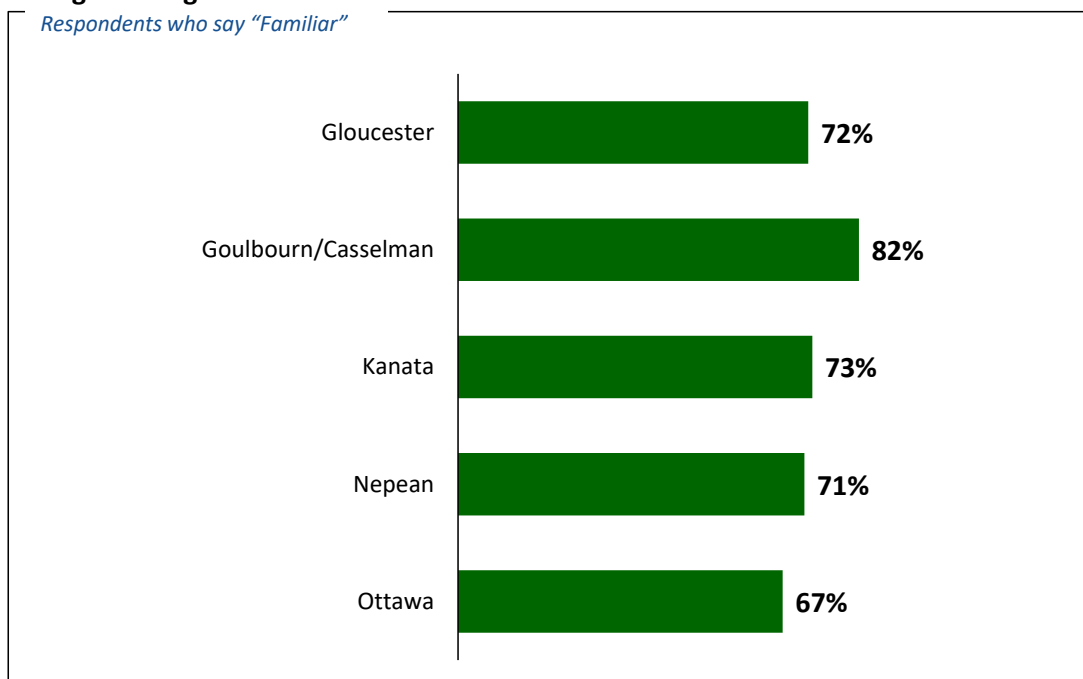
Q

Before this consultation, how familiar were you with various parts of the electricity system, how they work together, and for which services Hydro Ottawa is responsible?



Regional Segmentation

Respondents who say "Familiar"



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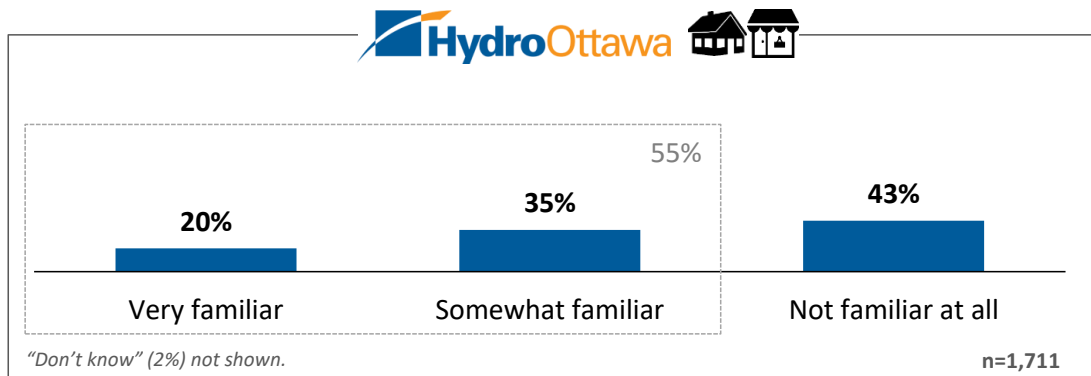


Familiarity with how Hydro Ottawa receives funding

Hydro Ottawa is entirely funded through the rates its customers pay and does not receive taxpayer money for its operations or investments.

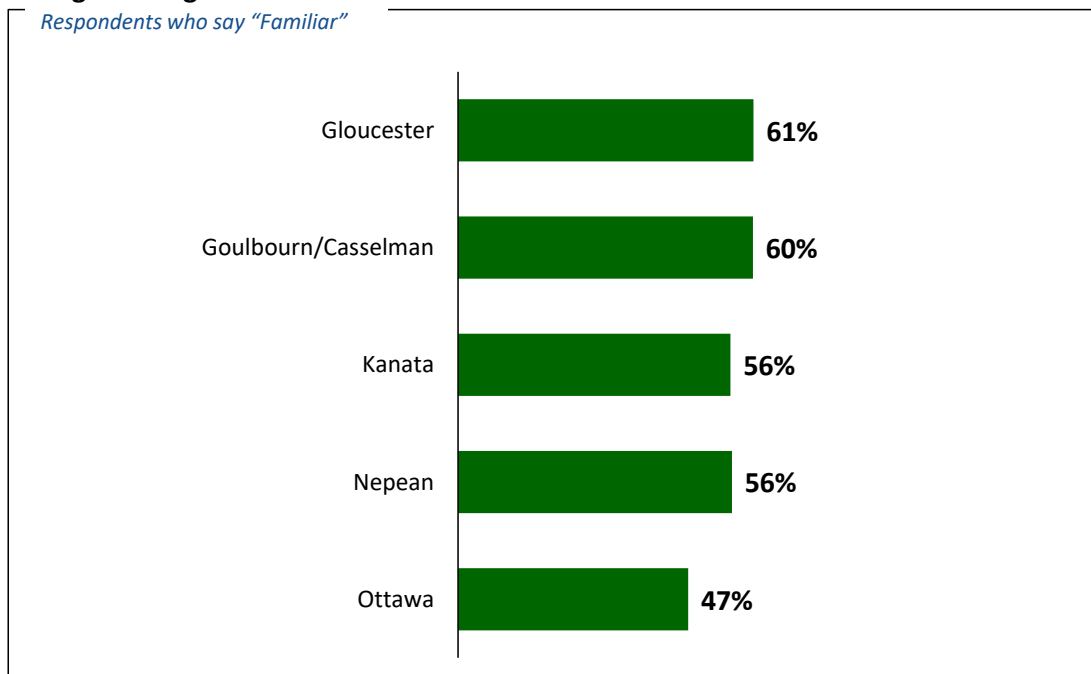


Before this consultation, were you aware of how Hydro Ottawa received its funding?



Regional Segmentation

Respondents who say "Familiar"



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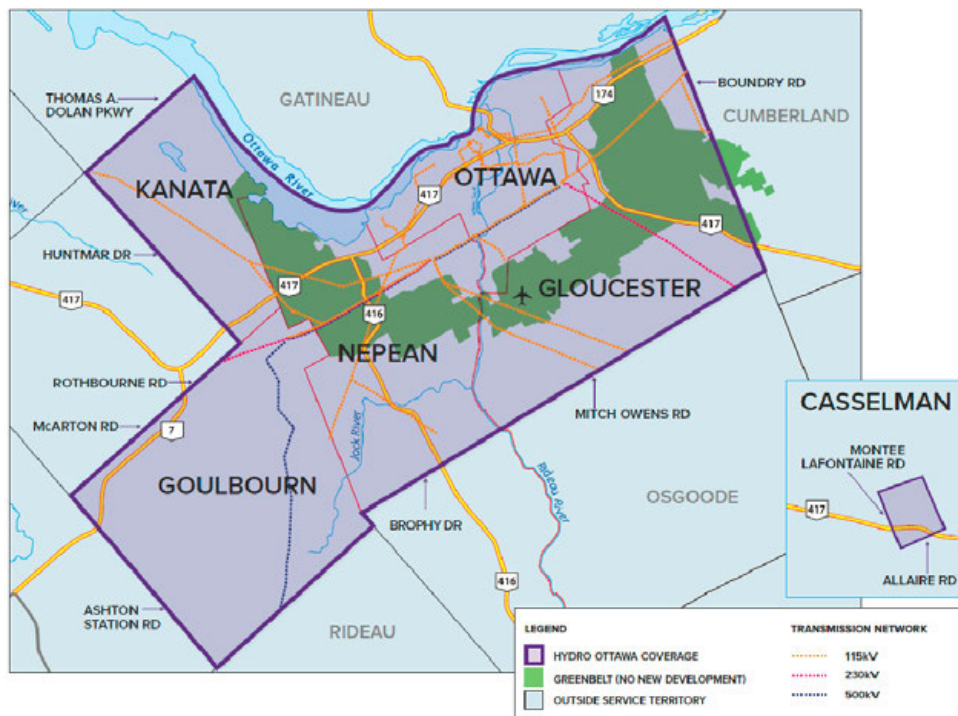
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Hydro Ottawa fast facts

- Private business corporation 100% owned by its shareholder, the City of Ottawa
- Third largest municipally-owned electricity distributor in Ontario
- Serves approximately 335,000 homes and businesses (more than one million consumers)
- Service territory of 1,116 square kilometers that includes most of the City of Ottawa and the Village of Casselman
- Over 600 employees
- Does not receive taxpayer money to fund its operations or its investments in the distribution system
- Entirely funded through the rates its customers pay



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Overall Satisfaction with Hydro Ottawa

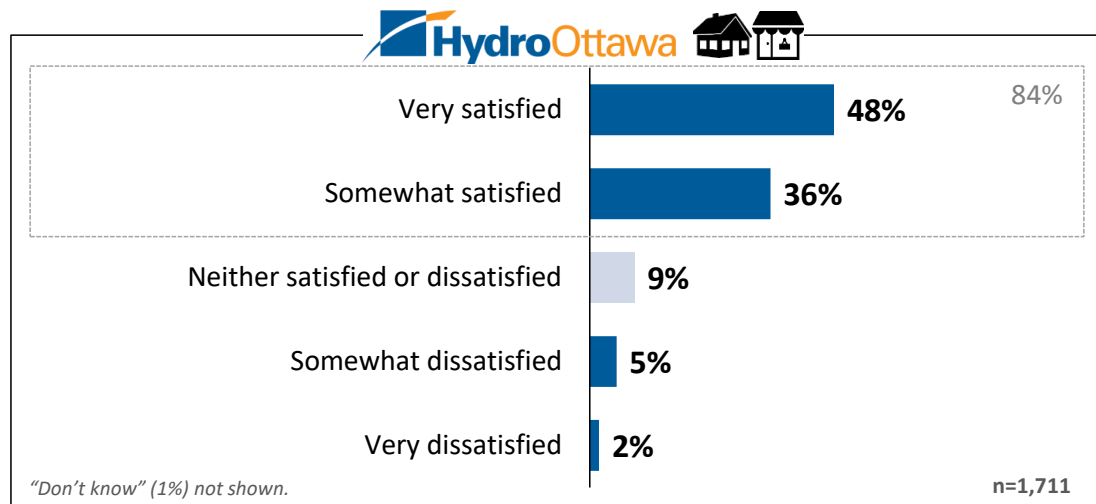
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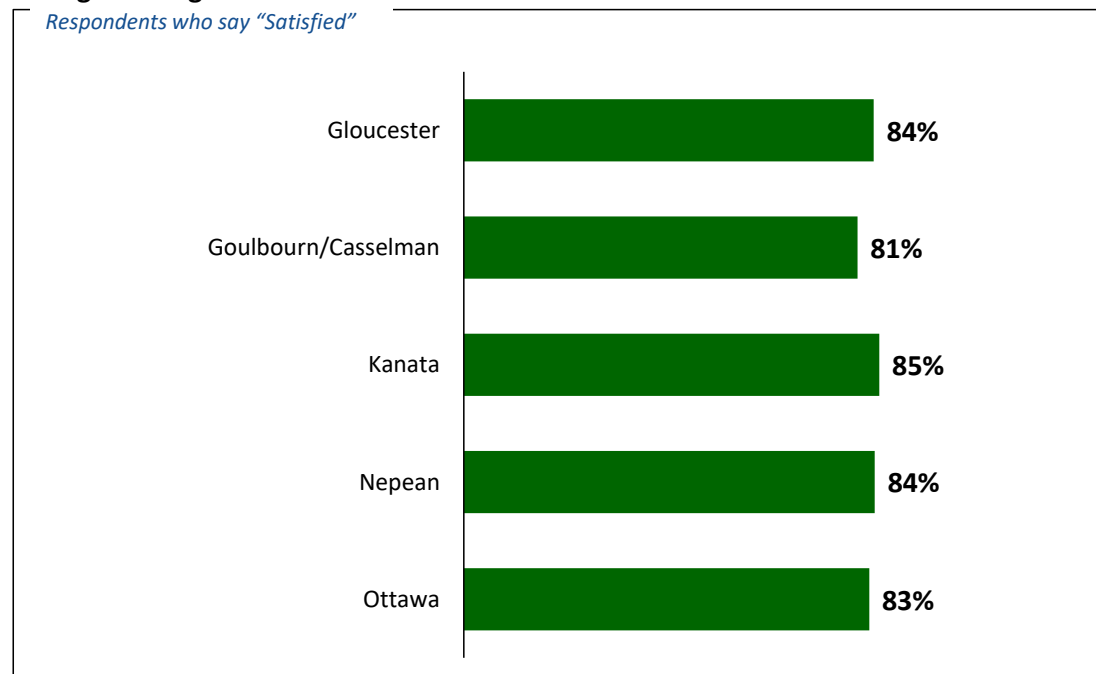
Q

Thinking specifically about the services provided to you and your community by Hydro Ottawa, how satisfied or dissatisfied are you with the services that you receive?



Regional Segmentation

Respondents who say "Satisfied"



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How can Hydro Ottawa Improve services?

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Q

Is there anything in particular that Hydro Ottawa can do to improve its services to you?

Improving Services (n=830)	%
51% of respondents did not provide additional feedback	
Reduce rates	21%
Nothing; happy with service	7%
Bill for usage; eliminate/reduce delivery charge/fixed service fees	5%
Adjust time of use/reduce/eliminate peak rates	4%
Reduce number of unplanned outages	3%
Move to green energy/renewables/encourage self generation	3%
Improve clarity of bills; explain charges and calculations	3%
Improve communication during outages	3%
Maintain/upgrade infrastructure/expand service	3%
More support for low/fixed income, seniors, differently abled	2%
More education on conservation/energy efficiency/peak time rates	2%
Do not increase rates/keep rates affordable/minimize increases	2%
Improve billing (e.g. timing, payment methods, notices, etc)	2%
Improve customer service/better access to CSR for complaints/outage reporting/online portal	2%
Better access to usage data online/reinstate usage emails/PeakSaver	2%
Move lines underground	2%
Better accountability/transparency/info on sources of energy/general communications	2%
Find internal efficiencies/lower operating costs/lower executive salaries	2%
Provide (more) incentives and rebates/rewards for energy saving	1%
Improve reliability and power quality	1%
Improve restoration times	1%
Against privatization/payment of dividends to city/profits should go to consumer savings	1%
Improve reliability during storms; harden system against weather	1%
Better tree maintenance	1%
Other	3%
None	17%
Don't Know	1%

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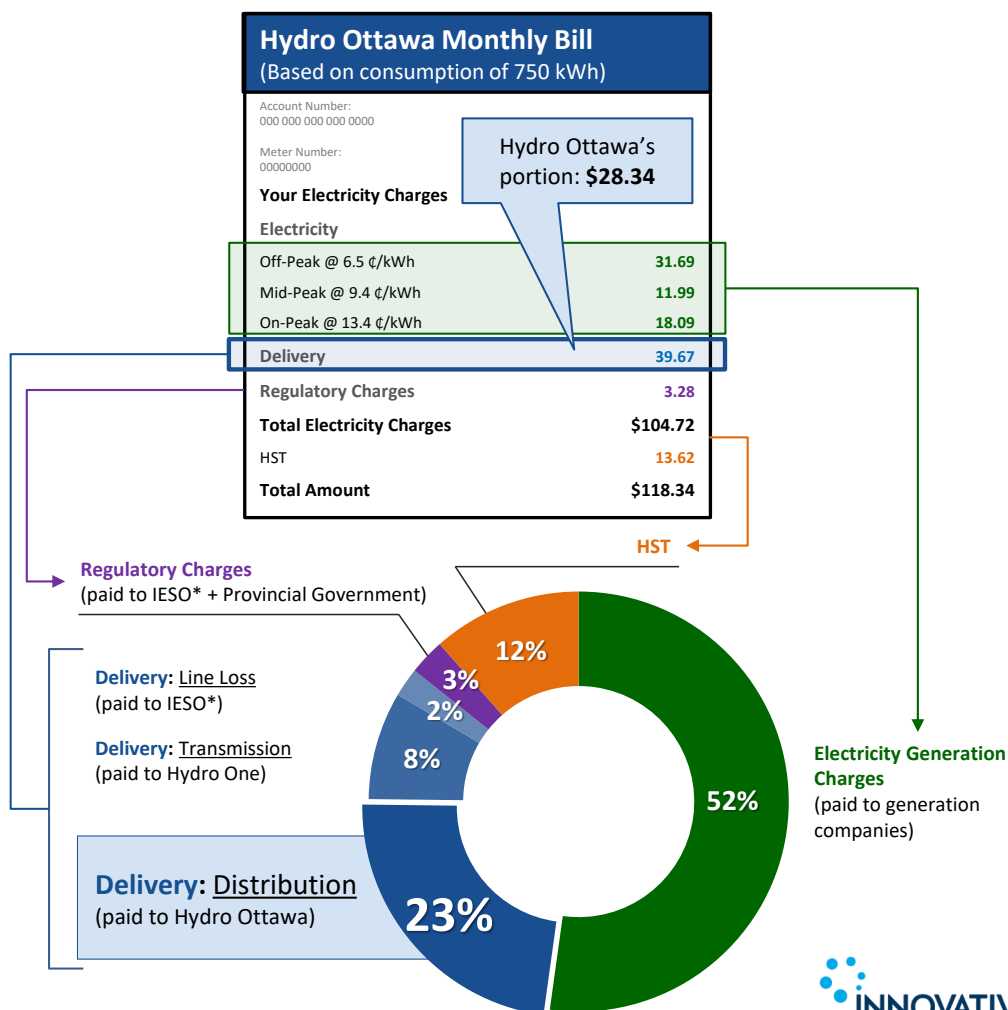


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How much of your bill goes to Hydro Ottawa?

Every item and charge on your bill is mandated by the provincial government or regulated by the Ontario Energy Board (OEB), the provincial energy regulator.

- While Hydro Ottawa is responsible for collecting payment for the entire electricity bill, it retains only a portion of the delivery charge.
- Hydro Ottawa's portion makes up about 23% of a typical residential customer's bill.
- The remainder of your bill is collected for the other companies responsible for generating and transmitting electricity, and to regulatory agencies and the federal and provincial governments.



* IESO = Independent Electricity System Operator.

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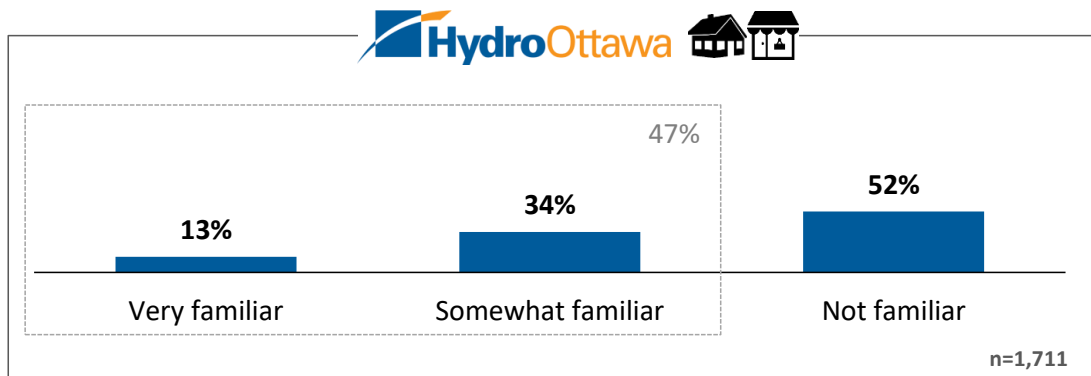


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Familiarity with Portion of Bill Remitted to Hydro Ottawa

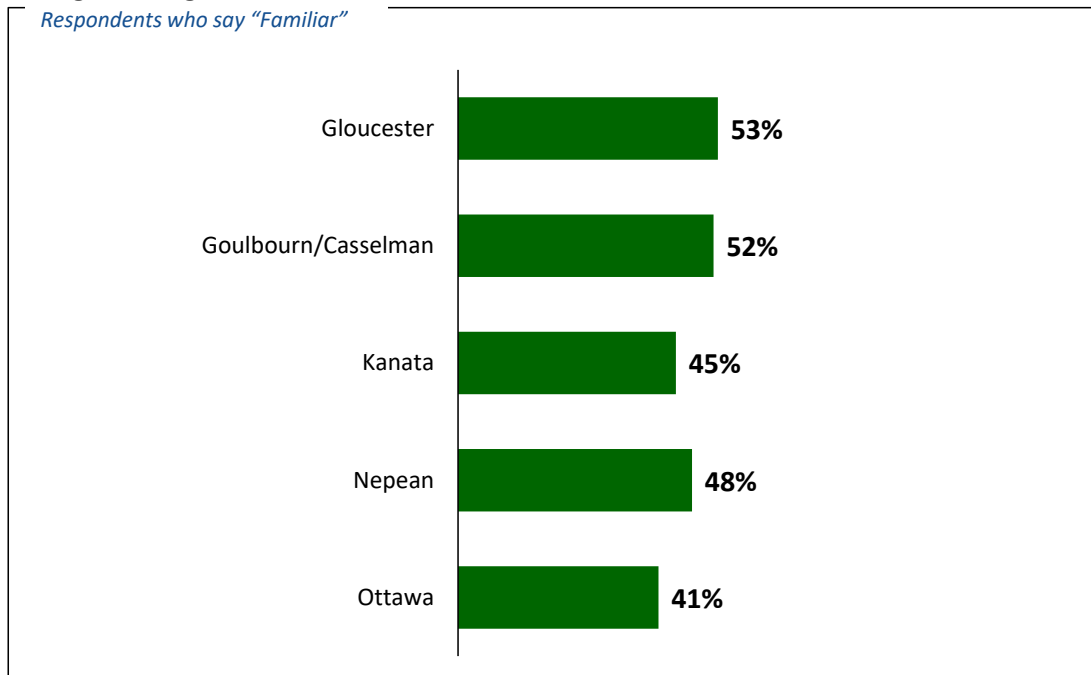
Q

Before this survey, how familiar were you with the amount of your electricity bill that went to Hydro Ottawa?



Regional Segmentation

Respondents who say "Familiar"



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How did customer feedback shape Hydro Ottawa's preliminary plan?

Hydro Ottawa engages with its customers both in day-to-day interactions and in a variety of customer engagement surveys. **However, this consultation is unique, as it focuses on Hydro Ottawa's business plan that will cover the five year period from 2021 to 2025.**

Preliminary customer engagement found that:

- The clear majority of residential and small business customers are satisfied with the current service they receive;
- Despite being the top priorities, customers don't just expect Hydro Ottawa to focus exclusively on price and reliability;
- Among competing priorities, price, reliability, and investing in new technology are the top three priorities for both residential and small business customers.

Understanding that many customers are satisfied with the level of service they receive from Hydro Ottawa, including with the reliability of the distribution system, and value minimizing price increases above all else, Hydro Ottawa has developed a business plan that emphasizes four core principles:

1. **Minimize rate increases;**
2. **Maintain reliability and service quality;**
3. **Address key pressures to the system, including;**
 - Aging infrastructure;
 - An expanding customer base and continued population growth, and;
 - The effects of severe weather events.
4. **Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs.**

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Principles of Hydro Ottawa's Plan

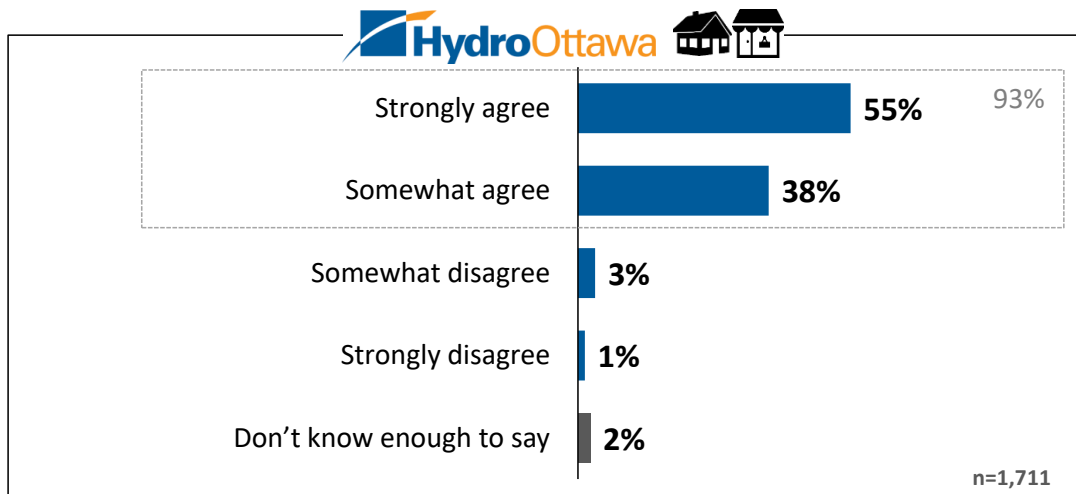
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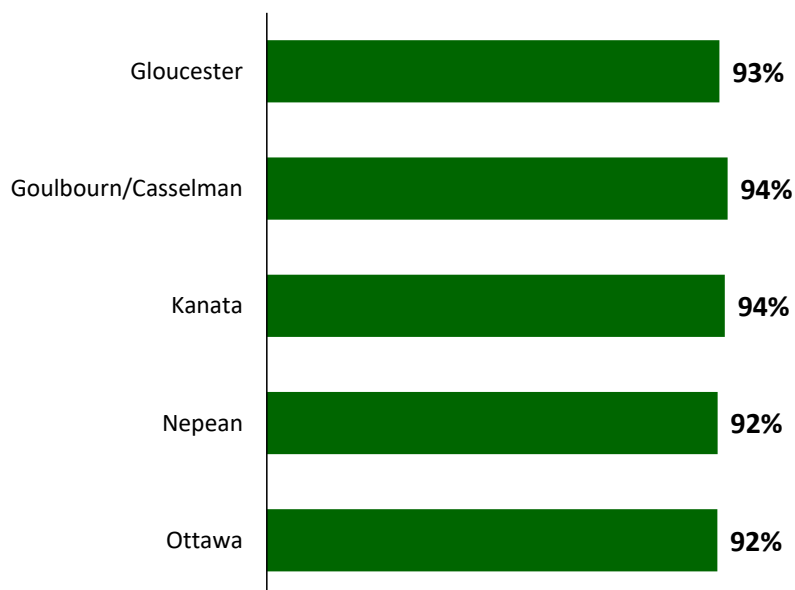
Q

Do you agree or disagree with the principles outlined above?



Regional Segmentation

Respondents who say "Agree"



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Changes to Principles of Hydro Ottawa's Plan

Q

Is there anything that you would change about the four core principles outlined above? If yes, what would you change?

Additional Feedback (n=523)	
69% of respondents did not provide additional feedback	%
'Freeze'/'reduce' rate increase, as opposed to 'minimize'	7%
All principles are important	5%
Transition to green/renewables	5%
Environment should be a (top) priority	5%
Reducing rates/minimizing increases should be top priority	4%
Demo-based rates/supports - conservers, income brackets, seniors, urban vs. rural, usage, etc.	2%
Educate, incentivize, encourage conservation	2%
Prioritize transparency, accountability, fiscal responsibility	2%
Investing in emerging tech is important/escalate priority	2%
Maintaining reliability and service quality should be top priority	2%
New tech should be green focused	2%
Alternative financing (e.g. developers, gov't, dividend to City, etc.)	2%
Eliminate/reduce/clarify delivery charge; bill for usage	2%
Find internal efficiencies	2%
Encourage self-generation	2%
Prudence is key; mistrust 'emerging' tech	2%
Move lines underground	2%
Addressing key pressures should be top priority	1%
Critical of question/survey (biased, leading, skeptical results will have impact, etc.)	1%
Increasing rates is necessary for other three principles	1%
Improve customer service and communication	1%
Prioritize hardening system against worsening weather/climate change	1%
Encourage EV adoption and prepare the grid	1%
Eliminate/adjust Time of Use	1%
Need more information/have outstanding questions	1%
Investing in emerging tech is not a priority	1%
Managing aging infrastructure should be part of 'maintaining reliability and service quality'	1%
Other	8%
None	33%
Don't Know	2%

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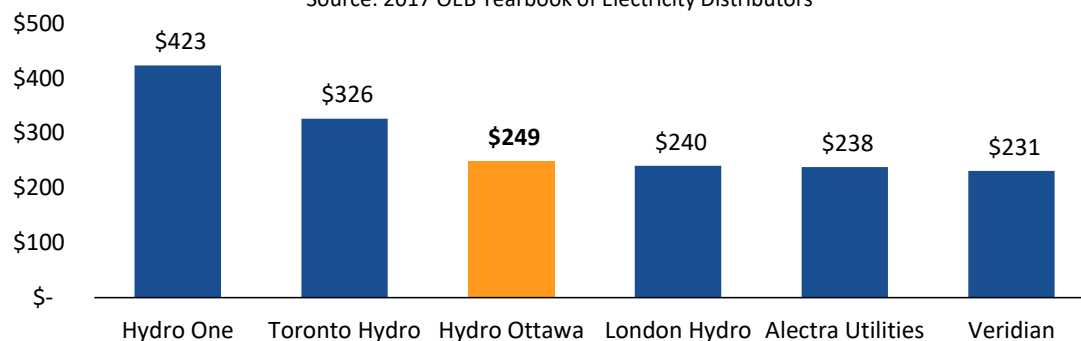
Finding efficiencies

Hydro Ottawa is continuing its focus on productivity and continuous improvement initiatives; which offset continuing costs and improves organizational effectiveness.

Hydro Ottawa's total operating costs are reported every year to the OEB and benchmarked against other distribution companies in Ontario. In the last year of publicly available data collected by the OEB, Hydro Ottawa's total operating cost per customer was **\$249**. This was, and historically has been, lower than the average Ontario distribution company cost of **\$304** per customer.

Six Largest Provincial Distributors: Operating Cost per Customer (\$)

Source: 2017 OEB Yearbook of Electricity Distributors



The choices Hydro Ottawa makes in its operating budget are primarily driven by technical analysis and expert assessments of best practices.

As promised earlier, this workbook does not ask questions that expect you to be an electricity expert.

The OEB runs an open and transparent review process where experts from the OEB and intervenor groups review and have the opportunity to question Hydro Ottawa's analyses and assessments. Anyone, including you are welcome to participate in the OEB process.

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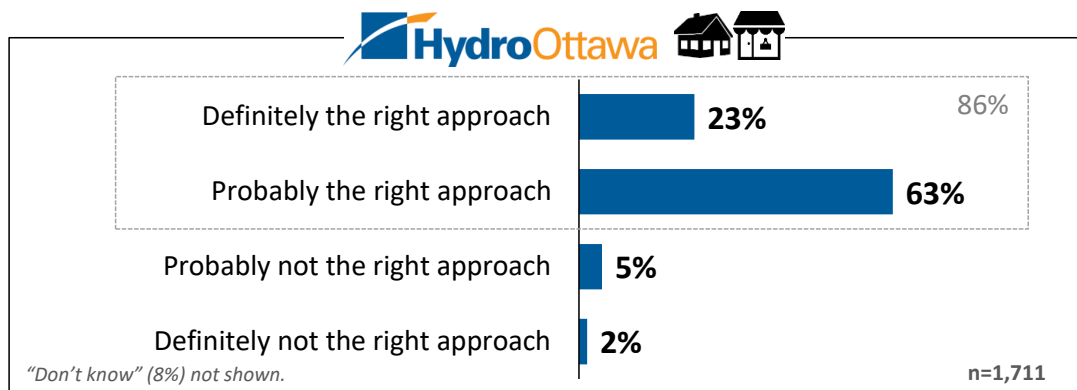


Approach to Bringing Customer Views into Plans

This workbook leaves detailed discussion of Hydro Ottawa's operating budget to experts from the OEB and intervenors in the formal OEB review; the workbook focuses on collecting your views on competing trade-offs in investments.

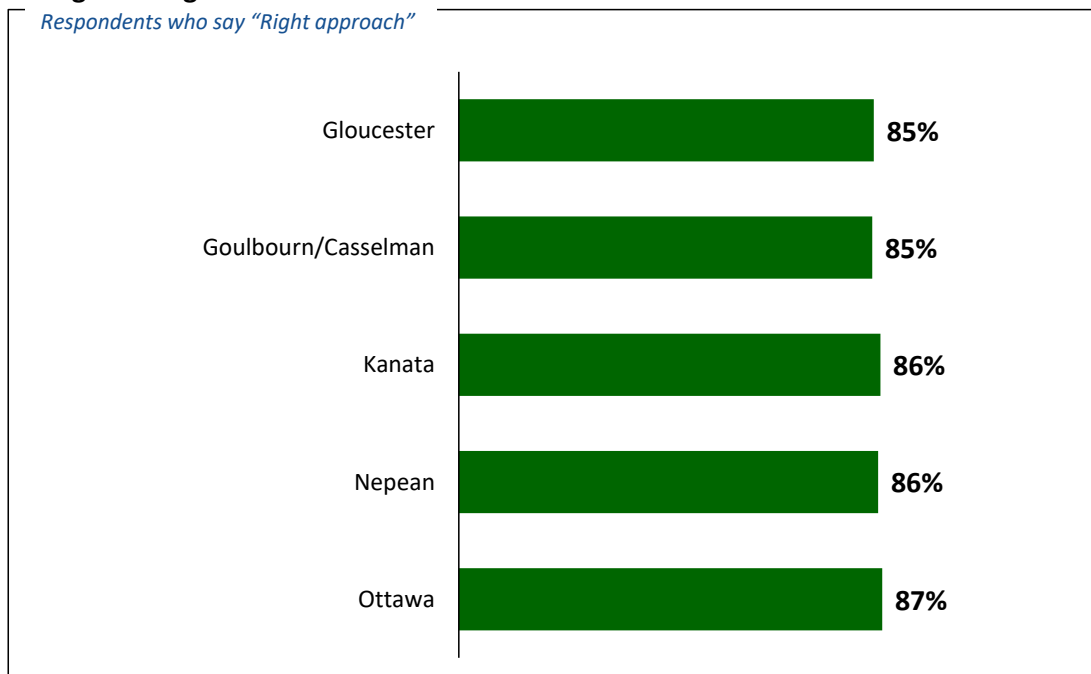


Does this customer engagement process seem like the right approach to bring customer needs and preferences into Hydro Ottawa's plan?



Regional Segmentation

Respondents who say "Right approach"



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Changes to Approach to Bringing Customer Views into Plans

Q

Are there things that you would change about how Hydro Ottawa brings customer needs and preferences into Hydro Ottawa's plan? If so, what would you change?

Additional Feedback (n=371)	%
78% of respondents did not provide additional feedback	
Continue customer engagement; ensure accessibility and representation	12%
Reduce cost/cost too high/minimize increase	11%
Issue with rest of system (transmission, generation, policy, etc.)	4%
Demo-based rates/support - income brackets, seniors, big users, conservers, etc.	3%
Prioritize environment - alternatives, renewables, sustainability, carbon neutral operations, conservation	3%
Ensure accountability/transparency	3%
Happy with service; keep up good work	3%
Follow up on survey; share results; prove customers were listened to	3%
Customer education is important	3%
Critical of survey - too long/complex	2%
Ensure fiscal responsibility - eliminate waste, plan long-term, find efficiencies, etc.	2%
Appreciated survey/opportunity to give feedback; informative	2%
Alternative financing - developers, gov't, profits, internal efficiencies, executive salaries, dividends to city	2%
Increase should not exceed inflation/cost of living	2%
Investment should be well thought out	1%
Ontario rates are highest; model off/compare to systems outside Ontario	1%
Reduce/eliminate delivery charge	1%
Need more information/have outstanding questions/defer to experts	1%
Prioritize reliability	1%
Eliminate/adjust Time of Use	1%
Other	4%
Nothing	34%
Don't Know	2%

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Non-discretionary expenditures

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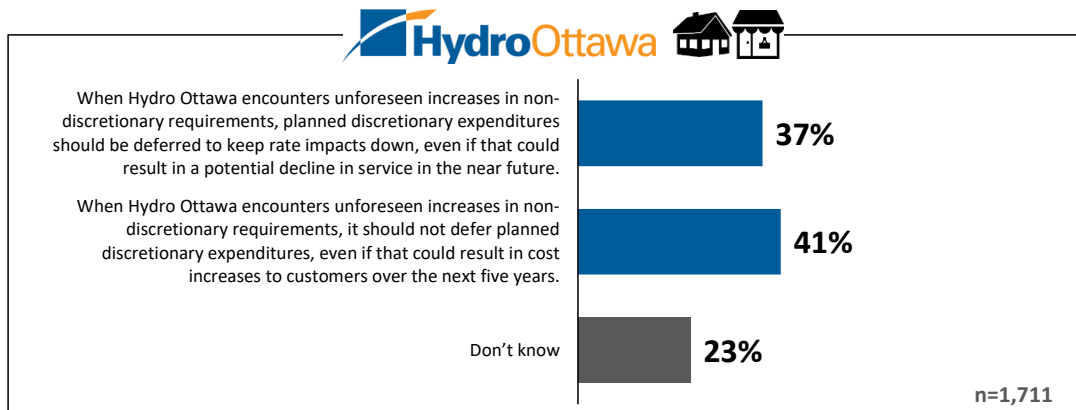


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As federal, provincial and municipal demands change, Hydro Ottawa may need to implement unplanned, non-discretionary expenditures. It has a decision to make about how to accommodate unexpected non-discretionary spending which could impact other planned priorities.

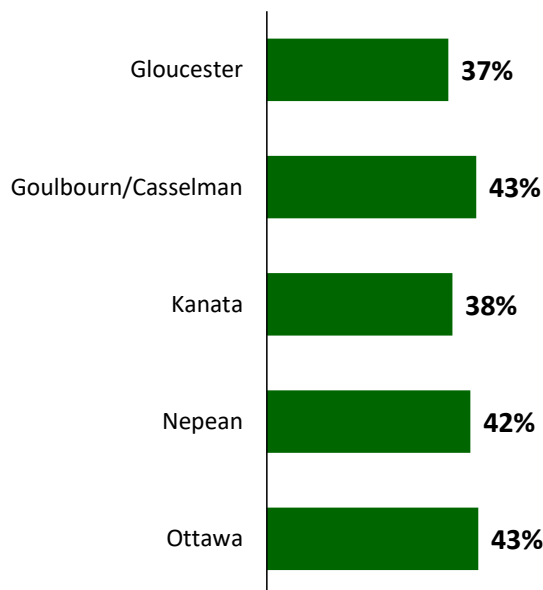


Which of the following statements best represents your point of view regarding Hydro Ottawa's approach to discretionary and non-discretionary spending?



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Respondents who say "Do not defer planned discretionary expenditures"



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Additional Feedback: Non-discretionary expenditures



Additional Feedback (Optional)

Additional Feedback (n=250)	%
85% of respondents did not provide additional feedback	
There should already be a contingency plan/budget; rates shouldn't be affected	11%
Alternative financing (eg. developers, new connects, gov't, cause of expenditure, etc.)	8%
Investing now leads to reduced future costs	8%
Service/reliability is more important than cost (within reason)	6%
Balance of options 1 and 2	6%
Plan better; there should be nothing 'unforeseen'	5%
Transparent communication/consultation in the event of increase/unforeseen expenditure	4%
Lower rates	4%
Depends on context; assess case-by-case	3%
More context required to answer	3%
Ensure impact of decisions are fully understood/justified (eg. cost vs benefit, short vs long-term, etc.)	2%
Manage better; make do without increase or decline in service	2%
Keeping rates low is priority #1/minimize increases	2%
Demo-based rates/supports - income brackets, seniors, usage, etc.	2%
Depends on the size of the increase	2%
Reduce salaries/employee bonuses/pay from profits	2%
Skeptical/critical (of question/options/survey)	1%
Prioritize environment - do not defer green investment	1%
Increase should not exceed inflation/cost of living	1%
Reduction in service is unacceptable	1%
Prioritize operational efficiency/minimize spending	1%
Short-term increases are fine, but should decrease in the long-term	1%
Survey/question too long/difficult to understand	1%
Bury lines to save in the long run	1%
Other	14%
Nothing	10%
Don't Know	1%

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Pacing investments in the overhead distribution system

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Hydro Ottawa is considering three options for continued investment in the overhead distribution system:

- 1. Accelerated Approach:** Increased replacement of aging overhead transformers, switches, and poles to catch up and get ahead of growing number of poles at, or beyond, their end-of-life.
- 2. Included in Draft Plan:** Defer catch up in aging infrastructure to manage rate impact. Modest decrease of approximately \$1M per year in renewal of overhead infrastructure from 2016 to 2020 levels. Move to more targeted renewals of specific poor condition assets and less full renewals of broad areas.
- 3. Reduced Approach:** Deferral of proactive switch renewal, and pole replacement. Move to replacement of only critical assets.

Option	Outcome
Accelerated Approach <u>Additional</u> \$0.04 per bill each year (\$0.20 more per bill by 2025)	<ul style="list-style-type: none"> Increasing the replacement levels to address higher-risk assets, such as poles, which are at or near end-of-life. Increasing investments in switches to enhance operational efficiency. Reducing requirement for emergency renewals.
Included in Draft Plan <i>Within 2.5% annual increase</i>	<ul style="list-style-type: none"> Moderate slowing of asset replacement. Increased future costs to catch up on expected end-of-life infrastructure. Some increase in emergency renewal replacements, significant increase not expected for next five years. Minor increases in customer impact as targeted and emergency renewals will result in more piecemeal replacements.
Reduced Approach <u>Decrease</u> of \$0.03 per bill each year (\$0.15 less per bill by 2025)	<ul style="list-style-type: none"> Need for catch up in future years, requiring significant levels of investment. Degradation in system reliability due to lower switch renewal. Switch failures typically occur on operation, resulting in longer restoration times. Moderate increases in targeted and emergency renewal, possibly resulting in multiple service visits in certain areas.

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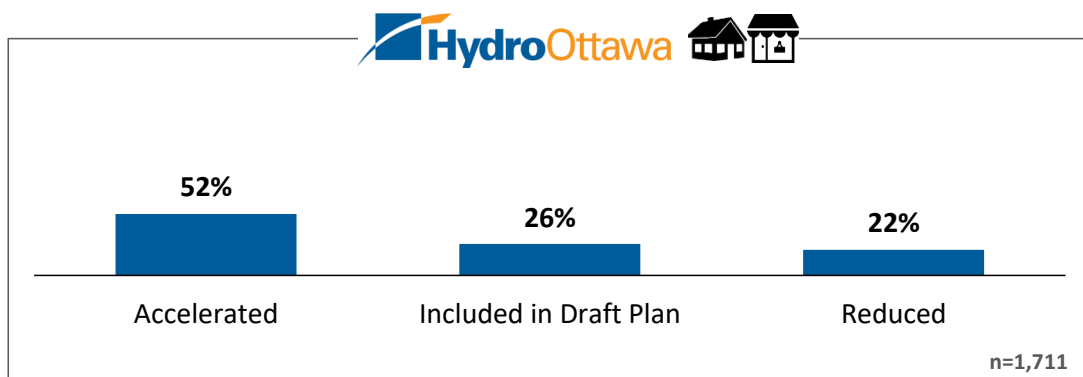


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Pacing investments in the overhead distribution system

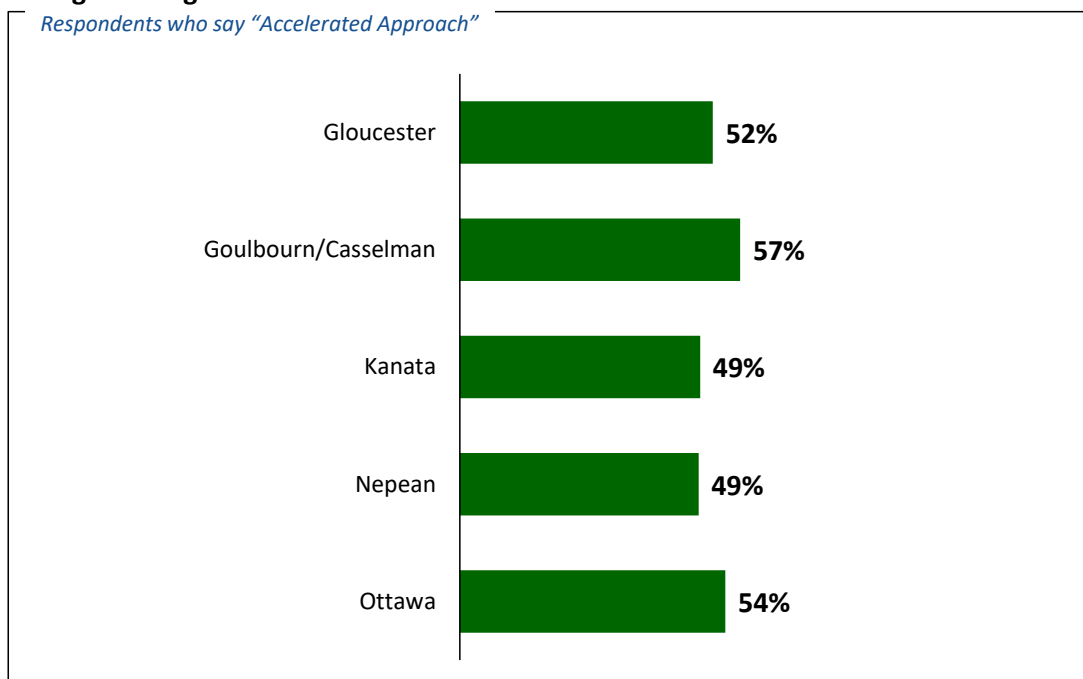
Q

Which of the following options do you prefer?



Regional Segmentation

Respondents who say "Accelerated Approach"



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Additional Feedback: Overhead

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Q

Additional Feedback (Optional)

Additional Feedback (n=203)	
88% of respondents did not provide additional feedback	
	%
Move lines underground	22%
Investing now leads to reduced future cost; proactive > reactive	9%
Maintaining/upgrading system is important	5%
Alternative financing (eg. developers, new builds, big businesses, partnerships, etc.)	5%
Increase nominal/worth it	5%
Critical of question/options presented	4%
Harden system against climate change/extreme weather	4%
Oppose any increase; cost too high already	4%
Prioritize finding efficiencies; minimize increase	3%
Need more information/have outstanding questions/defer to the experts	3%
Invest in pole/cable tech	3%
Safety/reliability is crucial	2%
Hydro Ottawa should have planned better	2%
Increase should not exceed inflation/cost of living	1%
Demo-based rates/supports - income brackets, seniors, urban vs rural, usage, etc.	1%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	1%
Other	10%
Nothing	11%

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Pacing investments in the underground distribution system

Hydro Ottawa is considering four options when it comes to underground cable renewal:

- 1. Accelerated Approach:** Renewal of aging assets with increased spending directed to underground transformers and cables.
- 2. Enhanced Approach:** Renewal of aging assets with increased spending targeted for cable replacement.
- 3. Included in Draft Plan:** Balanced investment, defer catch up in replacement of aging infrastructure to manage rate impact. Continued and modest increases in proactive replacement of assets at higher risk of failure.
- 4. Reduced Approach:** Defer any increase in proactive asset replacement, moving to only critical repairs of the system.

Option	Outcome
Accelerated Approach Additional \$0.14 per bill each year (\$0.70 more per bill by 2025)	<ul style="list-style-type: none"> Increasing proactive replacement of aging infrastructure with a focus on transformer and cable replacement. Reduced asset risk and future investment to catch up. Accelerating asset renewal enabling rapid roll out of increased system capacity (EVs) and improved operations (faster restoration when outages occur). Reliability improvements reducing frequency and duration of outages. Reducing maintenance costs related to oil leaks.
Enhanced Approach Additional \$0.07 per bill each year (\$0.35 more per bill by 2025)	<ul style="list-style-type: none"> Replacing aging cables to reduce failure risk, with slowed investment in other underground infrastructure such as switches, and transformers. Manageable future investment will be required to catch-up. Increased rate of cable replacement will provide some improvements in asset failure and outage frequency.
Included in Draft Plan <i>Within 2.5% annual increase</i>	<ul style="list-style-type: none"> Moderate rate of asset replacement, which is still higher than the 2016-2020 program Manageable level of future investment required to catch-up. Maintenance of system reliability with minor impact in service reliability.
Reduced Approach Decrease of \$0.07 per bill each year (\$0.35 less per bill by 2025)	<ul style="list-style-type: none"> Need for catch up in future years, requiring significant levels of investment. Potential reduction on system reliability with increasing outages in specific areas due to cable failures.

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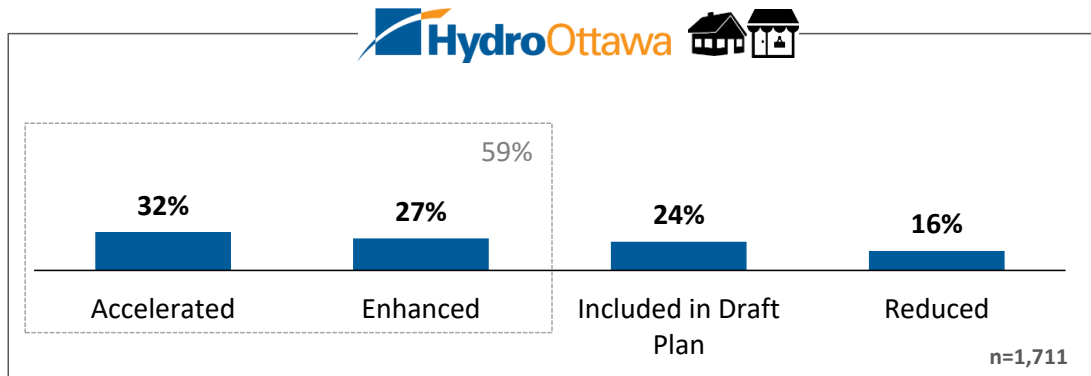
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Pacing investments in the underground distribution system

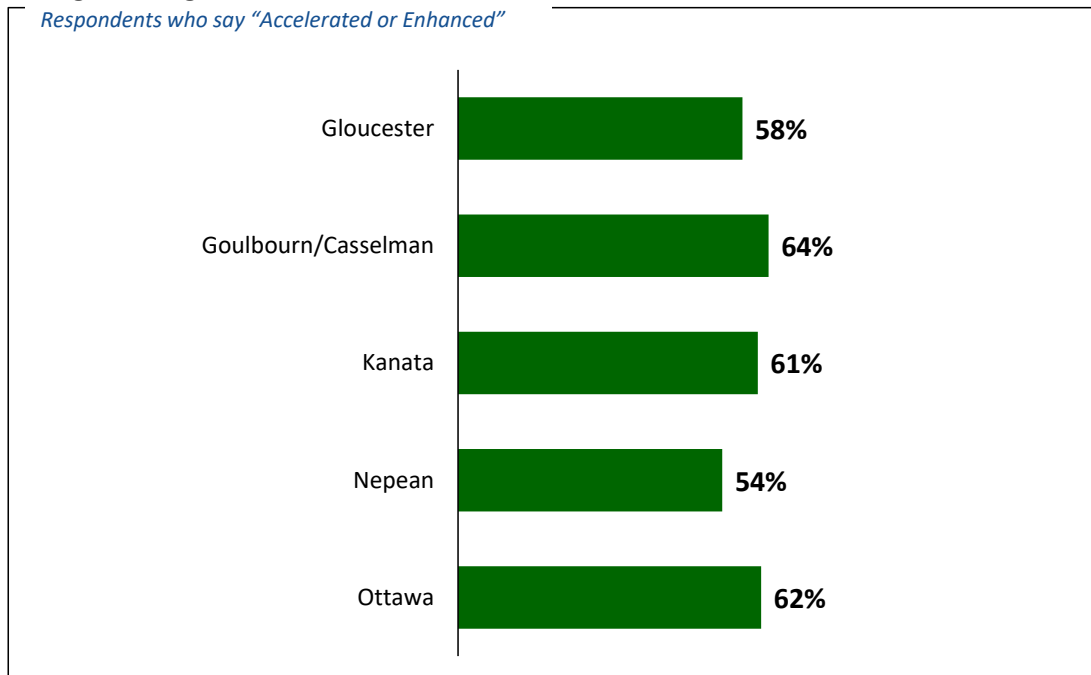
Q

Which of the following options do you prefer?



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Respondents who say "Accelerated or Enhanced"



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Additional Feedback: Underground

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Q

Additional Feedback (Optional)

Additional Feedback (n=139)	%
92% of respondents did not provide additional feedback	
Investing now leads/should lead to reduced future cost; proactive > reactive	9%
Research/investment in cabling technology necessary	6%
Increase nominal/worth it	5%
Critical of question (eg. insufficient options, leading, biased, etc.)	5%
Move lines underground	4%
Decide based on positive ROI/cost-benefit analysis	4%
Harden system against worsening weather by burying cables	4%
Reliability/safety is priority	4%
Moderate/gradual approach preferred/target critical areas first/as they fail	4%
Alternative financing (eg. developers, new builds, big businesses, government, etc.)	3%
Oppose any increase; cost too high already	3%
Consider environment/risk assessment necessary	3%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	2%
Prioritize finding efficiencies; minimize increase	2%
Maintenance/replacement planning should have been done/lack of foresight	2%
Make do with less than 2.5%	2%
Not qualified to respond/defer to experts	2%
Lower rates should be a priority	2%
Only those affected should pay	2%
Demo-based rates/supports - income brackets, seniors, urban vs rural, usage, EV adopters, etc.	1%
Need more information/have outstanding questions	1%
Maintaining/upgrading the system is important	1%
Plan for future (eg. EV adoption, urban development, future demands, emerging tech, etc.)	1%
Pay from profits/savings/not from customers	1%
Too expensive/unnecessary/defer for now	1%
Coordinate with other companies/utilities to share costs	1%
Other	7%
Nothing	16%

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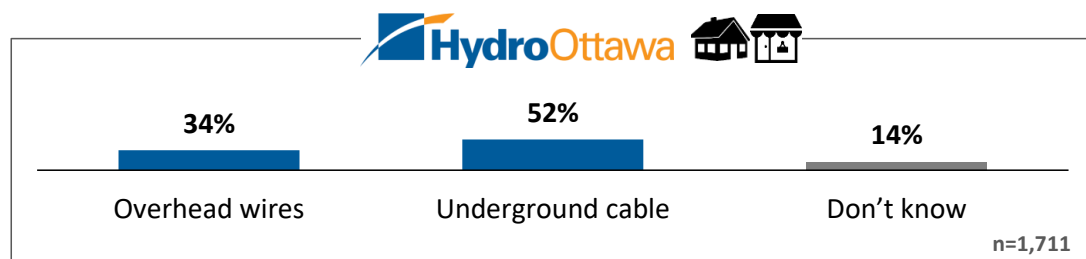
Residential &
Small Business



Overhead/Underground Investments by Service Type

Q

To the best of your knowledge, how does your home receive electrical service?



Q

Pacing investments in the overhead distribution system

Investment Option	Total	Overhead	Underground
Accelerated Approach	52%	56%	52%
Included in Draft Plan	26%	26%	28%
Reduced Approach	22%	19%	20%

Q

Pacing investments in the underground distribution system

Investment Option	Total	Overhead	Underground
Accelerated Approach	32%	34%	33%
Enhanced Approach	27%	28%	27%
Included in Draft Plan	24%	25%	24%
Reduced Approach	16%	13%	16%

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Background Information

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Small Business



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Reliability experience

In order to provide feedback on Hydro Ottawa's plans, it's important to understand how the distribution system has performed in the past, as well as what's expected in the future.

A core objective of Hydro Ottawa's 2021-2025 rate application is to maintain current levels of reliability, while making targeted improvements to those areas experiencing below average service.

- The five-year average number of outages (excluding major event days and loss of supply from Hydro One) has decreased slightly between 2014 and 2018, from 1.02 to 0.84 (total number of annual outages).
- The five year average duration of outages (excluding major event days and loss of supply from Hydro One) has decreased slightly between 2014 and 2018, from 1.17 to 1.14 (total annual hours).

What is most likely to cause an outage?

Although both the number and duration of outages have decreased compared to the previous five-year average, defective equipment remains the top cause of outages within Hydro Ottawa's control.

That said, in 2018, severe weather presented a unique set of challenges for Hydro Ottawa's distribution system. One section of this consultation will focus on the impacts of severe weather, and the options for preparing the distribution system for more frequent and extreme weather.

Causes of Unscheduled Power Outages (five-year average: 2014 to 2018)



10%

Animal Contact: outages caused by animals such as birds and squirrels coming in contact with overhead power lines or transformers.



27%

Equipment Failure: unscheduled power outages from equipment failure usually occur with distribution assets that are beyond or approaching the end of their expected useful lives.



24%

Weather Related Events: adverse weather such as heavy rain, lightening, ice, snow, wind, extreme temperatures, freezing rain and frost can disrupt the distribution system.



39%

Other: includes tree contact (10%), and human interference (11%) (such as construction workers accidentally cutting power lines or motor vehicle accidents involving contact with distribution assets). 9% of outages are unknown, but most likely caused by animal contact.

Note: statistics do not include loss of supply from Hydro One.

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Reliability Experience

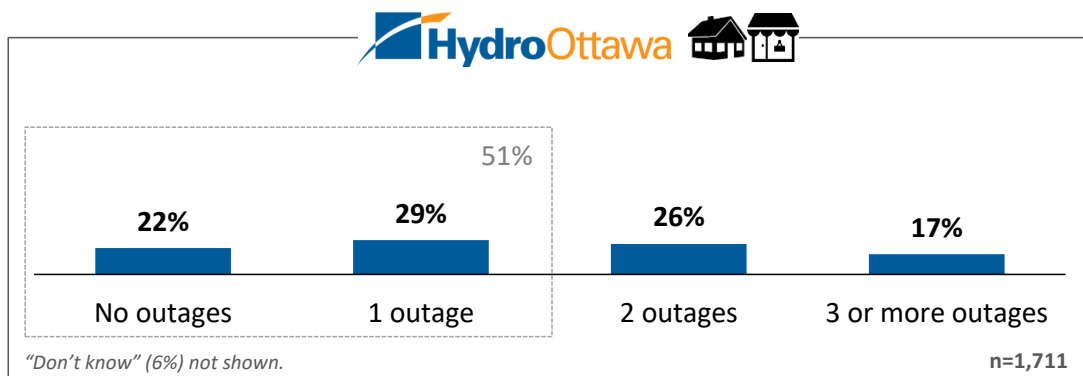
Residential &
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34

Q

Have you experienced any power outages at your home or at your business in the past 12 months which lasted longer than one minute?



Number of Outages	Gloucester	Goulbourn/ Casselman	Kanata	Nepean	Ottawa
No outages	21%	7%	19%	12%	36%
1 outage	29%	19%	25%	32%	30%
2 outages	25%	39%	32%	28%	20%
3 or more outages	20%	28%	14%	22%	9%
Don't know	5%	6%	9%	6%	6%
One or fewer outages	50%	27%	45%	43%	66%

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Reliability Investments

Residential &
Small Business



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Hydro Ottawa is considering four options when it comes to reliability investments:

- 1. Accelerated Approach:** Build power lines/new connections between substations to improve reliability. Enhance monitoring of substation and distribution equipment.
- 2. Included in Draft Plan:** Only build critical connections between substations. Enhance monitoring of station and distribution equipment.
- 3. Limited Approach:** Improve reliability for neighbourhoods experiencing the most frequent number of power outages. Enhance monitoring of substation and distribution equipment.
- 4. Reduced Approach:** Only improve reliability for neighbourhoods experiencing the most frequent number of power outages.

Option	Outcome
Accelerated Approach <u>Additional</u> \$0.02 per bill each year (\$0.10 more per bill by 2025)	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Increase system resilience and performance through addition of connections on distribution network. Supports reduction in outage duration. Target investments to areas that have below average reliability.
Included in Draft Plan <i>Within 2.5% annual increase</i>	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Maintain system resilience and performance through addition of connections on distribution network. Maintains outage duration at current levels. Target investments to areas that have below average reliability.
Limited Approach <u>Decrease</u> of \$0.04 per bill each year (\$0.20 less per bill by 2025)	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Target investments to areas that have below average reliability.
Reduced Approach <u>Decrease</u> of \$0.05 per bill each year (\$0.25 less per bill by 2025)	<ul style="list-style-type: none"> Target investments to areas that have below average reliability. No investment to improve/enhance reliability.

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Reliability Investments

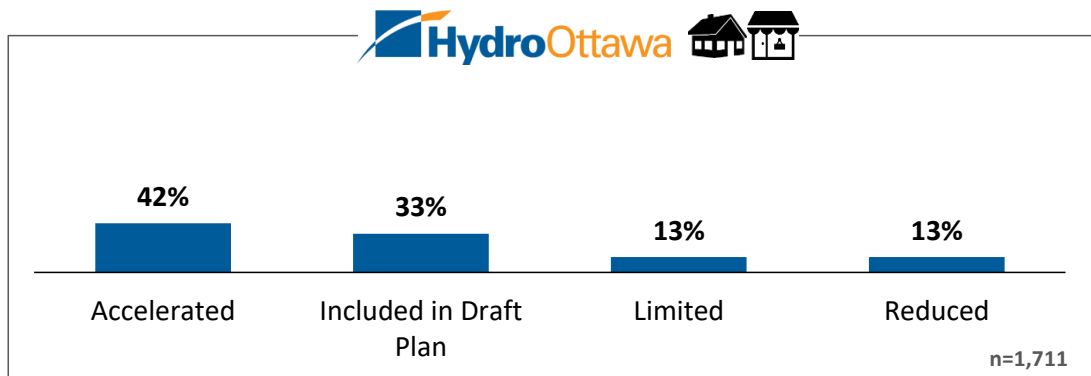
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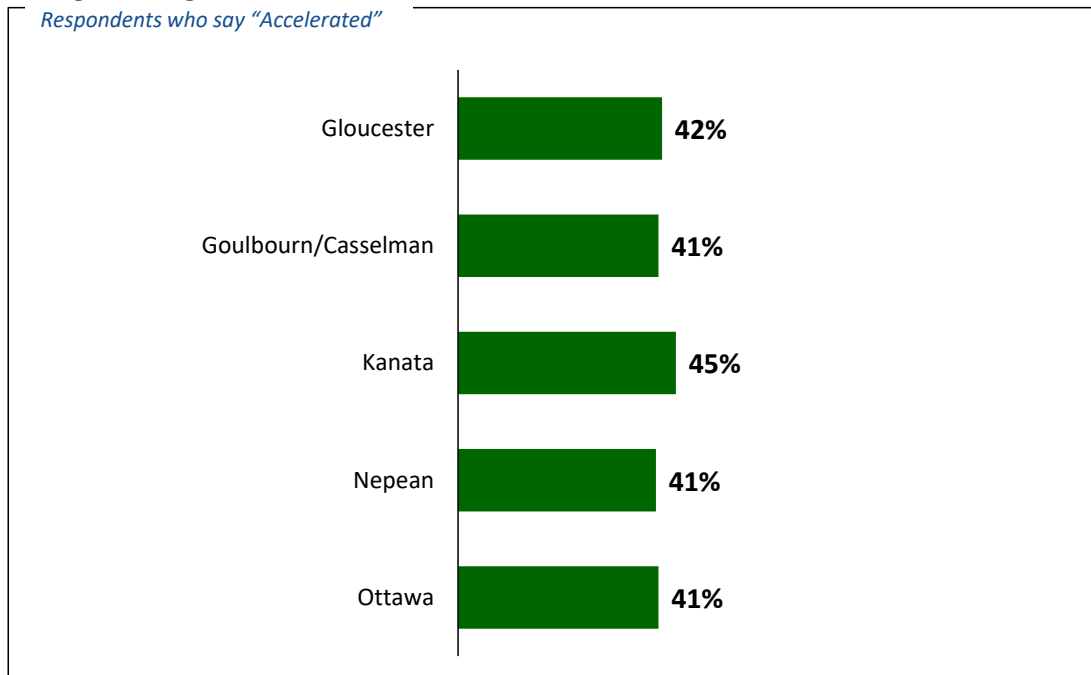
Q

Which of the following options do you prefer?



Regional Segmentation

Respondents who say "Accelerated"



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Additional Feedback: Reliability Investments

Residential &
Small Business



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Q

Additional Feedback (Optional)

Additional Feedback (n=97) 94% of respondents did not provide additional feedback	%
Oppose any increase; cost too high already	13%
Reliability/short outage duration is priority #1	10%
Investing now leads to reduced future cost; proactive > reactive	6%
Critical of question/options presented/biased/leading question	6%
Increase nominal/worth it	5%
Current reliability is adequate	5%
Move lines underground	3%
Prioritize hardening system against worsening weather	3%
Prioritize finding efficiencies; minimize increase	3%
Maintaining/upgrading system is important	3%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	2%
Alternative financing (eg. developers, new builds, big businesses, partnerships, etc.)	1%
Maintenance/replacement planning should have already been done/lack of foresight	1%
Need more information/have outstanding questions	1%
Plan for future needs (eg. increasing demand, EV adoption, etc.)	1%
Other	12%
Nothing	19%
Don't Know	4%

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Background Information

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Preparing for potential increases in severe weather

Hydro Ottawa's distribution system is designed to withstand environmental stresses and impacts, however, weather-related outages have been increasing in terms of frequency and severity over recent years. During 2018 there were three major events which, combined, resulted in system asset replacements of approximately \$4M.

In addition to impacting Hydro Ottawa's equipment, these events increase the resources required to safely and quickly respond to the storm damage and coordinate and communicate restoration efforts to customers.

Hydro Ottawa is currently in the process of completing a climate change vulnerability assessment to determine what steps should be taken to mitigate the impacts of changing climates. While the recommendations from this assessment have not yet been finalized, there are a number of steps Hydro Ottawa could consider taking to prepare for an increasing frequency of severe weather events. For example, changing pole replacement practices and standards would increase overhead structure strength and provide greater clearances from trees and vegetation.

Hydro Ottawa wants to know what your preferences are with respect to making investments in system resilience for severe weather that may or may not materialize over this rate period.



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Preparing for potential increases in severe weather

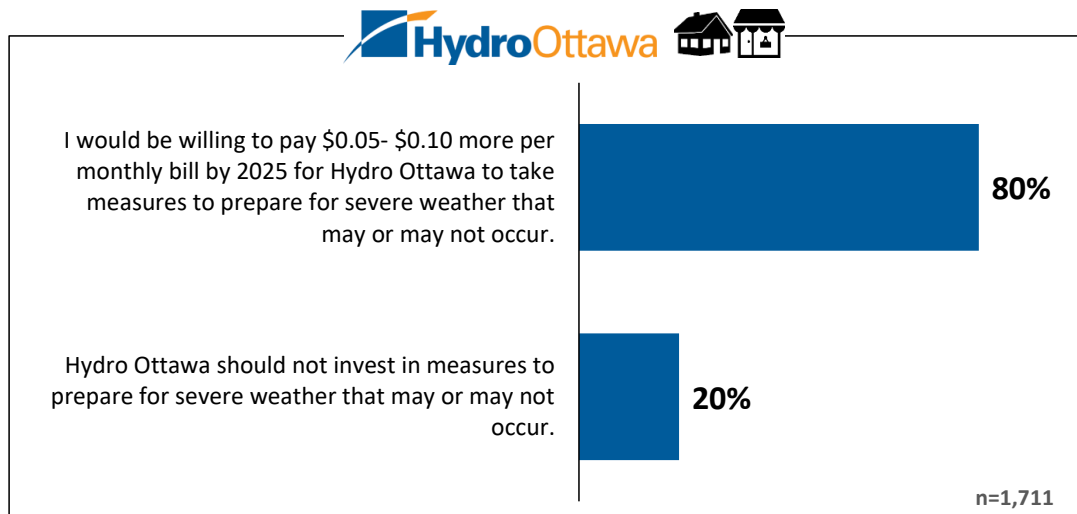
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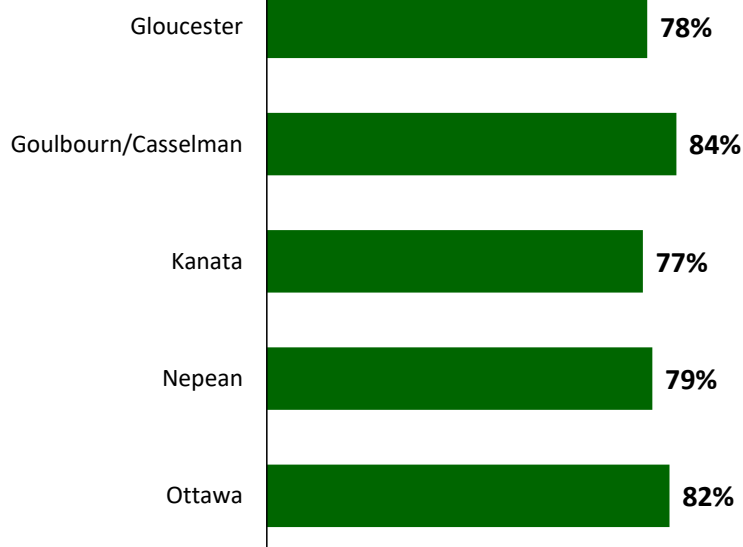
Q

Which of the following options do you prefer?



Regional Segmentation

Respondents who say "Willing to pay more to take measures to prepare for severe weather"



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Additional Feedback: Severe Weather

Residential &
Small Business



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Q

Additional Feedback (Optional)

Additional Feedback (n=207)	%
88% of respondents did not provide additional feedback	
Preparing for severe weather is important/worth the cost	14%
Worsening weather is inevitable AND we must be prepared	8%
Move lines underground	8%
Alternative financing - salaries, profits, City dividend, etc.	7%
Critical of question - insufficient options	4%
Manage/prepare without increase	4%
Investing now leads to reduced future costs; proactive > reactive	3%
HO should have already been preparing/ customer already paying for this	3%
Worsening weather is inevitable	3%
Demand transparency/accountability in spending of this fund	3%
Unused funds should go back to customer/into the system	2%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	2%
No use/unable to predict and/or prepare for worsening weather	2%
Need more information/ have outstanding questions/defer to experts	2%
Reliability is crucial; need outweighs cost	2%
Increase is nominal/worth it	2%
Smaller/minimize increase	2%
Fund must be untouchable/carried over year-year until needed	1%
Demo-based rates - income bracket, seniors, consumption, region, etc.	1%
Gov't/City should step in and pay for severe weather events	1%
Reduce cost	1%
Ensure fiscal responsibility and good management	1%
Invest in alternative energy sources	1%
Worsening weather is not a problem	1%
Focus on tree maintenance	1%
Other	9%
None	10%

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Background Information

Residential &
Small Business



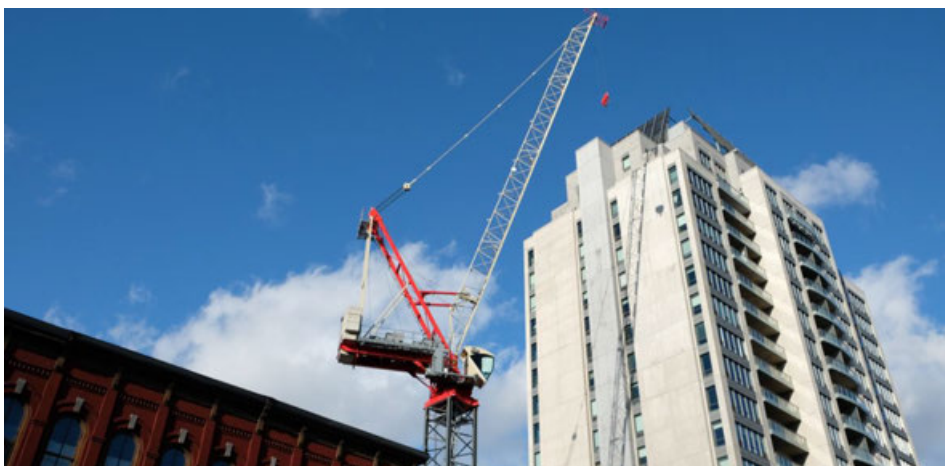
41

Serving a growing city

The population in Hydro Ottawa's service territory continues to grow. Hydro Ottawa must be prepared to serve new customers, while maintaining acceptable levels of service for existing customers. This means regularly assessing the capacity and reliability of its distribution system and its resilience to extreme weather events, and taking action when gaps are found.

A number of Hydro Ottawa's substations are approaching capacity and cannot accommodate future customer growth. Delaying planned investments could result in a decline in reliability for existing customers.

Hydro Ottawa's current plan only includes critical capacity investments; however, there is also an option to make further investments to get ahead of the growing demand for electricity supply.



Option	Outcome
Accelerated Approach <u>Additional</u> \$0.09 per bill each year (\$0.45 more per bill by 2025)	<ul style="list-style-type: none"> • Increase distribution system capacity investment to meet and exceed growing demand for electricity supply. • Distribution system capacity is moved ahead of the demand for electricity, eliminating reliability risk during peak demand days.
Included in Draft Plan <i>Within 2.5% annual increase</i>	<ul style="list-style-type: none"> • Slow distribution system capacity to critical investment only. • Distribution system capacity maintains pace with demand for electricity, or slightly lagging. No impact on ability to connect customers. • Results in modest increase to risk in reliability to areas of growth and increased risk of longer outages or inability to restore power to some customers if outages occur on peak demand days.

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Serving a growing city

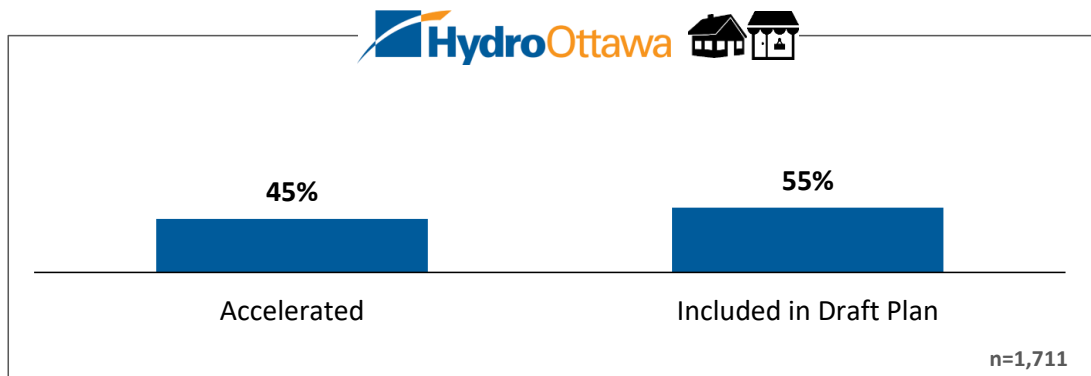
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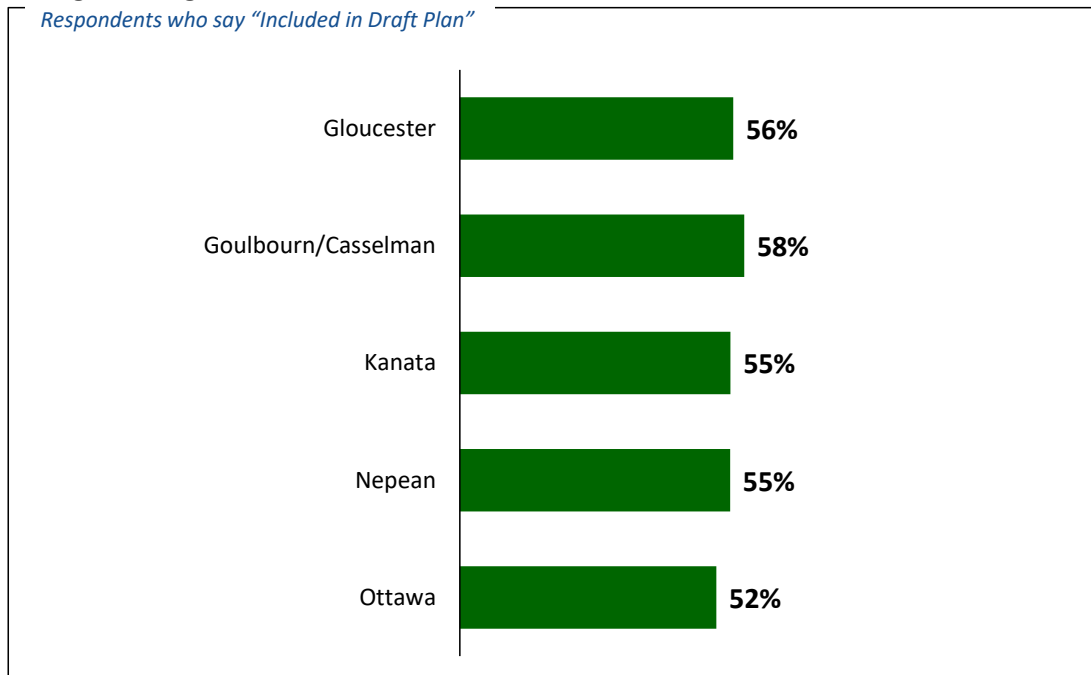
Q

Which of the following options do you prefer?



Regional Segmentation

Respondents who say "Included in Draft Plan"



Voluntary Workbook

Additional Feedback: Serving a growing city

Residential &
Small Business



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Q

Additional Feedback (Optional)

Additional Feedback (n=154)	
91% of respondents did not provide additional feedback	%
Alternative financing (eg. developers, new builds, big businesses, government, etc.)	21%
Plan for the future (including EVs, urban growth/densification, emergency preparedness, etc.)	15%
Oppose any increase; cost too high already	10%
Critical of question (insufficient options, biased, leading, etc.)	7%
Demo-based rates/supports - income brackets, seniors, urban vs rural, usage, etc.	7%
Focus on conservation/energy efficiency vs. increased supply	4%
Need more information/have outstanding questions	4%
Increase nominal/worth it	3%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	3%
Safety/reliability is crucial	3%
Research/Invest in methods of distribution/self-generation/decentralisation	2%
Investing now leads to reduced future cost; proactive > reactive	1%
Prioritize finding efficiencies; minimize increase	1%
Concerned about all these increases/costs adding up	1%
Other	6%
None	6%
Don't Know	5%

Online Workbook

Background Information

Residential &
Small Business



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Innovation: Investing for the future

Electricity distribution service is in the midst of unprecedented change – evolving towards a more decentralized, customer-centric, technologically-advanced and environmentally sustainable model.

Hydro Ottawa plans to continue engaging in research and development activities which offer value to its customers. This includes supporting the connection of Distributed Energy Resources (DERs). This small scale generation is connected to the grid close to the communities they serve. Hydro Ottawa's Great DR – phase two project (currently known as MiGen), where customers generate their own power and store what's not immediately used, is an example of innovation that is incorporated into the 2021-2025 plan.

Hydro Ottawa has also been actively involved in assessing and addressing customer needs within the emerging electric vehicle market, as well as, participating in a Battery Energy Storage Project, as part of the Smart Grid Program.

Looking forward, opportunities to develop new rate models and explore new energy services will offer customers more choice and control over their electricity needs.



Voluntary Workbook

Innovation: Investing for the future

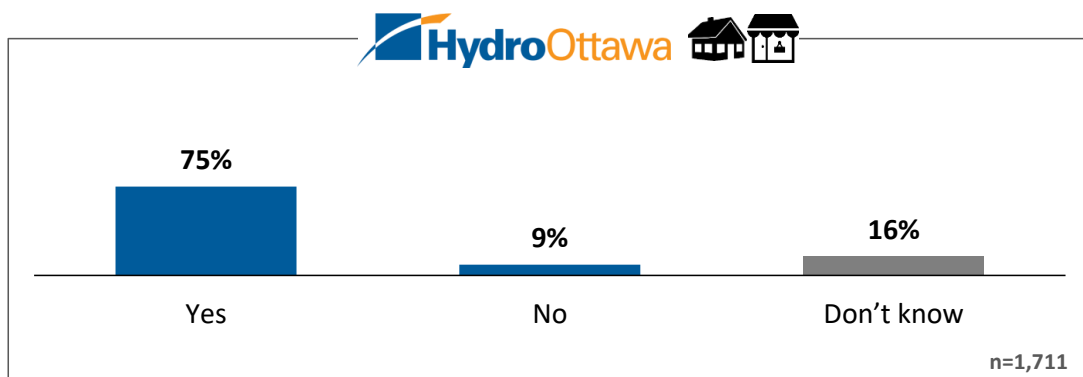
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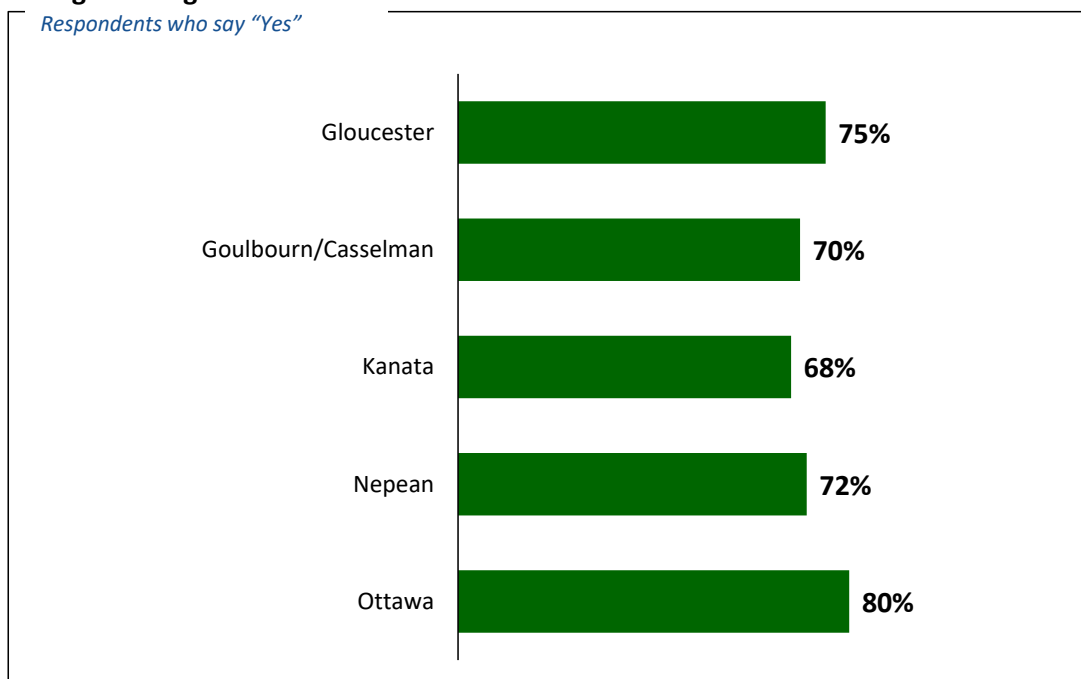
Q

Do you support Hydro Ottawa's strategy of leading change and engaging in industry projects that could shape the future of the energy marketplace?



Regional Segmentation

Respondents who say "Yes"



Voluntary Workbook

Innovation: Investing for the future

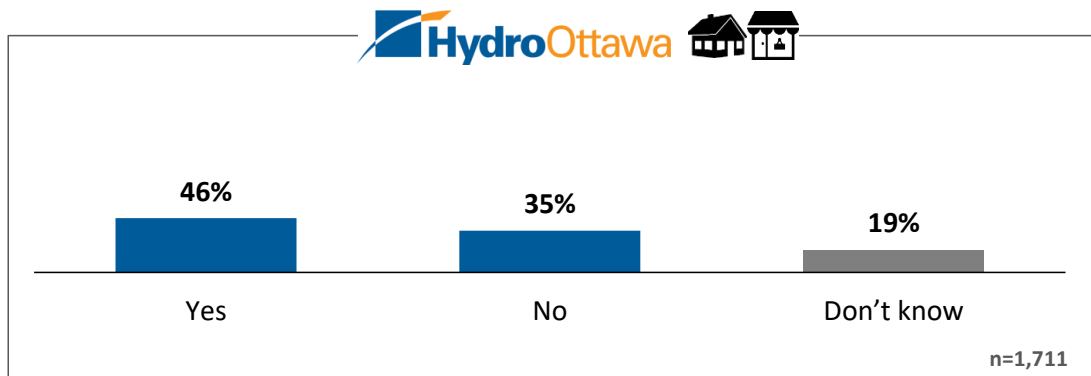
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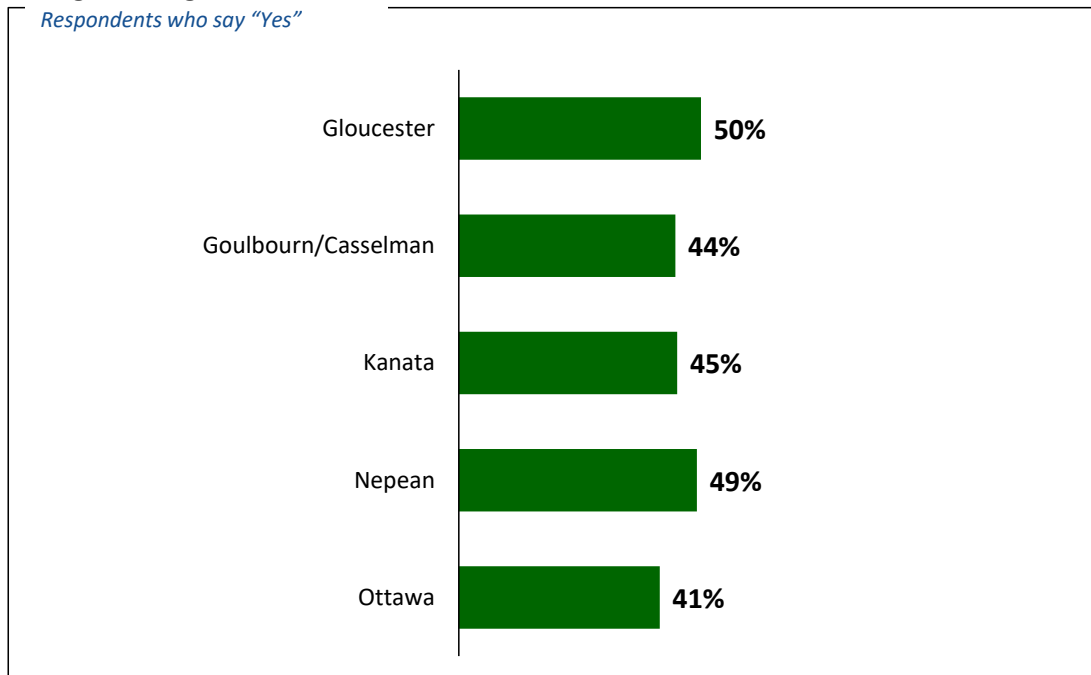
Q

Do you believe Hydro Ottawa should limit expenditures to those necessary to serve today's customers and existing needs, if this option could lower rate impacts in the short term?



Regional Segmentation

Respondents who say "Yes"



Voluntary Workbook

Additional Feedback: Innovation: Investing for the future

Residential &
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Q

Additional Feedback (Optional)

Additional Feedback (n=164)	%
90% of respondents did not provide additional feedback	
Plan for future (urban growth, EV adoption, future demand, etc.)	15%
R&D, innovation is important/worth it	9%
Support alternative/renewable energy	7%
Reduce rates; keep costs low	7%
Need more information/have outstanding questions	7%
Allow opt-in funding/those interested should pay	5%
Support local generation and/or storage (decentralization, MiGen)	5%
Critical of question (insufficient options, confusing, contradictory, biased, etc.)	4%
Skeptical of/opposed to 'green' tech/EVs	4%
Find a balance - neither lead nor lag; prudence	3%
Support investment IF it results in reduced cost	2%
Stay in your lane (distribution); others more qualified to research	2%
Decide after thorough assessment (priorities, value, impact, etc.)	2%
Support EVs	2%
Alternative financing - partnerships, developers, gov't, dividends, etc.	2%
Not worth increased rates	2%
Be a leader; stay ahead/on the cusp	1%
Investing now will reduce future costs; proactive > reactive	1%
Focus on present needs	1%
Demo-based rates - income brackets, business vs residential, those affected, etc.	1%
Respond to markets (EVs, emerging tech/innovations, etc.)	1%
Other	7%
None	9%

Online Workbook

Background Information

Residential &
Small Business



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Keeping the business running

Hydro Ottawa is more than just poles and wires – it's a business that needs to invest in tools, trucks, equipment, and facilities to maintain the distribution system and service its customers.

The types of expenditures in this category are:

- **Information Technology:** Systems required to securely operate the distribution system, manage customer information and privacy, and keep employees working effectively and efficiently.
- **Vehicles:** Bucket trucks and other vehicles used to move employees, equipment, and supplies throughout Hydro Ottawa's service territory to support the safe and reliable operation of the grid.
- **Facilities:** Warehouse, operations centres and administrative office.
- **Tools and Equipment:** Specialized safety tools and equipment to mitigate the risks associated with maintaining electricity distribution infrastructure.

When deciding whether to continue to maintain existing tools or replace them, Hydro Ottawa considers whether the risks and costs of continuing to use them outweighs the benefits of waiting longer to replace them. Hydro Ottawa must also consider the lead times required to replace some utility vehicles, such as bucket trucks, which can be as long as 18 months.



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Keeping the business running

Residential &
Small Business

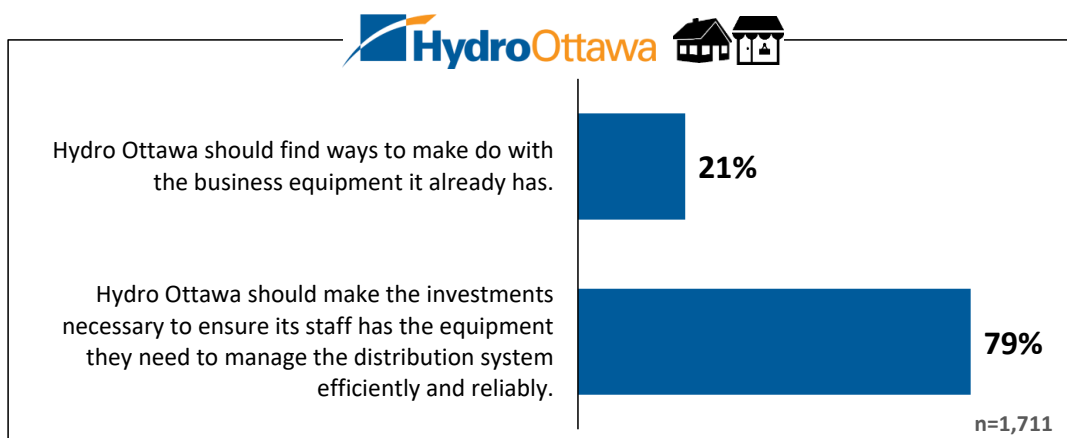


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As a company, Hydro Ottawa needs equipment to maintain its distribution system and IT systems to manage the distribution system and customer information.

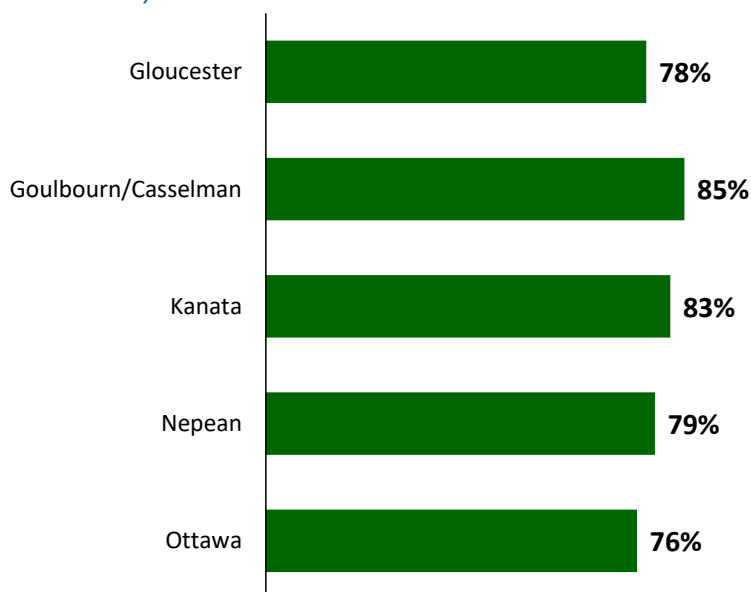
Q

Which of the following statements best represents your point of view?



Regional Segmentation

Respondents who say "Hydro Ottawa should make the investments necessary..."



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Additional Feedback: Keeping the business running

Residential &
Small Business



50

Q

Additional Feedback (Optional)

Additional Feedback (n=164)	%
90% of respondents did not provide additional feedback	
Proper/efficient/up-to-date equipment is important	16%
Alternative financing - asset sharing, salaries, profits, internal efficiencies, etc.	12%
Safety (of work crews) is priority #1	7%
Critical of question (insufficient/misleading options)	5%
Invest when necessary/what's truly needed (need > want)	5%
Current service is adequate; make do with what's in budget	4%
Find balance between the two options (discretion, prudence, 'within reason')	4%
Prioritize thorough assessment	4%
Ensure transparency/accountability of these expenditures	4%
This should already be part of the budget/business plan/paid for	3%
Ensure operational efficiency	3%
Make decisions based on positive ROI/cost-benefit	3%
Prioritize environment - alternatives, renewables, carbon neutral operations, sustainability	3%
Investing now leads to reduced future costs; proactive > reactive	2%
Maximize asset life (regular maintenance, quality products)	2%
Manage without increasing rates	2%
Reduce rates/cost	2%
Ensure cyber security	2%
Need more information/have outstanding questions	1%
Minimize increases	1%
Other	6%
None	5%
Don't Know	5%

Voluntary Workbook

Vehicle replacement

Residential &
Small Business



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Q

Which of the following vehicle replacement options do you prefer?



Option 1: Using a run-to-failure approach, replace vehicles only when they can no longer operate, knowing that some larger vehicles require an 18 month lead time to replace. This approach may impact restoration times and efficiency.

12%

Option 2: Make investments in the fleet on a vehicle-by-vehicle basis weighing age, kilometers driven, engine hours, repair history, availability of parts and internal mechanic assessments of the general vehicle condition.

78%

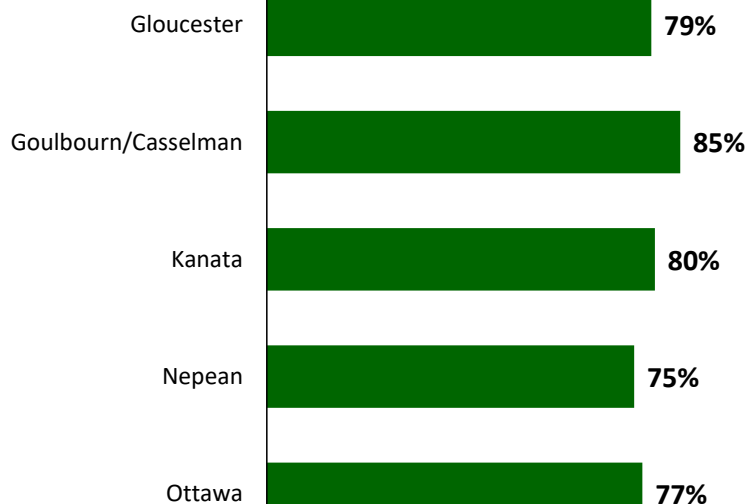
Option 3: Replace vehicles once they have reached the end of their recommended age, regardless of their condition, which is the most expensive and lowest risk option.

10%

n=1,711

Regional Segmentation

Respondents who say "Option 2"



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Additional Feedback: Vehicle Replacement

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Additional Feedback (Optional)

Additional Feedback (n=121)	%
93% of respondents did not provide additional feedback	
Maximize asset life (eg. no idling, rust protection, regular maintenance, skilled mechanics on staff, etc.)	16%
Transition to EV/hybrid/alternative fuel/greener fleet	13%
Critical of life cycle estimates (too low, arbitrary, etc.)	6%
Have spare assets ready	5%
Prioritize safety/risk management	5%
Sell retired assets	4%
Prioritize thorough assessment	3%
Support run-to-failure	3%
Find balance between options 1 and 2	2%
Ensure fiscal responsibility - eliminate waste, efficient spending, need > want, etc.	2%
Make do with current fleet/spending here is low priority/limit spending	2%
Need more information/have outstanding questions	2%
Reduce rates/minimize increases	2%
Alternative financing - salaries, profits, asset sharing, etc.	2%
Critical of question/survey (insufficient options, biased, leading etc.)	2%
Underground lines mean fewer trucks needed	1%
Ensure effective management/planning ahead/budgeting	1%
Explore more options (none quite right)	1%
Make decisions based on cost-benefit /ROI	1%
Find balance between options 2 and 3	1%
Lease/rent/share the fleet/outsource	1%
Increase should be paid for by Hydro Ottawa/should have planned better/already budgeted	1%
Other	11%
None	13%

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Small Business

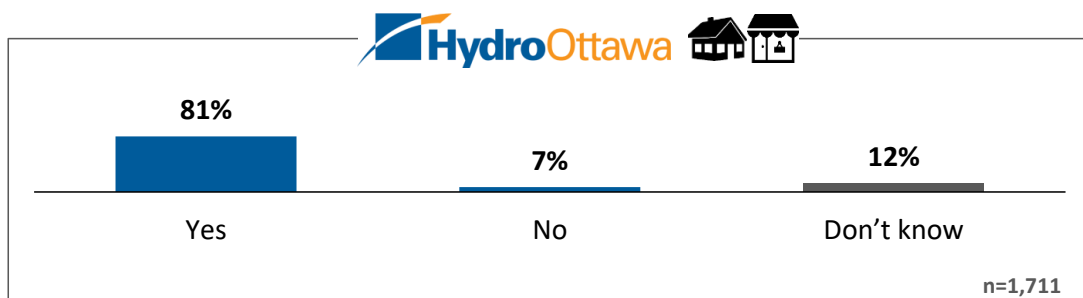


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Finding efficiencies through technology investments

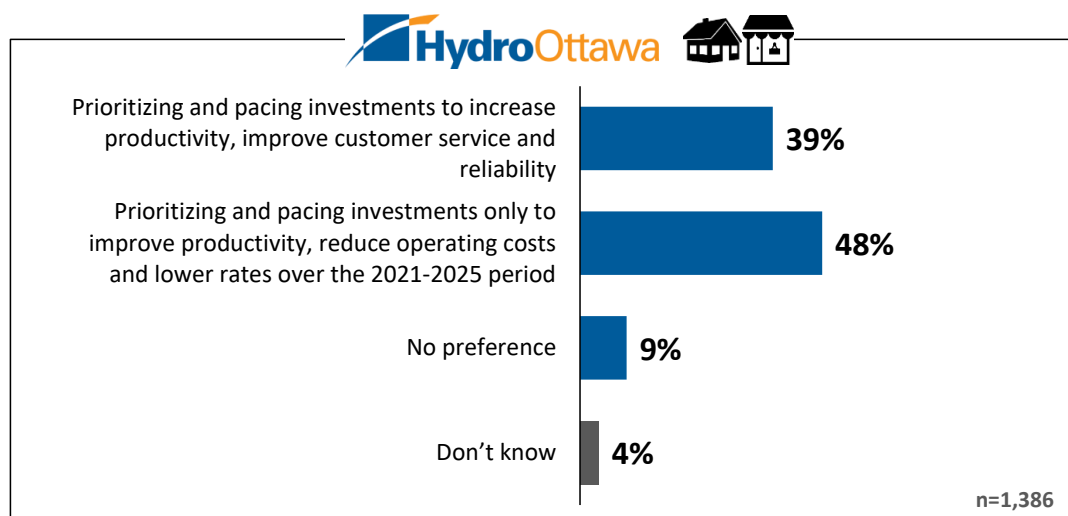
Q

Do you support Hydro Ottawa's view that prudent technological investments are necessary in order to meet its ongoing business and customer needs?



Q

[If yes to above] And which of the following options do you prefer?



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Small Business



Additional Feedback: Finding efficiencies through technology



Additional Feedback (Optional)

Additional Feedback (n=99)	%
94% of respondents did not provide additional feedback	
Support this investment - general	17%
Prudence is key; thoughtful investment	6%
Ensure cyber security	6%
Make do without increase; find efficiencies	5%
Source alternative, renewable energy or providers; be environment/climate conscientious	5%
Ensure effective managing/planning/budgeting	5%
Keep rates low/minimize increase	4%
Prioritize reliability	4%
'Personalized experience' unnecessary/wasteful/no value	4%
Find a balance between options; assess case-by-case	3%
Invest IF it leads to reduction in bills/increase in efficiency/productivity	3%
Low priority/limit spending/service is fine	3%
Invest in personnel; don't cut jobs	2%
Prioritize a 'green' service', e.g. self-gen	2%
Support self-usage-monitoring	2%
Critical of question (insufficient options, confusing, misleading, etc.)	2%
Alternative financing (e.g.. developers, new builds, big businesses, partnerships, etc.)	2%
Need more information	2%
Customers service already adequate	1%
No frills on bills - focus simplicity, clarity, predictability	1%
Use of 'prudence' here is problematic; creates questions	1%
Lack confidence in survey design, questions, or Ottawa Hydro to use the data	1%
Hydro Ottawa should pay cost/make cuts from within	1%
Plan needs to be more strategic, longer than 5 years	1%
Only purchase and implement proven systems to avoid poor technology	1%
Make decisions based on positive ROI/cost-benefit analysis	1%
Other	1%
None	13%

Voluntary Workbook

Investment Alternative Summary

Residential &
Small Business



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Investment Alternative Summary

Throughout this workbook, you have been asked about some key choices that could impact your rates. Below is a summary of your answers to the questions that could impact your rates.

At the bottom of this page you will find the total bill impact of all the answers.

Having seen the total bill impact, please review your answers and change your responses if you desire; your potential rate impact will be re-calculated. You will have the opportunity to adjust your answers again until you feel you've reached the best balance for you.

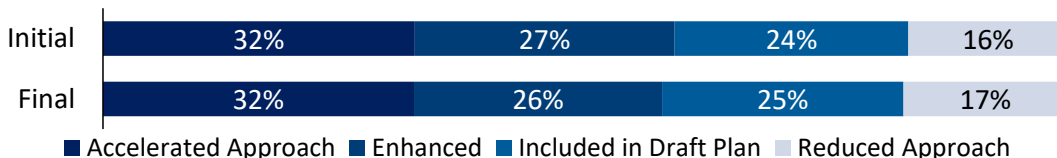
Q

Pacing Investments in the Overhead Distribution System



Q

Pacing Investments in the Underground Distribution System



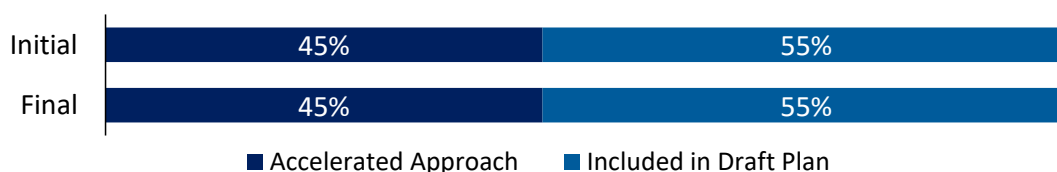
Q

Reliability Investments



Q

Serving a Growing City



Voluntary Workbook

Impact of Choices on Rates | Preamble

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Impact of Hydro Ottawa's Plan

Hydro Ottawa has calculated the rate impact of implementing the options recommended by its planners and included it in its draft plans.

These priorities may change based on your input but Hydro Ottawa is looking for an investment program that aims to:

- **Minimize rate increases;**
- **Maintain reliability and service quality;**
- **Address key pressures to the system, including;**
 - **Aging infrastructure;**
 - **An expanding customer base and continued population growth; and**
 - **The effects of severe weather events.**
- **Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs.**

If Hydro Ottawa continues with its current plan, it is estimated that the distribution portion of the bill will increase an average of **2.5% per year for the period 2021-2025.**

At the end of the 5-year plan, the typical residential customer would see the distribution portion of their electricity bill increase by **\$3.74**. As a result, the distribution charges on the typical residential customer's monthly bill would increase from **\$28.47 in 2020** to **\$32.21 by 2025**.

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Impact of Hydro Ottawa's Plan

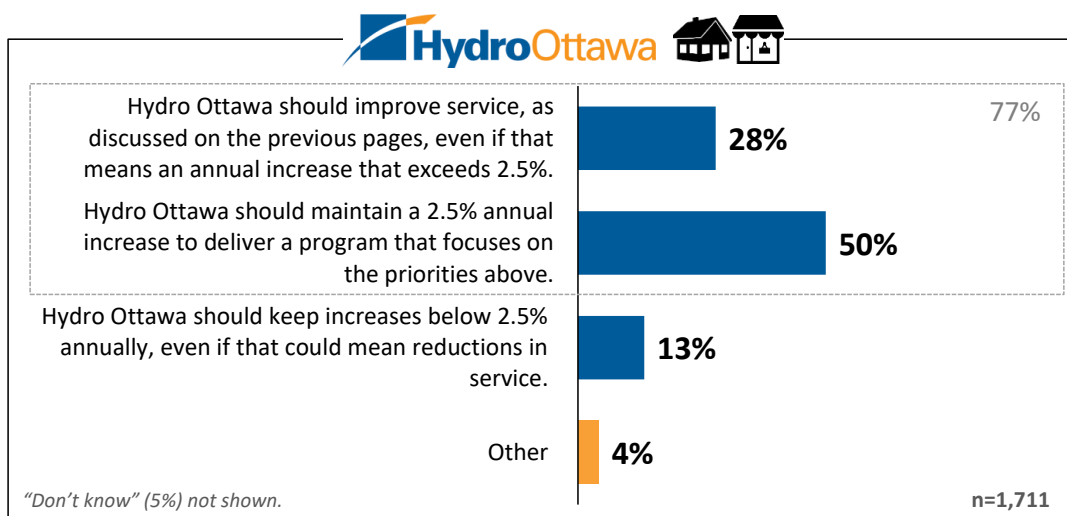
Residential &
Small Business



57

Q

With regards to Hydro Ottawa's draft plan, which of the following statements best represents your view?



View of Hydro Ottawa's plan	Gloucester	Goulbourn/Casselman	Kanata	Nepean	Ottawa
Hydro Ottawa should improve service	27%	23%	24%	26%	31%
Maintain 2.5% increase	48%	58%	53%	49%	49%
Keep increases below 2.5%	15%	9%	9%	16%	11%
Other	5%	6%	5%	3%	3%
Don't know	5%	3%	8%	5%	5%
Improve services or stick with 2.5% increase	74%	81%	78%	75%	80%

Voluntary Workbook

Final Comments

Residential &
Small Business



58

Q

Now that you have considered the various choices Hydro Ottawa has to make and the cost implications of those choices, do you have any final comments for Hydro Ottawa?

Final Comments (n=324)	%
81% of respondents did not provide additional feedback	
Reduce cost/cost too high/ minimize increase	7%
Ensure fiscal responsibility - eliminate waste, plan long-term, find efficiencies, etc.	7%
Happy with service; keep up good work	6%
Demo-based rates/support - income brackets, seniors, big users, conservers, etc.	6%
Appreciated survey/opportunity to give feedback; informative	6%
Adjust (exec) salaries to cover increase	4%
Prioritize environment - alternatives, renewables, carbon neutral operations	4%
More communication/transparency (planned projects, operations, bill breakdown, etc.)	4%
Strong infrastructure is worth paying more; do what it takes	4%
Maintaining/upgrading system is important	3%
Skeptical/critical of survey	3%
Investing now leads to/should lead to reduced future costs	3%
Issue with rest of system (transmission, generation, policy, etc.)	2%
Support the plan - general	2%
Decision making should be long-term/future oriented	2%
Alternative financing - developers, gov't, profits, internal efficiencies, dividends to city, etc.	2%
Increase should not exceed inflation/cost of living	2%
Investment should be well thought out	1%
Reduce/eliminate delivery charge	1%
Encourage/incentivize conservation	1%
Harden system against worsening weather	1%
Aim for 2.5% but adjust within reason	1%
Move lines underground	1%
Encourage self-generation	1%
Support accelerated/aggressive approach (within reason)	1%
Eliminate/adjust Time of Use	1%
Other	8%
None	14%
Don't Know	1%

Voluntary Workbook

Final Thoughts: Workbook Diagnostics

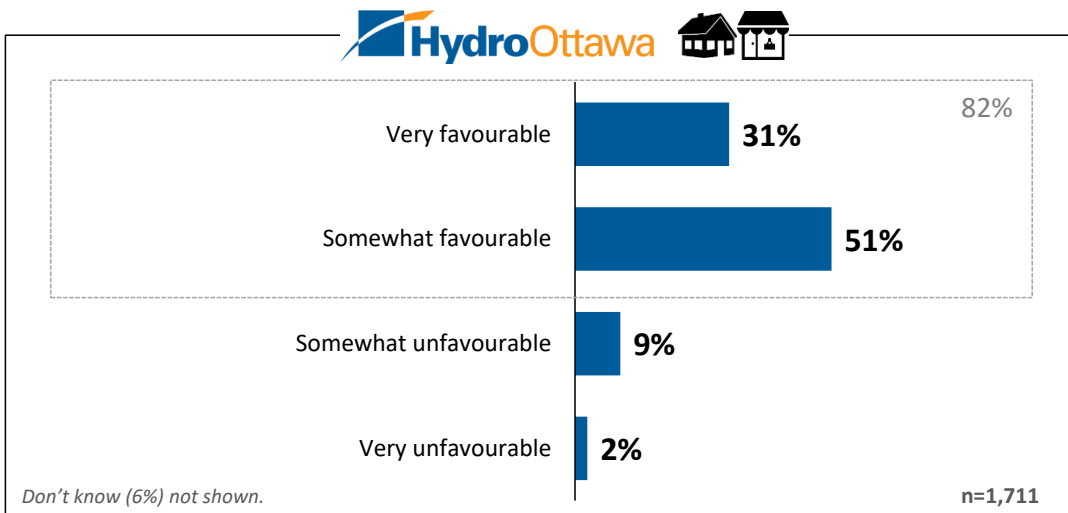
Residential &
Small Business



59

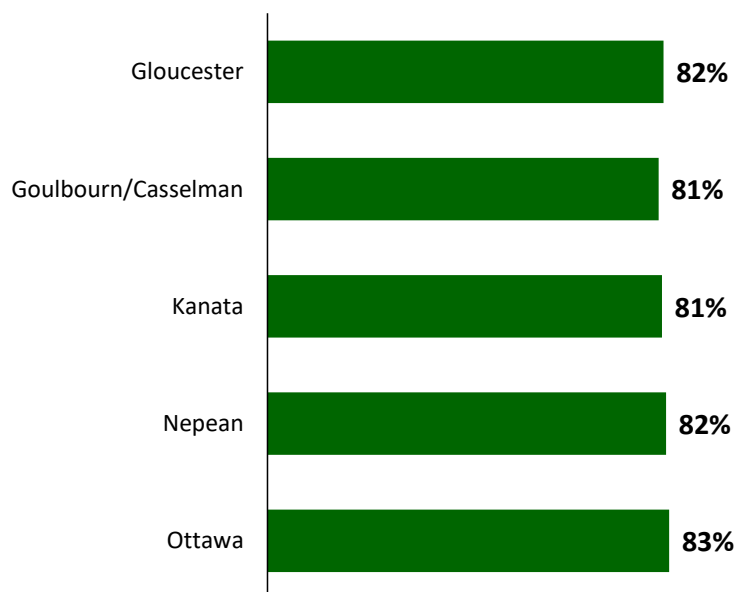
Q

Overall Impression: Did you have a favourable or unfavourable impression of the workbook you just completed?



Regional Segmentation

Respondents who say "Favourable"



Voluntary Workbook

Final Thoughts: Workbook Diagnostics

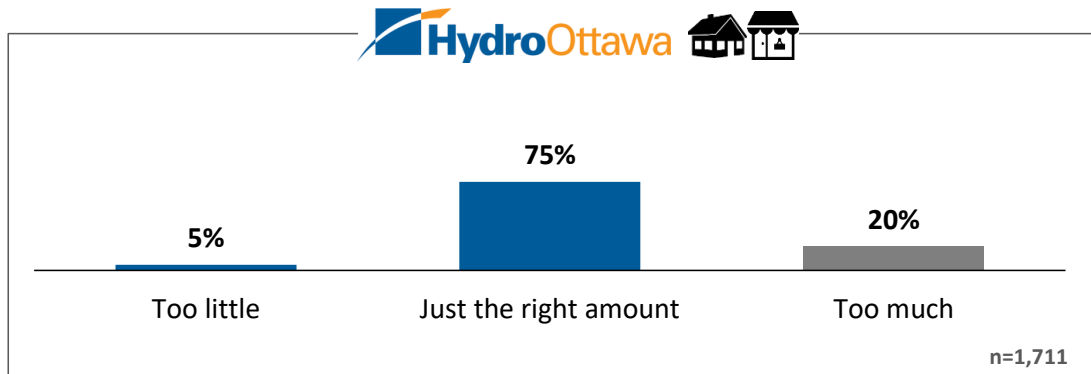
Residential &
Small Business



60

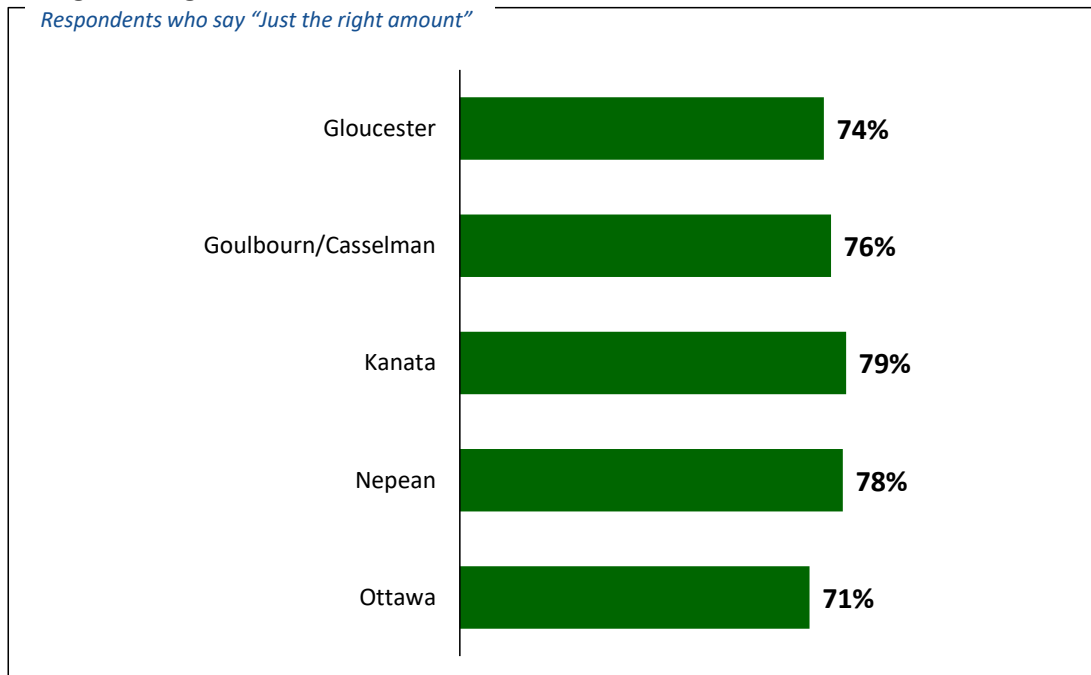
Q

Volume of Information: Did Hydro Ottawa provide too much information, not enough, or just the right amount?



Regional Segmentation

Respondents who say "Just the right amount"





Building Understanding.

Personalized research to connect you and your audiences.

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Appendix 7.0



2021-2025 Rate Application

Mid-Market and Commercial Report



This report and all of the information and data contained within it may not be released, shared or otherwise disclosed to any other party, without the prior, written consent of Hydro Ottawa Limited.

November 2019

STRICTLY PRIVILEGED AND CONFIDENTIAL

Introduction

Mid-Market and Commercial Engagement

Mid-Market &
Commercial



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Innovative Research Group Inc. (INNOVATIVE) was engaged by Hydro Ottawa to assist in meeting the utility's customer engagement commitments with mid-market (GS > 50 kW – 999) and commercial (1MW+) customers under the Renewed Regulatory Framework for Electricity Distributors.

To effectively engage with these customers, INNOVATIVE designed a two-staged approach which employed both qualitative and quantitative research methods. This two-staged approach was designed to allow these larger business customers multiple opportunities to provide feedback, both in-person, and as part of a broadly distributed online workbook.

Understanding that mid-sized and commercial business customers are often reluctant to take the time to provide feedback in such engagements, this approach was designed to ensure that all efforts were made to engage with these groups of customers. In addition to efforts to engage with all types of customers, this approach also ensured that customers had the opportunity to provide feedback using multiple methods, at their convenience. This report documents the efforts made to engage with this customer group, including what is considered to be *best efforts* to hear from all types of customers using multiple modes and methods.

This two-staged approach included:

- 1. In-person Customer Engagement Workshops:** By leveraging existing customer relationships, in-person workshops are an effective way of bringing together business customers to both provide information, as well as gather feedback. This approach allowed Hydro Ottawa "key account" staff to connect with their customers, provide a short overview of the utility's plans, as well as solicit feedback on specific investments and spending decisions. Using both random-recruitment techniques (for mid-market customers) and broad invites (for commercial and key account customers) ensures that a diverse set of views is gathered, while also providing all customers an opportunity to provide feedback.
- 2. Mid-Market and Commercial Online Workbook:** The second stage of this mid-market and commercial engagement focused on allowing customers to provide feedback through an online "workbook". An online workbook was deployed to all Hydro Ottawa mid-market and commercial customers who have previously provided the utility with an email address through a unique URL. Over the course of nearly one month, customers were repeatedly encouraged to complete the workbook, both through email reminders, as well as direct outbound calls from Hydro Ottawa staff.

Customer Workshops

Mid-Market and Commercial Engagement

Mid-Market &
Commercial



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Workshop Methodology

Two workshops were conducted in Ottawa on **Tuesday, September 17, 2019**. Key Account customers were engaged in the morning, and mid-market customers in the afternoon.

All Key Account customers were invited to attend the workshop sessions by Hydro Ottawa Key Account representatives. Ten of the 65 invited Key Account customers attended the workshop.

Mid-market customers were randomly recruited by telephone, and screened for eligibility based on whether they are in charge of managing or overseeing their organization's electricity bill. 23 Hydro Ottawa mid-market customers were recruited and confirmed attendance at the workshop. A total of 13 customers actually attended and fully-participated in the session.

Workshop Structure

INNOVATIVE and Hydro Ottawa worked together to develop a "high-level" presentation. Given by senior Hydro Ottawa staff, the presentation explained the challenges facing the system, the utility's investment plan, and the impact on business customers. The presentation lasted approximately one hour, and included a brief Q&A period with customers in the audience.

Following Hydro Ottawa's delivery of the presentation and the Q&A session, customers were separated into breakout groups to begin the next step of the engagement.

A guided discussion was then led by an INNOVATIVE moderator. Hydro Ottawa and INNOVATIVE developed a workbook that was used to guide the discussion.

The facilitators led participants through the workbook section by section to ensure they understood the information and answered any questions they had about the content.

Participants were then asked to independently respond to the questions within the workbook. The facilitators led a group discussion on the answers participants provided, what the various issues meant for their organization, and a broad discussion on what impact Hydro Ottawa's rate application will have for their businesses.

The questions in the workbook served primarily to guide the discussion and were not strictly completed by all participants.

Each breakout session lasted approximately 90 minutes.

Customer Workshops

Key Account Customer Feedback

Mid-Market &
Commercial



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Initial Discussion

Reliability is the critical top-priority for almost all customers, and they are willing to pay what is required to ensure a constant supply of electricity. All things considered, most acknowledge rising prices to be a reality, and that 0.3% of the entire bill is *“nothing to lose sleep over.”* For most participants, Hydro Ottawa’s estimated bill increase of 4.2% wasn’t perceived to represent a material impact on the distribution portion of customers’ bills.

That said, taking a step back and considering the whole of their electricity expenditure beyond just distribution, many customers report that it is not an insignificant cost, and has an impact on their competitiveness. This is a concern shared by customers across all sectors. Affordability is particularly concerning for those who rent space to their customers, stating *“tenants get hit by big increases.”*

Many customers are actively engaged with their electricity usage and spending, and pursue conservation initiatives to reduce costs.

There was some discussion that weather should be an important consideration when budgeting electricity costs. Among those who are concerned with sustainability, there should be a focus placed on greenhouse gas emissions.

Satisfaction with Hydro Ottawa

Overall, customers are very satisfied with the services they receive from Hydro Ottawa. A common anchor of this sentiment is the relationship customers have cultivated with the utility. They feel that Hydro Ottawa is responsive and communicative, and many customers consider the relationship to be a partnership. Further, there is a sense of trust in the utility’s ethics and *“good stewardship.”* Finally, most customers feel that Hydro Ottawa excels when compared to other utilities such as water or gas, and in comparison to another utility in particular, one customer felt the difference to be *“like night and day.”*

One unique complaint was the difficulty in navigating Hydro Ottawa’s bureaucratic process around customers’ attempts to install co-generation assets. They feel that better coordination to meet customer deadlines could avoid delays. One customer advised, *“don’t wait for the ESA approval before you move.”*

Key Account Customer Feedback

Hydro Ottawa’s customer energy management portal is an important tool, but does not require any further investment or development. According to one customer, *“the current version is a huge timesaver, as it avoids manual data entry.”* Further, most customers already have their own uniquely tailored programs in place, some of which combine data from other utilities.

Customer Workshops

Key Account Customer Feedback

Mid-Market &
Commercial



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Some customers (*Industrial Conservation Initiative (ICI)* participants) are interested in tools and applications that can assist in accessing real-time data to inform their own energy management strategies. One noted that access from the *MyAccount* portal would be useful to develop direct engagement with their own tenants. Others are not in agreement, stating that many big businesses already have these tools.

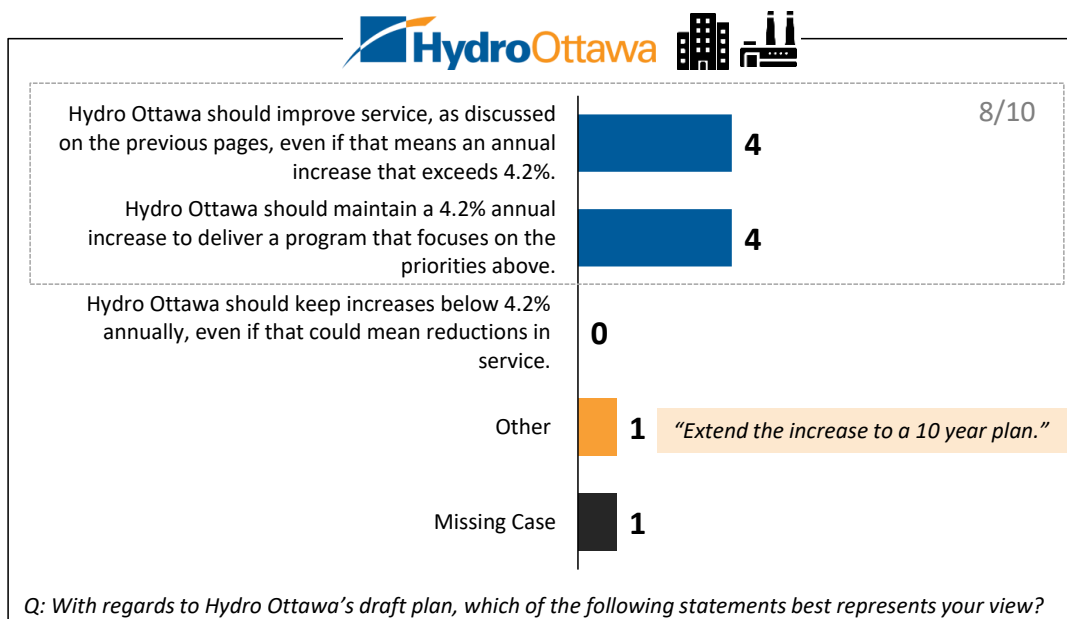
There are mixed feelings regarding the proactive vs reactive infrastructure investment debate. Customers favour an approach that mixes proactive and reactive responses. Reliability is crucial, so critical infrastructure should be maintained without risk, however run-to-failure is acceptable for non-critical equipment, and when there is no impact to safety.

Most customers are interested in looking at Hydro Ottawa's longer-term plan; they want more information to assist them in understanding what comes after the five-year plan. They want to ensure Hydro Ottawa is thoughtfully managing its system, setting priorities, and not just continuing to increase prices year over year.

For those in healthcare, the price is simply what you need to pay to be in business.

Impact of Hydro Ottawa's Plan

At the conclusion of the session, customers were asked to provide their overall feedback on Hydro Ottawa's preliminary plans. A summary of customer responses is included below, in which 8/10 customers either support Hydro Ottawa's current plan (4) or believe they should improve services beyond the current proposal (4).



Customer Workshops

Key Account Customer Feedback

Mid-Market &
Commercial



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Outstanding Questions and Comments

Overall, this customer engagement was perceived to be constructive and relevant. Key Account customers trust Hydro Ottawa, and this process, however they would like to see more details; more explanation of how the 4.2% figure was reached, and particularly why it is double the Consumer Price Index (CPI). Longer-term, they want a better understanding of the scope of this impact in five years and beyond.

There was also some question about the validity of the forecasting model: How accurate are these predictions? How do they prepare for severe weather? What models are used to make these predictions?

Some customers wanted to understand labour costs - where it is going, and specific details about the productivity gain.

Outstanding questions include:

- Who should pay for new developments?
- Will the increase remain at 4.2% from 2025-2030, or will it continue to increase?
- Some wanted additional information about Hydro Ottawa's cost allocation model. For example - Is part of the increase related to increasing demands from the city? If so, that seems unfair to some given how difficult it is for customers to install co-gen assets.

Additional Commentary (Verbatim responses from workbooks)

"How did we come to 4.2%? Details of expected cost?"

"It appears we have no choice."

"Historical data and 10 year planning information would help."

Customer Workshops

Mid-Market Customer Feedback

Mid-Market &
Commercial



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Satisfaction with Hydro Ottawa

Overall, mid-market customers are very satisfied with the service they receive from Hydro Ottawa, in terms of reliability and power quality, and when compared to other distributors they receive services from or have dealt with in the past.

Top-notch service always. The workers we see are always polite, professional and very knowledgeable. Service is fine – please maintain it.

However, mid-market customers are much more likely than Key Account customers to say they are frustrated with the overall price of electricity. Regardless of the figure, these customers are already feeling squeezed, and it's the concept of increasing expenses itself that cause alarm. They acknowledge that distribution is just a portion of their bill, and are expecting increases to also be coming from the other players in the system.

Furthermore, the fact that Hydro Ottawa requires an increase of this size, and what is perceived to be so suddenly, is an indicator of poor planning. They feel that the utility “should be operating as any other business;” planning well-ahead, working within their means, and not foisting their shortfall onto customers. Mid-market customers cannot reflect such an increase in their own prices, and are increasingly stretched to mitigate the impact of their expenses; further, a few feel this ask to be an abuse of power, given that Hydro Ottawa is a monopoly.

I think it's important that Hydro Ottawa manage itself the same way we all manage our businesses. We cannot get 4.5% more yet we manage. If everything keeps going up at a higher rate than we can afford, the consumer at the end (our customers) will get poorer and poorer and spend less and less at our businesses.

The perception of high start-up and deposit costs for small businesses is also a point of contention. Being responsible for financing their own equipment, and the fees and deposit required by Hydro Ottawa are considerable obstacles when a business is just starting out, and the process is felt to be a “bad business practice.”

Business start-up costs to create infrastructure are exorbitant (way too high). This needs to be better managed. This is a Hydro Ottawa cost. Also, retaining \$14K of my money for 5 years hurts start-up businesses.

There should be some format for current customers to hear about the problems that new businesses are facing in the start-up phase. I suspect that many established business owners would agree to pay a little more so that new business connection fees were not so extreme.

Customer Workshops

Mid-Market Customer Feedback

Mid-Market &
Commercial



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Mid-Market Customer Feedback

The figures in the workbook gave the impression that Hydro Ottawa “has done their homework,” with particular appreciation of the accuracy of the numbers. That said, there was some interest in showing more details about specific costs, such as that for labour.

Many customers were unaware of how much of their bill was allocated to Hydro Ottawa. One customer had this to say:

I had no clue. This information is a must to be clearly indicated on our monthly invoices. Every Hydro Ottawa customer needs to know this.

Lots of confusion with overall billing being only 7% of the total.

Minimizing rate increases is the resounding number one priority.

Minimizing rate increase is well above the others. Service is a close second.

Overall, customers are more in favour of a proactive approach than a reactive approach; run-to-failure is perceived to be a more costly approach, and an unacceptable strategy for running a distribution system. That said, some feel that this is not a black and white issue; the approach should be flexible and take into consideration how crucial a given piece of equipment is, in tandem with budget management.

Hydro Ottawa must take a proactive approach in delivering power in Ottawa. If not, costs will be greater once power outages occur.

As a business owner I am concerned about the increase in electric vehicles and how much the infrastructure is going to have to increase to support this method of transportation.

Many feel that cost savings that have been realized through conservation efforts have largely been offset by increases in the commodity portion of their electricity bills.

While most customers acknowledge the value in having access to consumption data, spending on a personal energy management portal is felt to be unnecessary. Customers are struggling as is, and for the most part do not feel the benefits outweigh the cost of improving what is already available.

We need tools on how to save. I cannot affect my busy times...

I’m not sure we would use such a portal. If this going to cause a high expense, scratch this. I prefer paying less as we are almost over our heads with electricity costs.

I would prefer getting efficient service over having such a portal.

Existing billing shows kW/month history – this is sufficient for our needs.

Customer Workshops

Mid-Market Customer Feedback

Mid-Market &
Commercial



9

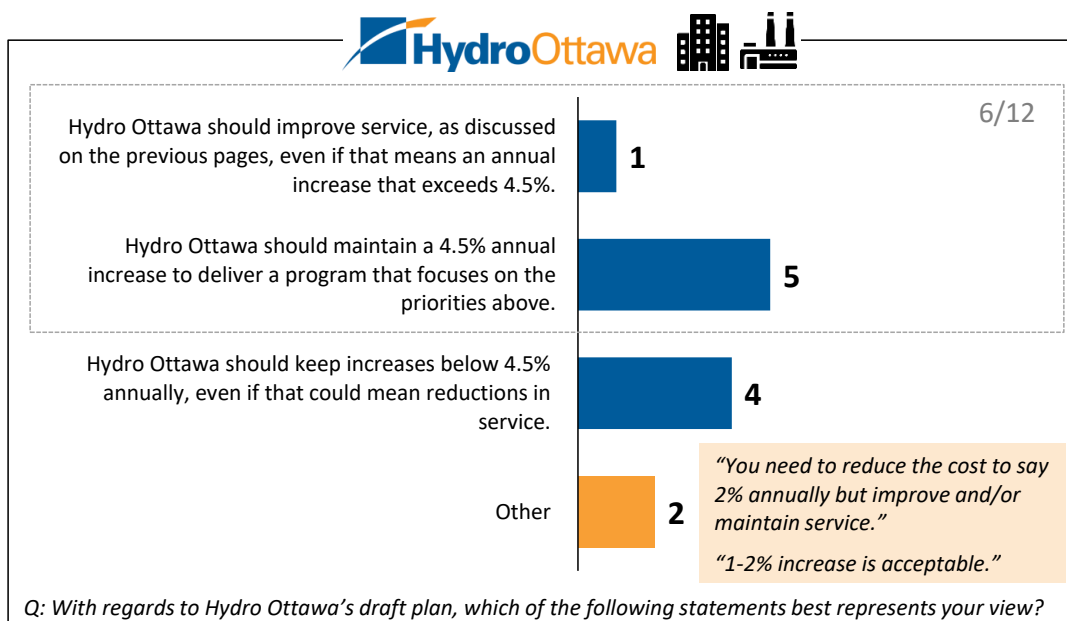
Reaction to Overall Preliminary Plan

Much more so than Key Account customers, mid-market customers take issue with the increase in the distribution portion of the bill. Many feel that it is too high, and that businesses are already struggling to remain competitive due to the cost of electricity. For some, this sentiment is exacerbated by the recent construction of Hydro Ottawa's new facility, which is seen to be a luxury, and evokes feelings of anger and suspicions of wasteful spending. There is a common desire among mid-market customers for Hydro Ottawa to find efficiencies, before raising rates or reducing services.

More specifically, resistance to the proposed increase presented itself in several different forms. Many could not reconcile an increase higher than the CPI. Others felt that Hydro Ottawa's rising costs are their own responsibility, and they should be budgeting within their means. Landlords in particular, who include utilities in the cost of their rent struggle to reconcile the increase with their inability to fully recover their own costs and are increasingly stretched to manage the cost of hydro – put simply by one, "Hydro is killing landlords with long-term tenants."

Impact of Hydro Ottawa's Plan

At the conclusion of the session, customers were asked to provide their overall feedback on Hydro Ottawa's preliminary plans. A summary of customer responses is included below, in which 6/12 customers either support Hydro Ottawa's current plan (5) or believe they should improve services beyond the current proposal (1).



Customer Workshops

Mid-Market Customer Feedback

Mid-Market &
Commercial



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Outstanding Questions and Comments

Regarding the customer engagement process itself, the majority felt this consultation to be the “right approach.” They felt it clarified Hydro Ottawa’s planning process and how rates are set, however not all were entirely satisfied. While some acknowledged that Hydro Ottawa has “very broadly made their case for the rate increase,” others were frustrated by the “narrow scope” of the engagement. This frustration is a product of the difficulty customers have separating distribution specifically, from the entirety of their electricity bill. Many of the questions and concerns they bring are outside Hydro Ottawa’s control, and cannot be incorporated into Hydro Ottawa’s plans as a result of this engagement exercise.

Most found the amount of information presented in the workbook to be sufficient, however for a few respondents the decisions they were being asked to comment on felt to be better suited to the engineers.

Additional Commentary (Verbatim responses from workbooks)

“Electricity distributors need to have more influence/‘power’ over the electricity generation charges and who controls this. Distributors need to help their customers by representing them to the electricity generation ‘people’.”

“I prefer replacing old poles with underground. System should not be allowed to get to a decrepit condition such as Quebec’s.”

“Hydro Ottawa should not invest in measures to prepare for sever weather: I think the way it is dealing with severe weather presently is adequate.”

“Individual customers need to be included. Online survey? Also, if we were all better informed maybe electricity generation management would be higher up on peoples’ minds when elections come around.”

“Follow CPI or change management. Services should not fall!”

[illegible]

Online Workbook

Background and Methodology

Mid-Market &
Commercial



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INNOVATIVE was engaged by Hydro Ottawa to gather input among mid-market and commercial customers on preferences on program timing and balancing outcomes. **Pages 13 to 51** show the actual pages of the workbook that was sent and completed by customers. The only additions are the actual results.

Field Dates & Workbook Delivery

The **Mid-Market and Commercial Online Workbook** was sent to all Hydro Ottawa mid-market and commercial customers who were not able to attend the September 17th Workshops and had provided the utility with an email address. Customers had an opportunity to complete the workbook between **September 27th and October 24th, 2019**.

Beyond the initial invite on **September 27th**, customers were sent two reminder emails on **October 2nd** and **October 10th, 2019** to encourage participation. Additionally, Hydro Ottawa staff placed follow-up telephone calls to encourage participation, particularly amongst Key Accounts with whom a more personal relationship exists.

Each customer received a unique URL that could be linked back to their annual consumption, region and rate class.

In total, the workbook was sent to **1,206 mid-market** and **71 commercial** customers by-way-of e-blast from INNOVATIVE.

Mid-Market and Commercial Online Workbook Completes

A total of **13** (unweighted) Hydro Ottawa mid-market and commercial customers completed the online workbook through a unique URL.

Individual mid-market and commercial customer responses were anonymous and no identifiable respondent information was shared with Hydro Ottawa. Responses were combined to protect the confidentiality of individual customers.

Sample Distribution

Due to sample size this data has not been weighted, and is presented in n-sizes rather than percentages. Results should be treated as directional only.

The table below summarizes the sample breakdown by rate class.

Rate Class	Eligible Sample (Unique accounts with email addresses)	Completed Workbooks
Mid-Market	1,206	n=7
Commercial	71	n=6
Total	1,277	n=13

Voluntary Workbook

Environmental Controls

Mid-Market &
Commercial

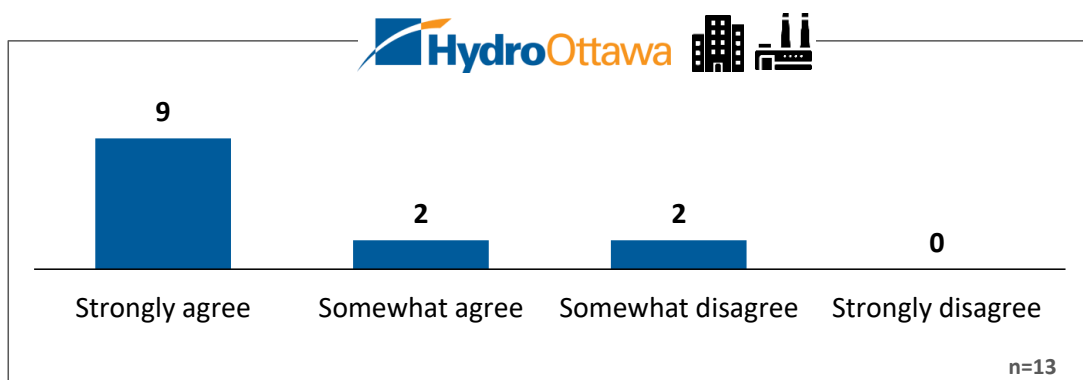


13

Thinking generally about the electricity system in Ontario, including generation, transmission and local distribution, do you agree or disagree with the following statements?

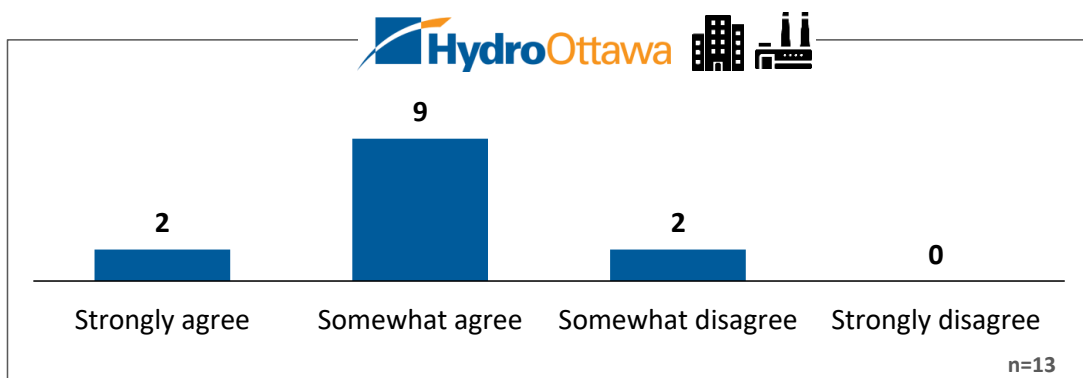
Q

The cost of my electricity bill has a major impact on the bottom line of my organization and results in some important spending priorities and investments being put off.



Q

Customers are well served by the electricity system in Ontario.



Online Workbook




Background Information

Mid-Market &
Commercial



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Hydro Ottawa Limited (Hydro Ottawa) is looking for your input on choices that will help shape the service you receive and the price you pay.

-  Hydro Ottawa is developing its business plan for 2021 to 2025. This plan will determine the level of spending and investments Hydro Ottawa makes in equipment and infrastructure and the services it provides, as well as the rates you pay.
-  Hydro Ottawa is accountable to the provincial regulator, the **Ontario Energy Board (OEB)**, both in terms of sharing what customers say and demonstrating how they considered those views when undertaking the planning process.
-  You don't need to be an electricity expert to participate in this consultation. This workbook is focused on basic choices and provides the background information you need to answer the questions.

Building on previous customer feedback, the goal of this consultation is to allow Hydro Ottawa to better understand the needs and preferences of customers like you, and help them align their plan with what you have shared.

While your view may not always align exactly with the available options, please select the one that is closest to your point of view.

Depending on how much feedback you wish to provide, this consultation should take approximately 30-45 minutes to complete. If you need to pause and return at a later time to finish your feedback, your completed answers will be saved

If you are reading this on a smaller mobile device, you may want to consider accessing the survey from a tablet, desktop or laptop instead so that it is easier for you to read.

Online Workbook

Background Information

Mid-Market &
Commercial



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This consultation is about gathering your feedback on finding the right balance between the services you receive from Hydro Ottawa over the next five years and the price you pay.

Hydro Ottawa has important decisions to make about the pace and mix of expenditures it makes in equipment and infrastructure, the services it provides you as a customer, and the rates you pay.

Every five years, Hydro Ottawa submits a plan for its proposed rates and spending to the Ontario Energy Board for approval. They are now in the process of finalizing that plan.

- Earlier in 2019, Hydro Ottawa asked thousands of customers about their priorities and preferred outcomes for electricity distribution service.
- Using the feedback shared by customers, Hydro Ottawa built a plan that is intended to align with customer preferences. Want to learn more about how Hydro Ottawa plans? [Click here](#)
- Hydro Ottawa is now coming back to its customers with a series of expenditure options in order to finalize its draft plan for the next five years.

How will this customer consultation work?



Hydro Ottawa will ask for your feedback on a number of decisions it needs to make in order to finalize their plan. These decisions will impact both the services you receive, as well as the price you pay on the distribution portion of your electricity bill.



For each decision, Hydro Ottawa has identified the option that it feels balances customer feedback received to date to limit cost impacts, while prudently investing in the distribution system. These options have been included in the current plan, but may be influenced by your feedback.



Once you have finished sharing your thoughts on these decisions, you will have an opportunity to review your responses and the estimated total rate impact of those choices. You will be able to change your responses until you feel you have found the right mix of investments and estimated rate impact.

Online Workbook

Background Information

Mid-Market &
Commercial



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How will your views impact Hydro Ottawa's plans and rates?

The Ontario Energy Board (OEB) sets electricity rates in Ontario.



Electricity distributors like Hydro Ottawa are funded by the distribution rates paid by its customers. Electricity distributors are required to file a rate application with the OEB to request a change in distribution rates based on its plans for capital and operating costs.

As a customer, how are my interests protected?

The OEB requires all electricity distributors in Ontario, like Hydro Ottawa, to consider customer needs and preferences as they develop their business plan and distribution system plan.

The OEB then reviews Hydro Ottawa's plan and proposed rates in an open and transparent public process known as a rate hearing. Any individual or group may participate during Hydro Ottawa's application to ask questions or seek more information about Hydro Ottawa's plan and application.

Hydro Ottawa will be held accountable for the way you were consulted, the information shared with you and the ways in which the plan considers what you say.

At the end of the process, the OEB will weigh the evidence and decide on the rates Hydro Ottawa can charge its customers.

Online Workbook

Mid-Market &
Commercial

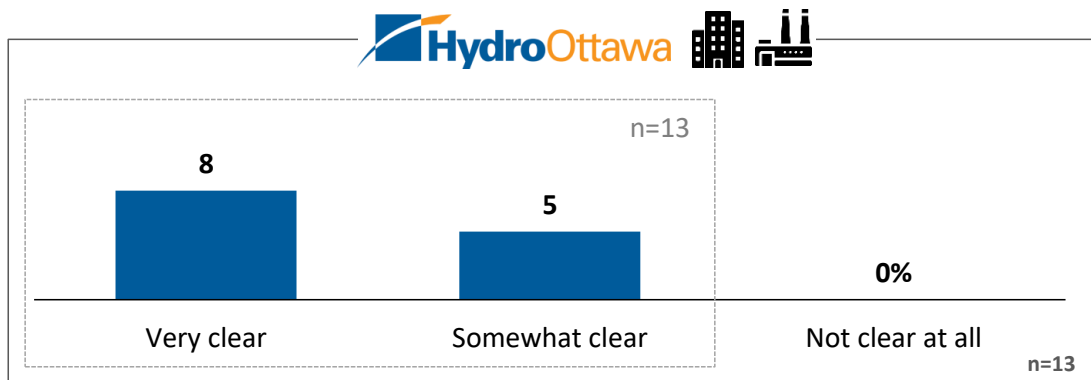


17

Purpose of Hydro Ottawa's customer consultation

Q

Do you feel that the purpose of Hydro Ottawa's customer consultation is clear?



Online Workbook

Background Information

Mid-Market &
Commercial



18

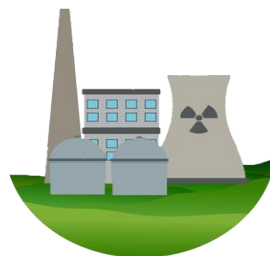
Understanding Ontario's electricity system and Hydro Ottawa's role

Ontario's electricity system is owned and operated by public, private and municipal corporations across the province. It is made up of three key components: **generation**, **transmission** and **distribution**.

Generation

Where electricity comes from

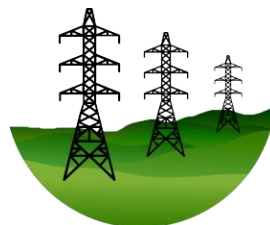
Ontario's electricity is generated using a mix of nuclear, gas-fired, and water power (hydro), as well as biomass and renewable sources such as wind and solar technology. In Ontario, a number of companies own these generating stations but approximately half of the electricity is generated by Ontario Power Generation. The Independent Electricity System Operator (IESO) balances the supply of, and demand for, electricity on a second-by-second basis and directs its flow across the high-voltage transmission lines.



Transmission

How electricity travels across Ontario

Once generated, electricity must be transported to electrical substations across the province. Due to the large amount of power and long distances, transmission normally takes place at high voltages with the lines suspended on large, steel towers. The province has more than 30,000 kilometres of 'electricity highway', most of which is owned and operated by Hydro One.



Local Distribution

How electricity is delivered to the end-consumer



Hydro Ottawa is responsible for the last step of the journey: distributing electricity to customers. Its local distribution system is connected to the transmission grid through its distribution stations and transformers. This allows the voltage to be decreased so it can be distributed and safely used in homes and organizations across Hydro Ottawa's service territory.

Hydro Ottawa's distribution system is complex. It consists of approximately 50,000 poles, 2,700 km of overhead power lines, 3,000 km of underground cable, and 45,000 transformers.

Online Workbook

Familiarity with Ontario's electricity system

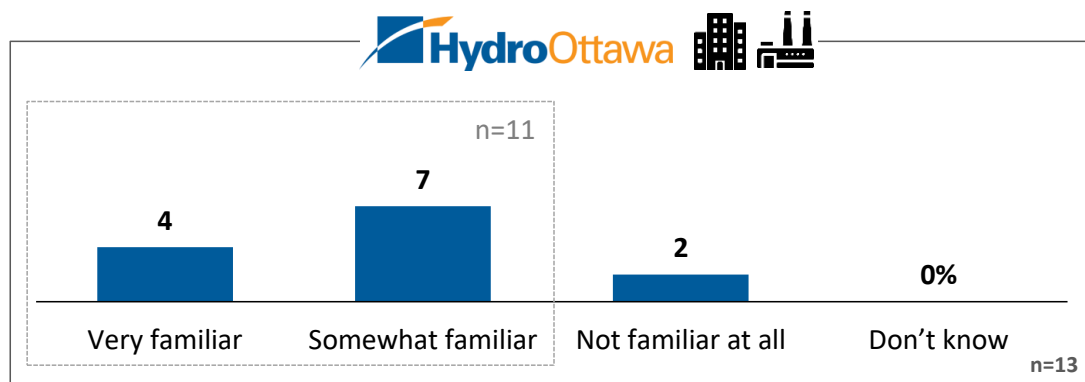
Mid-Market &
Commercial



19

Q

Before this consultation, how familiar were you with various parts of the electricity system, how they work together, and for which services Hydro Ottawa is responsible?



Online Workbook

Mid-Market &
Commercial



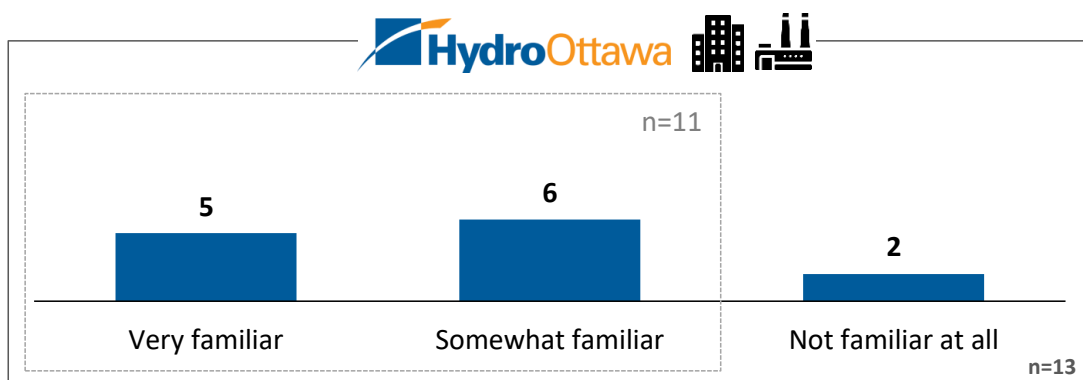
20

Familiarity with how Hydro Ottawa receives funding

Hydro Ottawa is entirely funded through the rates its customers pay and does not receive taxpayer money for its operations or investments.

Q

Before this consultation, were you aware of how Hydro Ottawa received its funding?



Online Workbook

Background Information

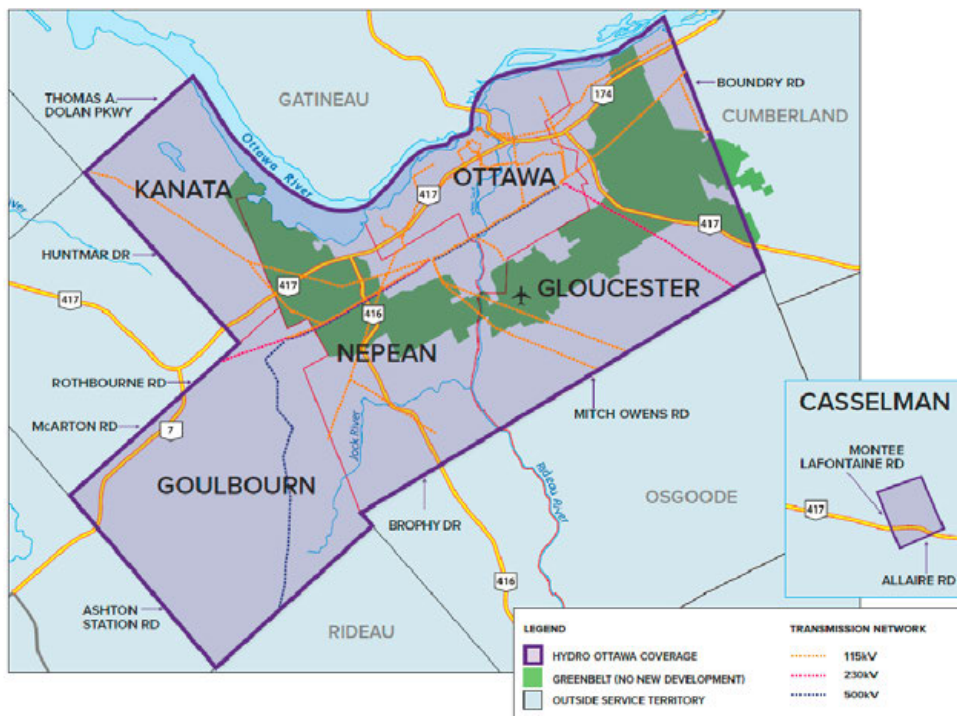
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21

Hydro Ottawa fast facts

- Private business corporation 100% owned by its shareholder, the City of Ottawa
- Third largest municipally-owned electricity distributor in Ontario
- Serves approximately 335,000 homes and businesses (more than one million consumers)
- Service territory of 1,116 square kilometers that includes most of the City of Ottawa and the Village of Casselman
- Over 600 employees
- Does not receive taxpayer money to fund its operations or its investments in the distribution system
- Entirely funded through the rates its customers pay



Online Workbook

Overall Satisfaction with Hydro Ottawa

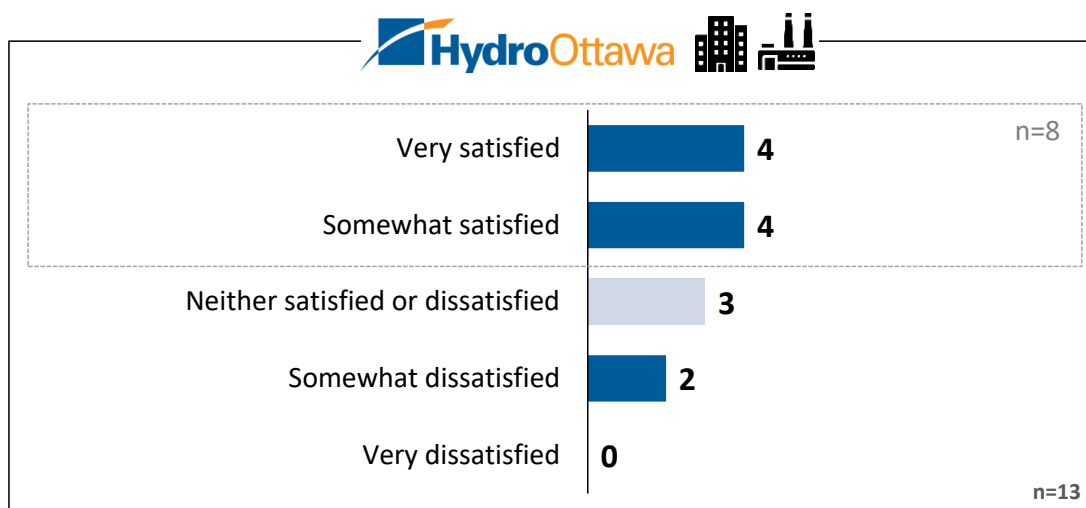
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22

Q

Thinking specifically about the services provided to you and your community by Hydro Ottawa, how satisfied or dissatisfied are you with the services that you receive?



Q

Is there anything in particular that Hydro Ottawa can do to improve its services to you?

Verbatim Responses (n=6)

7/13 of respondents did not provide additional feedback

This survey seems very self serving. Not sure where my opinion comes in.

Hydro rates are too high. Investigate the cheapest hydro possible (i.e. buy cheap from Quebec).

Lower our bills

Prevent power surges downtown.

I work for [REDACTED] Hydro Ottawa should be providing more incentives to building/home owners who install localized renewable energy generation systems. Whether the intent is to feed into the grid or just to use locally on-site, this reduces the load capacity requirement for Hydro Ottawa, thus reducing its need for infrastructure. Ultimately, Hydro Ottawa would be able to permanently lower operating costs for a 1-time incentive fee... Plus it is better for the environment.

Focus on customer service needs to improve and stick to electricity delivery

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

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Background Information

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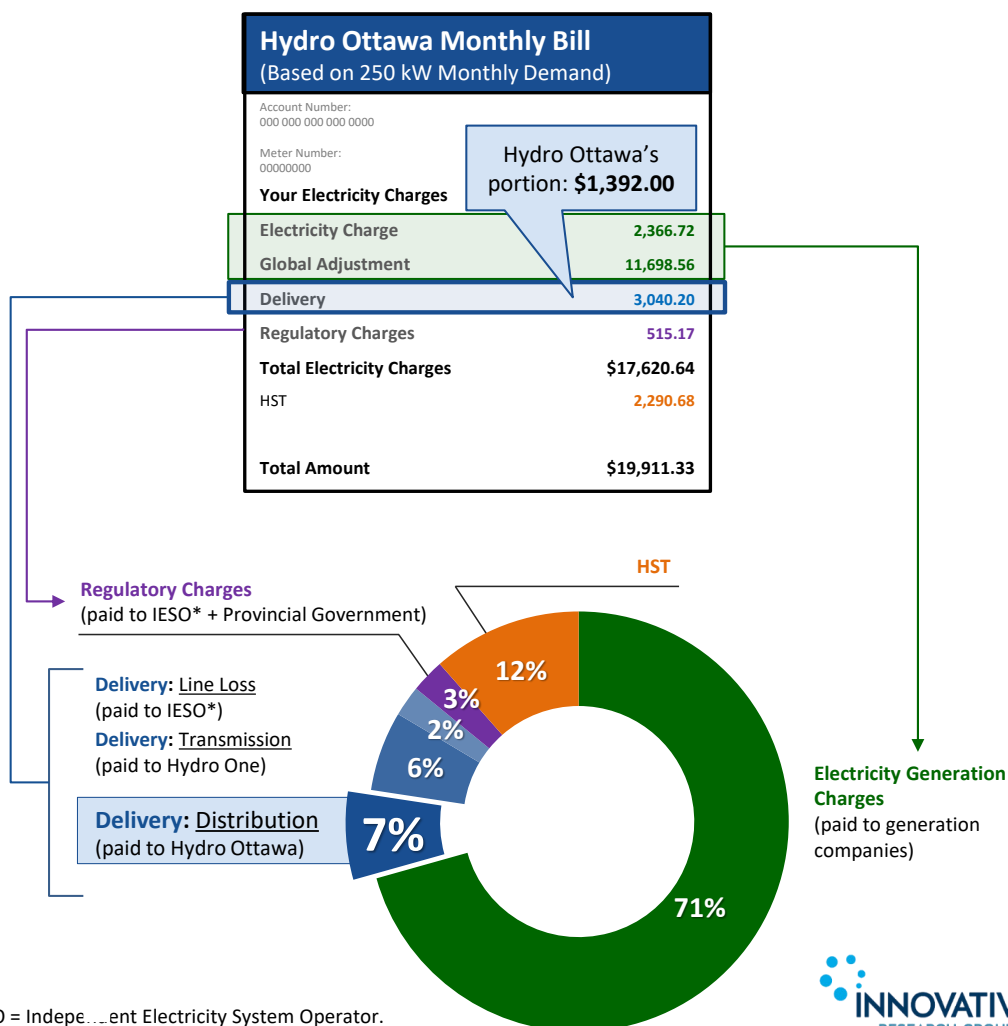


23

How much of your bill goes to Hydro Ottawa?

Every item and charge on your bill is mandated by the provincial government or regulated by the Ontario Energy Board (OEB), the provincial energy regulator.

- While Hydro Ottawa is responsible for collecting payment for the entire electricity bill, it retains only a portion of the delivery charge.
- Hydro Ottawa's portion makes up about **7%** of a typical mid-sized business customer's bill.
- The remainder of your bill is collected for the other companies responsible for generating and transmitting electricity, and to regulatory agencies and the federal and provincial governments.



* IESO = Independent Electricity System Operator.

Online Workbook

Familiarity with Portion of Bill Remitted to Hydro Ottawa

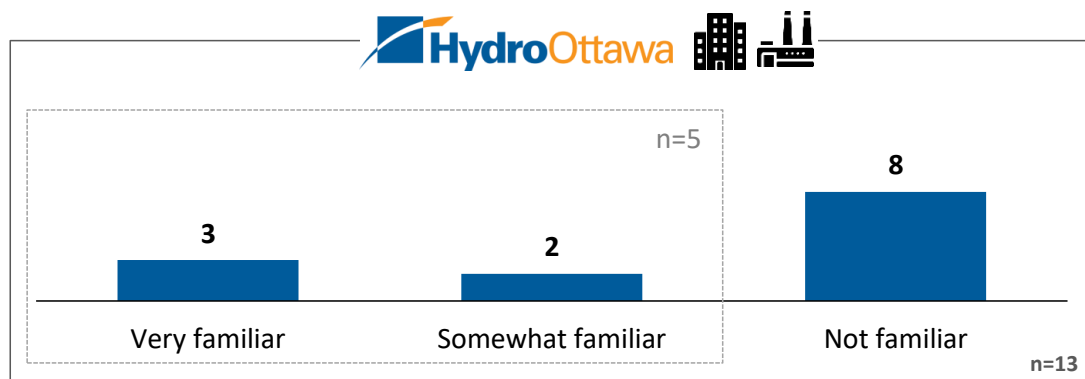
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24

Q

Before this survey, how familiar were you with the amount of your electricity bill that went to Hydro Ottawa?



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Background Information

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25

How did customer feedback shape Hydro Ottawa's preliminary plan?

Hydro Ottawa engages with its customers both in day-to-day interactions and in a variety of customer engagement surveys. **However, this consultation is unique, as it focuses on Hydro Ottawa's business plan that will cover the five year period from 2021 to 2025.**

Preliminary customer engagement found that:

- The clear majority of residential and small business customers are satisfied with the current service they receive;
- Despite being the top priorities, customers don't just expect Hydro Ottawa to focus exclusively on price and reliability;
- Among competing priorities, price, reliability, and investing in new technology are the top three priorities for both residential and small business customers.

Understanding that many customers are satisfied with the level of service they receive from Hydro Ottawa, including with the reliability of the distribution system, and value minimizing price increases above all else, Hydro Ottawa has developed a business plan that emphasizes four core principles:

1. **Minimize rate increases;**
2. **Maintain reliability and service quality;**
3. **Address key pressures to the system, including;**
 - Aging infrastructure;
 - An expanding customer base and continued population growth, and;
 - The effects of severe weather events.
4. **Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs.**

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Principles of Hydro Ottawa's Plan

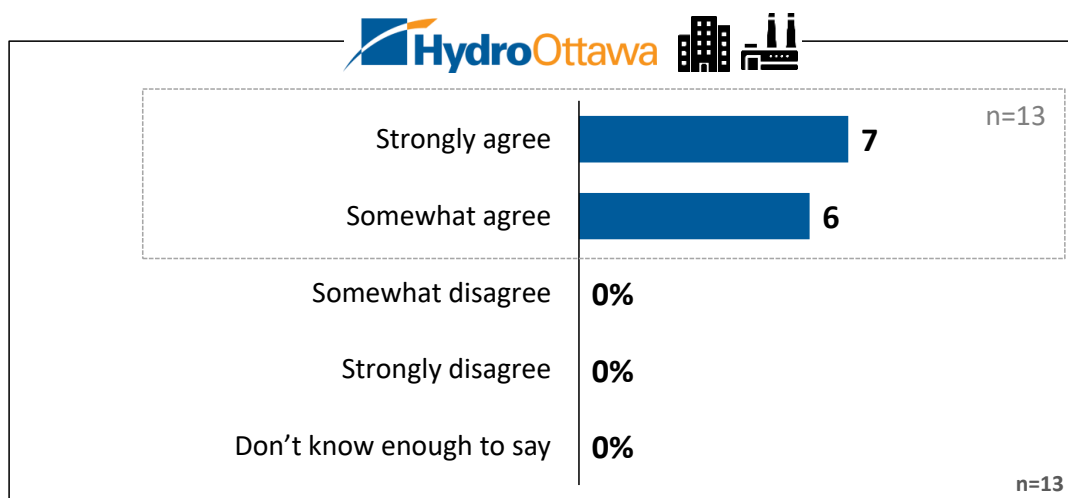
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26

Q

Do you agree or disagree with the principles outlined above?



Q

Is there anything that you would change about the four core principles outlined above? If yes, what would you change?

Verbatim Responses (n=1)

12/13 of respondents did not provide additional feedback

Investigate buying cheaper hydro not only minimizing rate increases.

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

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Background Information

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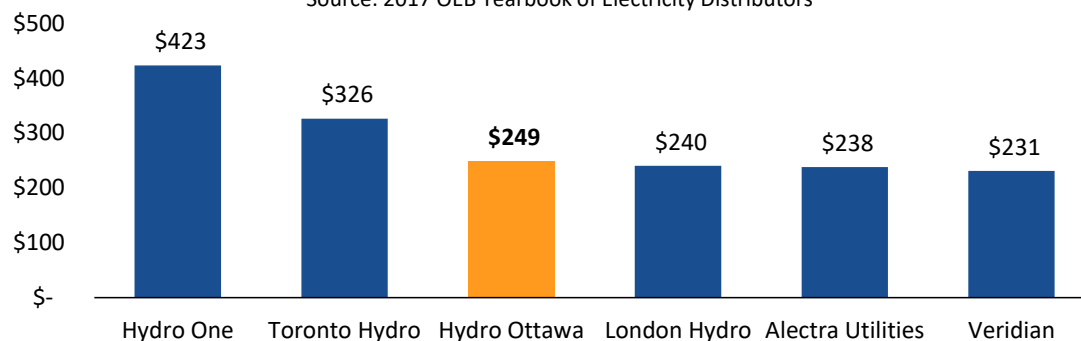
Finding efficiencies

Hydro Ottawa is continuing its focus on productivity and continuous improvement initiatives; which offset continuing costs and improves organizational effectiveness.

Hydro Ottawa's total operating costs are reported every year to the OEB and benchmarked against other distribution companies in Ontario. In the last year of publicly available data collected by the OEB, Hydro Ottawa's total operating cost per customer was **\$249**. This was, and historically has been, lower than the average Ontario distribution company cost of **\$304** per customer.

Six Largest Provincial Distributors: Operating Cost per Customer (\$)

Source: 2017 OEB Yearbook of Electricity Distributors



The choices Hydro Ottawa makes in its operating budget are primarily driven by technical analysis and expert assessments of best practices.

As promised earlier, this workbook does not ask questions that expect you to be an electricity expert.

The OEB runs an open and transparent review process where experts from the OEB and intervenor groups review and have the opportunity to question Hydro Ottawa's analyses and assessments. Anyone, including you are welcome to participate in the OEB process.

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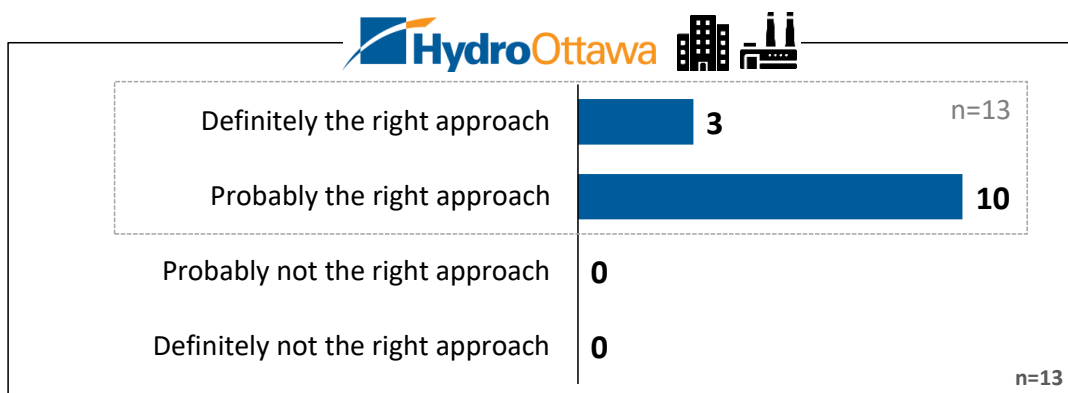
28

Approach to Bringing Customer Views into Plans

This workbook leaves detailed discussion of Hydro Ottawa's operating budget to experts from the OEB and intervenors in the formal OEB review; the workbook focuses on collecting your views on competing trade-offs in investments.

Q

Does this customer engagement process seem like the right approach to bring customer needs and preferences into Hydro Ottawa's plan?



Q

Are there things that you would change about how Hydro Ottawa brings customer needs and preferences into Hydro Ottawa's plan? If so, what would you change?

Verbatim Responses (No respondents provided additional feedback)

13/13 of respondents did not provide additional feedback

None

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

Online Workbook

Non-discretionary expenditures

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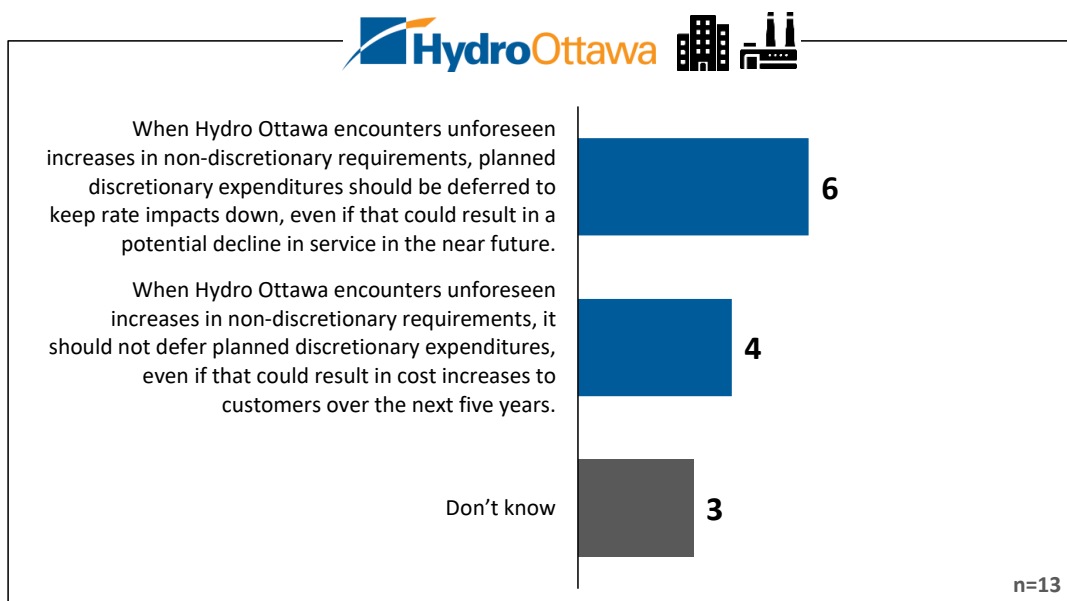


29

As federal, provincial and municipal demands change, Hydro Ottawa may need to implement unplanned, non-discretionary expenditures. It has a decision to make about how to accommodate unexpected non-discretionary spending which could impact other planned priorities.

Q

Which of the following statements best represents your point of view regarding Hydro Ottawa's approach to discretionary and non-discretionary spending?



Q

Additional Feedback (Optional)

Verbatim Responses (n=1)

12/13 of respondents did not provide additional feedback

Proper planning and allocation is far cheaper than trying to fix something that you encounter that is unforeseen...I would much rather you plan properly and forecast the cost increase proportional. You will get a better product with less investment

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

Online Workbook

Pacing investments in the overhead distribution system

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Hydro Ottawa is considering three options for continued investment in the overhead distribution system:

- 1. Accelerated Approach:** Increased replacement of aging overhead transformers, switches, and poles to catch up and get ahead of growing number of poles at, or beyond, their end-of-life.
- 2. Included in Draft Plan:** Defer catch up in aging infrastructure to manage rate impact. Modest decrease of approximately \$1M per year in renewal of overhead infrastructure from 2016 to 2020 levels. Move to more targeted renewals of specific poor condition assets and less full renewals of broad areas.
- 3. Reduced Approach:** Deferral of proactive switch renewal, and pole replacement. Move to replacement of only critical assets.

Option	Outcome
Accelerated Approach <u>Additional</u> \$2.48 per bill each year (\$12.41 more per bill by 2025)	<ul style="list-style-type: none"> Increasing the replacement levels to address higher-risk assets, such as poles, which are at or near end-of-life. Increasing investments in switches to enhance operational efficiency. Reducing requirement for emergency renewals.
Included in Draft Plan <i>Within 4.5% annual increase</i>	<ul style="list-style-type: none"> Moderate slowing of asset replacement. Increased future costs to catch up on expected end-of-life infrastructure. Some increase in emergency renewal replacements, significant increase not expected for next five years. Minor increases in customer impact as targeted and emergency renewals will result in more piecemeal replacements.
Reduced Approach <u>Decrease</u> of \$1.49 per bill each year (\$7.45 less per bill by 2025)	<ul style="list-style-type: none"> Need for catch up in future years, requiring significant levels of investment. Degradation in system reliability due to lower switch renewal. Switch failures typically occur on operation, resulting in longer restoration times. Moderate increases in targeted and emergency renewal, possibly resulting in multiple service visits in certain areas.

* Note: Mid-market bill impacts shown.

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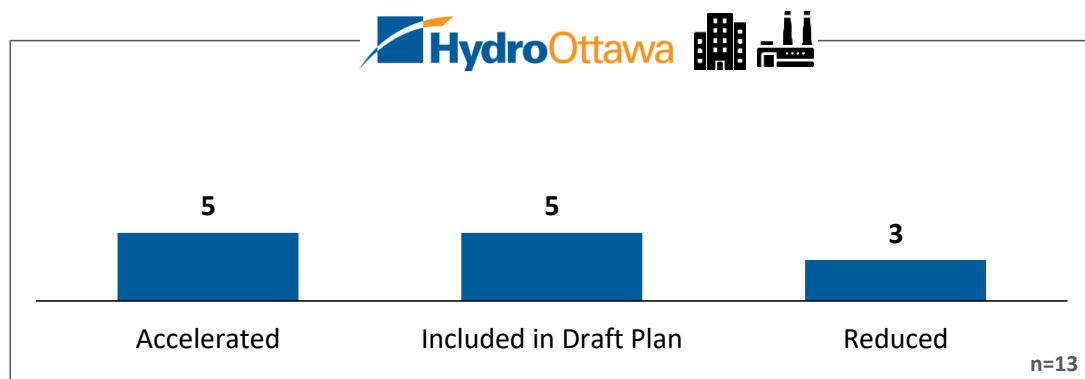


31

Pacing investments in the overhead distribution system

Q

Which of the following options do you prefer?



Q

Additional Feedback (Optional)

Verbatim Responses (n=1)

12/13 of respondents did not provide additional feedback

End of life estimates are just that " estimates " is there a better way to determine their useful life i.e technology, A.I, predictive analytics etc.

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

Online Workbook

Pacing investments in the underground distribution system

Mid-Market &
Commercial



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Hydro Ottawa is considering four options when it comes to underground cable renewal:

- 1. Accelerated Approach:** Renewal of aging assets with increased spending directed to underground transformers and cables.
- 2. Enhanced Approach:** Renewal of aging assets with increased spending targeted for cable replacement.
- 3. Included in Draft Plan:** Balanced investment, defer catch up in replacement of aging infrastructure to manage rate impact. Continued and modest increases in proactive replacement of assets at higher risk of failure.
- 4. Reduced Approach:** Defer any increase in proactive asset replacement, moving to only critical repairs of the system.

Option	Outcome
Accelerated Approach Additional \$7.94 per bill each year (\$39.72 more per bill by 2025)	<ul style="list-style-type: none"> Increasing proactive replacement of aging infrastructure with a focus on transformer and cable replacement. Reduced asset risk and future investment to catch up. Accelerating asset renewal enabling rapid roll out of increased system capacity (EVs) and improved operations (faster restoration when outages occur). Reliability improvements reducing frequency and duration of outages. Reducing maintenance costs related to oil leaks.
Enhanced Approach Additional \$3.97 per bill each year (\$19.86 more per bill by 2025)	<ul style="list-style-type: none"> Replacing aging cables to reduce failure risk, with slowed investment in other underground infrastructure such as switches, and transformers. Manageable future investment will be required to catch-up. Increased rate of cable replacement will provide some improvements in asset failure and outage frequency.
Included in Draft Plan <i>Within 4.5% annual increase</i>	<ul style="list-style-type: none"> Moderate rate of asset replacement, which is still higher than the 2016-2020 program Manageable level of future investment required to catch-up. Maintenance of system reliability with minor impact in service reliability.
Reduced Approach Decrease of \$3.97 per bill each year (\$19.86 less per bill by 2025)	<ul style="list-style-type: none"> Need for catch up in future years, requiring significant levels of investment. Potential reduction on system reliability with increasing outages in specific areas due to cable failures.

* Note: Mid-market bill impacts shown.

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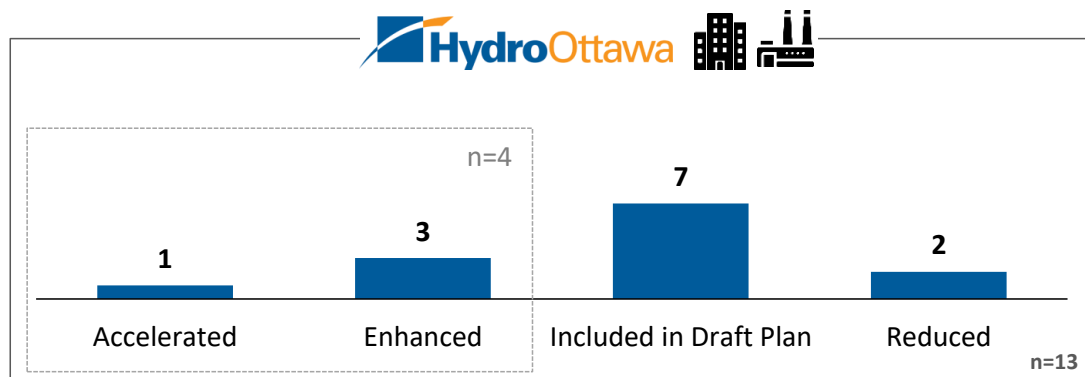


33

Pacing investments in the underground distribution system

Q

Which of the following options do you prefer?



Q

Additional Feedback (Optional)

Verbatim Responses (n=1)

12/13 of respondents did not provide additional feedback

Same as last answer. End of life estimates are just that " estimates " is there a better way to determine their useful life i.e technology, A.I, predictive analytics etc.

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

Online Workbook

Background Information

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Reliability experience

In order to provide feedback on Hydro Ottawa's plans, it's important to understand how the distribution system has performed in the past, as well as what's expected in the future.

A core objective of Hydro Ottawa's 2021-2025 rate application is to maintain current levels of reliability, while making targeted improvements to those areas experiencing below average service.

- The five-year average number of outages (excluding major event days and loss of supply from Hydro One) has decreased slightly between 2014 and 2018, from 1.02 to 0.84 (total number of annual outages).
- The five year average duration of outages (excluding major event days and loss of supply from Hydro One) has decreased slightly between 2014 and 2018, from 1.17 to 1.14 (total annual hours).

What is most likely to cause an outage?

Although both the number and duration of outages have decreased compared to the previous five-year average, defective equipment remains the top cause of outages within Hydro Ottawa's control.

That said, in 2018, severe weather presented a unique set of challenges for Hydro Ottawa's distribution system. One section of this consultation will focus on the impacts of severe weather, and the options for preparing the distribution system for more frequent and extreme weather.

Causes of Unscheduled Power Outages (five-year average: 2014 to 2018)



10%

Animal Contact: outages caused by animals such as birds and squirrels coming in contact with overhead power lines or transformers.



27%

Equipment Failure: unscheduled power outages from equipment failure usually occur with distribution assets that are beyond or approaching the end of their expected useful lives.



24%

Weather Related Events: adverse weather such as heavy rain, lightening, ice, snow, wind, extreme temperatures, freezing rain and frost can disrupt the distribution system.



39%

Other: includes tree contact (10%), and human interference (11%) (such as construction workers accidentally cutting power lines or motor vehicle accidents involving contact with distribution assets). 9% of outages are unknown, but most likely caused by animal contact.

Note: statistics do not include loss of supply from Hydro One.

Online Workbook

Reliability Experience

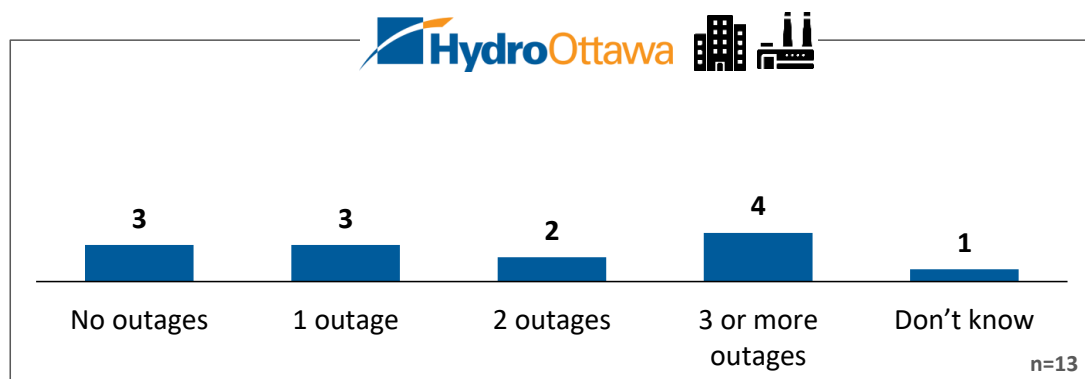
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Q

Have you experienced any power outages at your organization in the past 12 months which lasted longer than one minute? If so, approximately how many of these power outages did you experience?



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Reliability Investments

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Hydro Ottawa is considering four options when it comes to reliability investments:

- 1. Accelerated Approach:** Build power lines/new connections between substations to improve reliability. Enhance monitoring of substation and distribution equipment.
- 2. Included in Draft Plan:** Only build critical connections between substations. Enhance monitoring of station and distribution equipment.
- 3. Limited Approach:** Improve reliability for neighbourhoods experiencing the most frequent number of power outages. Enhance monitoring of substation and distribution equipment.
- 4. Reduced Approach:** Only improve reliability for neighbourhoods experiencing the most frequent number of power outages.

Option	Outcome
Accelerated Approach <u>Additional</u> \$0.99 per bill each year (\$4.97 more per bill by 2025)	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Increase system resilience and performance through addition of connections on distribution network. Supports reduction in outage duration. Target investments to areas that have below average reliability.
Included in Draft Plan <i>Within 4.5% annual increase</i>	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Maintain system resilience and performance through addition of connections on distribution network. Maintains outage duration at current levels. Target investments to areas that have below average reliability.
Limited Approach <u>Decrease</u> of \$1.99 per bill each year (\$9.93 less per bill by 2025)	<ul style="list-style-type: none"> Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral. Target investments to areas that have below average reliability.
Reduced Approach <u>Decrease</u> of \$2.98 per bill each year (\$14.89 less per bill by 2025)	<ul style="list-style-type: none"> Target investments to areas that have below average reliability. No investment to improve/enhance reliability.

* Note: Mid-market bill impacts shown.

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Reliability Investments

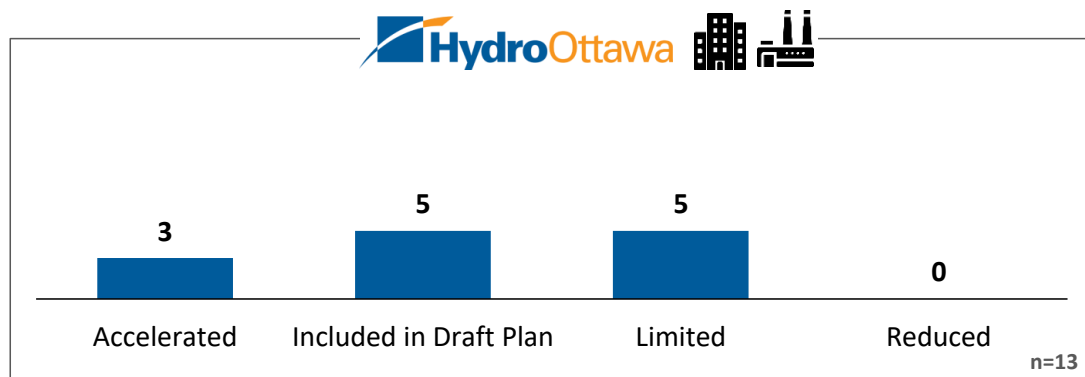
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37

Q

Which of the following options do you prefer?



Q

Additional Feedback (Optional)

Verbatim Responses (No respondents provided additional feedback)

13/13 of respondents did not provide additional feedback

None

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

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Background Information

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Preparing for potential increases in severe weather

Hydro Ottawa's distribution system is designed to withstand environmental stresses and impacts, however, weather-related outages have been increasing in terms of frequency and severity over recent years. During 2018 there were three major events which, combined, resulted in system asset replacements of approximately \$4M.

In addition to impacting Hydro Ottawa's equipment, these events increase the resources required to safely and quickly respond to the storm damage and coordinate and communicate restoration efforts to customers.

Hydro Ottawa is currently in the process of completing a climate change vulnerability assessment to determine what steps should be taken to mitigate the impacts of changing climates. While the recommendations from this assessment have not yet been finalized, there are a number of steps Hydro Ottawa could consider taking to prepare for an increasing frequency of severe weather events. For example, changing pole replacement practices and standards would increase overhead structure strength and provide greater clearances from trees and vegetation.

Hydro Ottawa wants to know what your preferences are with respect to making investments in system resilience for severe weather that may or may not materialize over this rate period.



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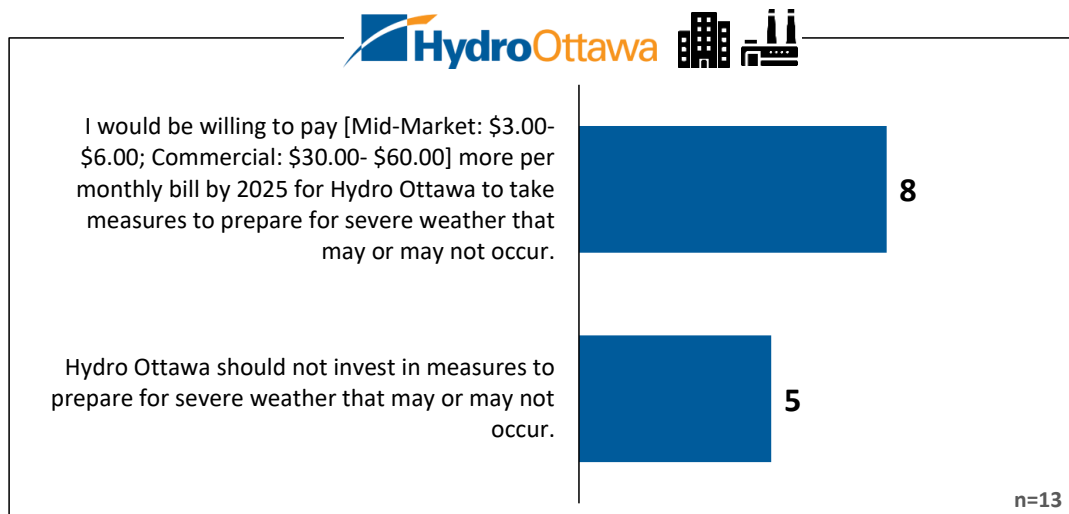


39

Preparing for potential increases in severe weather

Q

Which of the following options do you prefer?



Q

Additional Feedback (Optional)

Verbatim Responses (n=1)

12/13 of respondents did not provide additional feedback

Our tax and hydro bills are our greatest expenses - they are indeed onerous obligations to our business.

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

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Background Information

Mid-Market &
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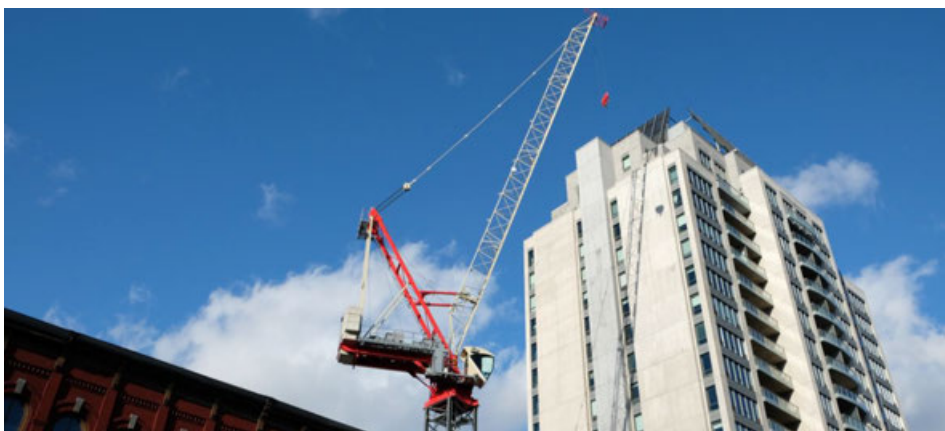
40

Serving a growing city

The population in Hydro Ottawa's service territory continues to grow. Hydro Ottawa must be prepared to serve new customers, while maintaining acceptable levels of service for existing customers. This means regularly assessing the capacity and reliability of its distribution system and its resilience to extreme weather events, and taking action when gaps are found.

A number of Hydro Ottawa's substations are approaching capacity and cannot accommodate future customer growth. Delaying planned investments could result in a decline in reliability for existing customers.

Hydro Ottawa's current plan only includes critical capacity investments; however, there is also an option to make further investments to get ahead of the growing demand for electricity supply.



Option	Outcome
Accelerated Approach <u>Additional</u> \$4.96 per bill each year (\$24.82 more per bill by 2025)	<ul style="list-style-type: none"> • Increase distribution system capacity investment to meet and exceed growing demand for electricity supply. • Distribution system capacity is moved ahead of the demand for electricity, eliminating reliability risk during peak demand days.
Included in Draft Plan <i>Within 4.5% annual increase</i>	<ul style="list-style-type: none"> • Slow distribution system capacity to critical investment only. • Distribution system capacity maintains pace with demand for electricity, or slightly lagging. No impact on ability to connect customers. • Results in modest increase to risk in reliability to areas of growth and increased risk of longer outages or inability to restore power to some customers if outages occur on peak demand days.

* Note: Mid-market bill impacts shown.

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Serving a growing city

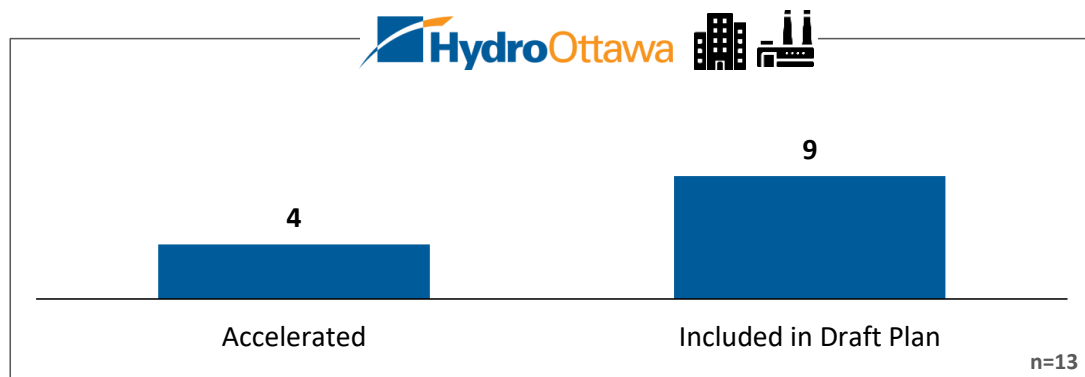
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41

Q

Which of the following options do you prefer?



Q

Additional Feedback (Optional)

Verbatim Responses (n=1)

12/13 of respondents did not provide additional feedback

Even potential limited access to power can prevent development. A client will not want to move into an area, if there is a risk of limited power or no expansion capability...

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

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Background Information

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Innovation: Investing for the future

Electricity distribution service is in the midst of unprecedented change – evolving towards a more decentralized, customer-centric, technologically-advanced and environmentally sustainable model.

Hydro Ottawa plans to continue engaging in research and development activities which offer value to its customers. This includes supporting the connection of Distributed Energy Resources (DERs). This small scale generation is connected to the grid close to the communities they serve. Hydro Ottawa's Great DR – phase two project (currently known as MiGen), where customers generate their own power and store what's not immediately used, is an example of innovation that is incorporated into the 2021-2025 plan.

Hydro Ottawa has also been actively involved in assessing and addressing customer needs within the emerging electric vehicle market, as well as, participating in a Battery Energy Storage Project, as part of the Smart Grid Program.

Looking forward, opportunities to develop new rate models and explore new energy services will offer customers more choice and control over their electricity needs.



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Innovation: Investing for the future

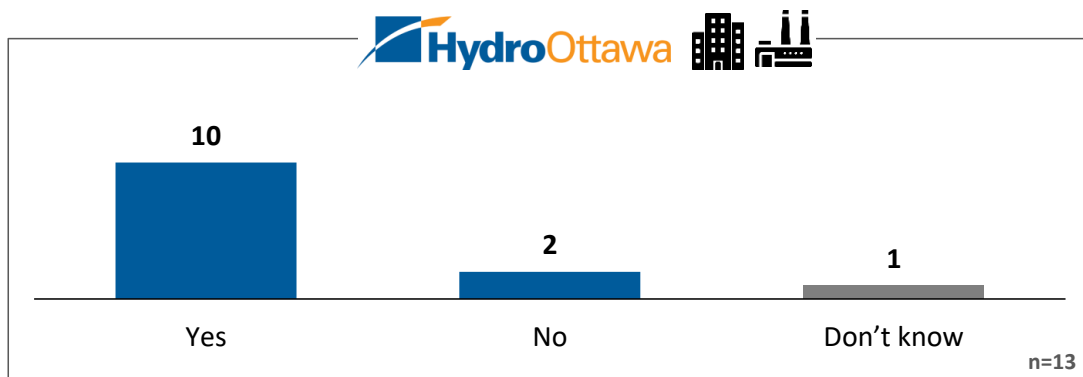
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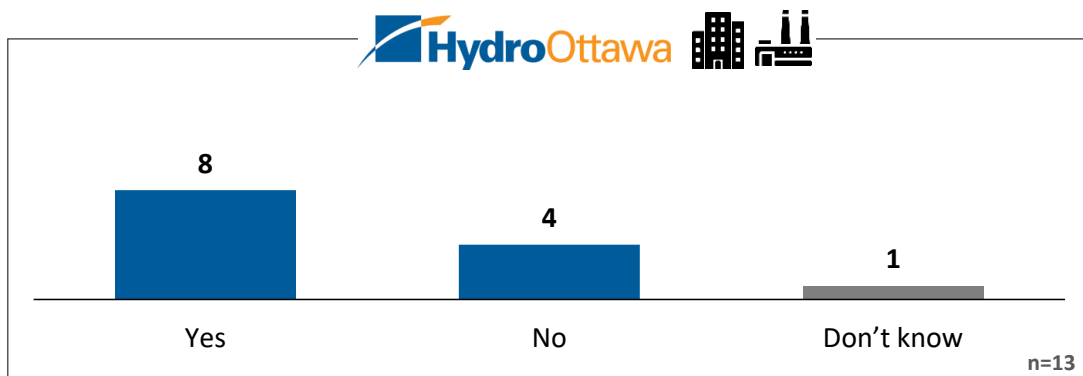
Q

Do you support Hydro Ottawa's strategy of leading change and engaging in industry projects that could shape the future of the energy marketplace?



Q

Do you believe Hydro Ottawa should limit expenditures to those necessary to serve today's customers and existing needs, if this option could lower rate impacts in the short term?



Q

Additional Feedback (Optional)

Verbatim Responses (No respondents provided additional feedback)

13/13 of respondents did not provide additional feedback

None

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

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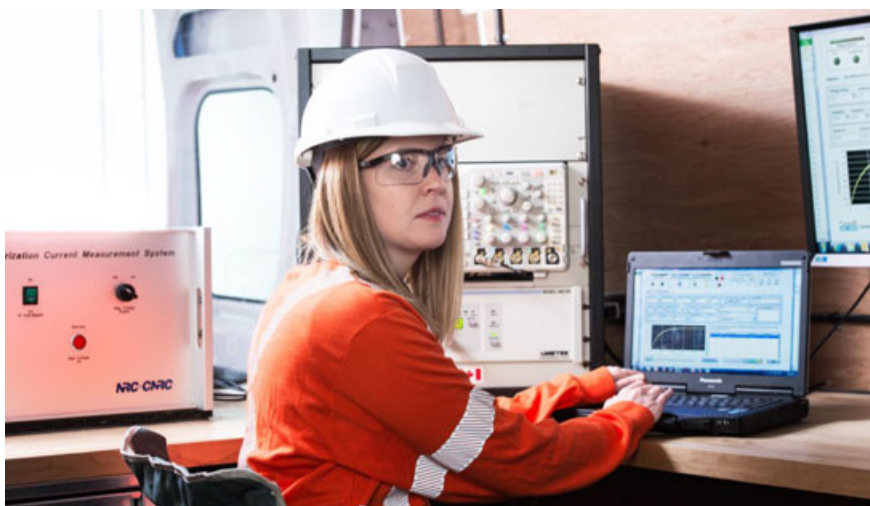
Keeping the business running

Hydro Ottawa is more than just poles and wires – it's a business that needs to invest in tools, trucks, equipment, and facilities to maintain the distribution system and service its customers.

The types of expenditures in this category are:

- **Information Technology:** Systems required to securely operate the distribution system, manage customer information and privacy, and keep employees working effectively and efficiently.
- **Vehicles:** Bucket trucks and other vehicles used to move employees, equipment, and supplies throughout Hydro Ottawa's service territory to support the safe and reliable operation of the grid.
- **Facilities:** Warehouse, operations centres and administrative office.
- **Tools and Equipment:** Specialized safety tools and equipment to mitigate the risks associated with maintaining electricity distribution infrastructure.

When deciding whether to continue to maintain existing tools or replace them, Hydro Ottawa considers whether the risks and costs of continuing to use them outweighs the benefits of waiting longer to replace them. Hydro Ottawa must also consider the lead times required to replace some utility vehicles, such as bucket trucks, which can be as long as 18 months.



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Keeping the business running

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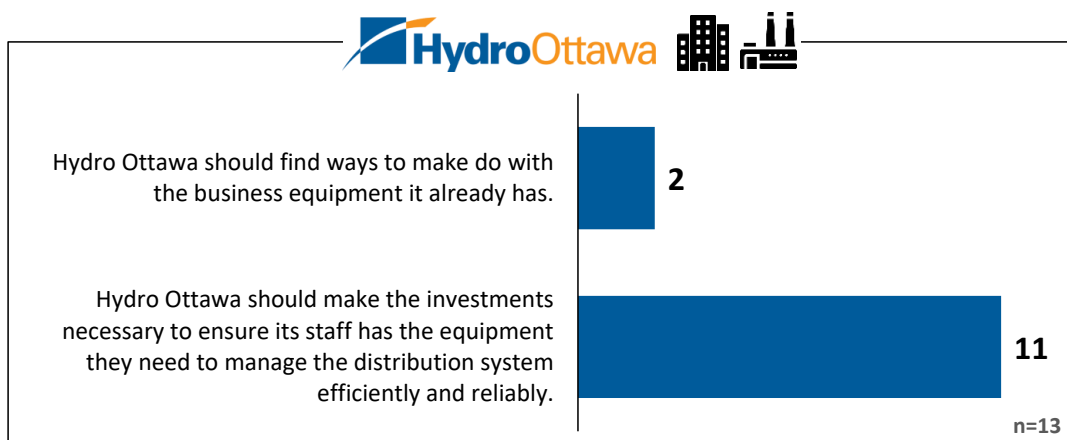


45

As a company, Hydro Ottawa needs equipment to maintain its distribution system and IT systems to manage the distribution system and customer information.

Q

Which of the following statements best represents your point of view?



Q

Additional Feedback (Optional)

Verbatim Responses (No respondents provided additional feedback)

13/13 of respondents did not provide additional feedback

None

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

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Vehicle replacement

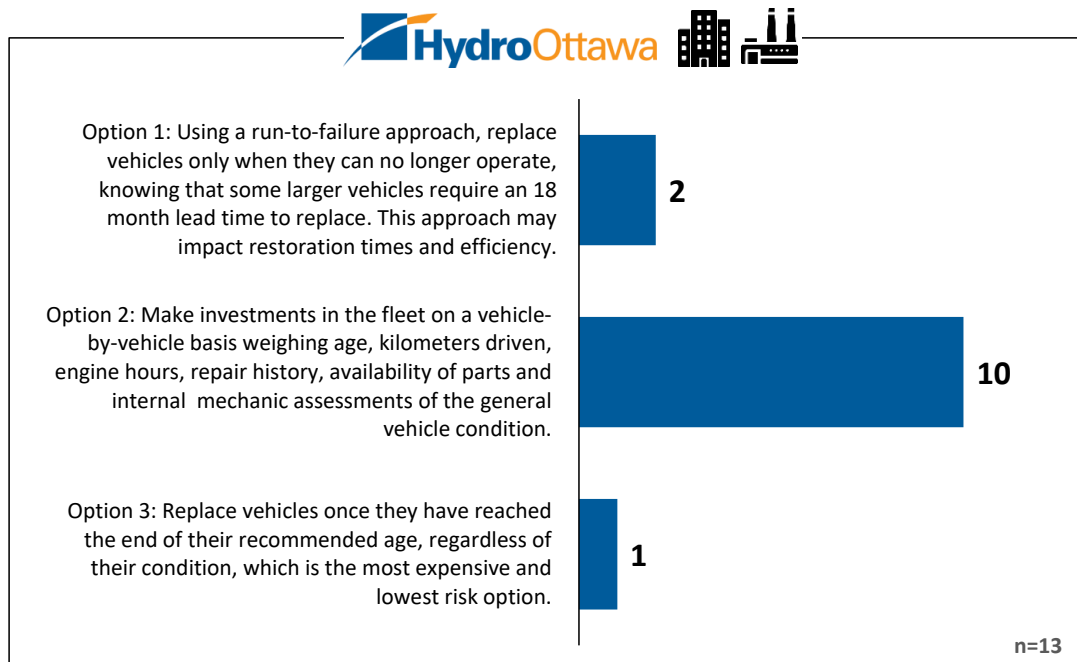
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Q

Which of the following vehicle replacement options do you prefer?



Q

Additional Feedback (Optional)

Verbatim Responses (No respondents provided additional feedback)

13/13 of respondents did not provide additional feedback

None

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

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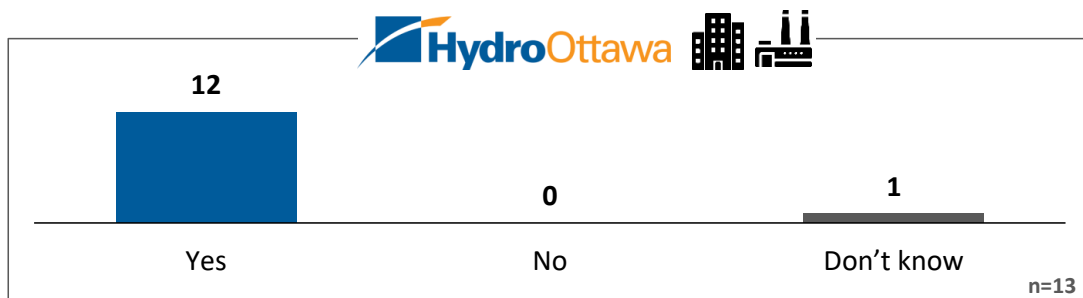


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Finding efficiencies through technology investments

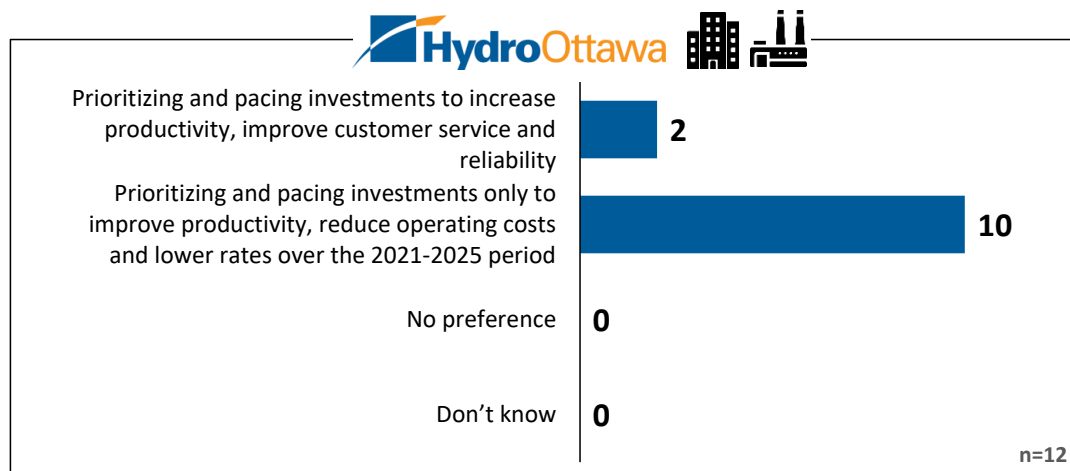
Q

Do you support Hydro Ottawa's view that prudent technological investments are necessary in order to meet its ongoing business and customer needs?



Q

[If yes to above] And which of the following options do you prefer?



Q

Additional Feedback (Optional)

Verbatim Responses (No respondents provided additional feedback)

13/13 of respondents did not provide additional feedback

None

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

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Change in Initial vs. Final Response by Project

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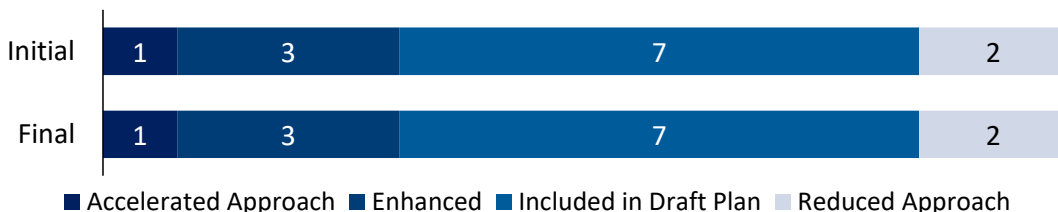
Q

Pacing investments in the overhead distribution system



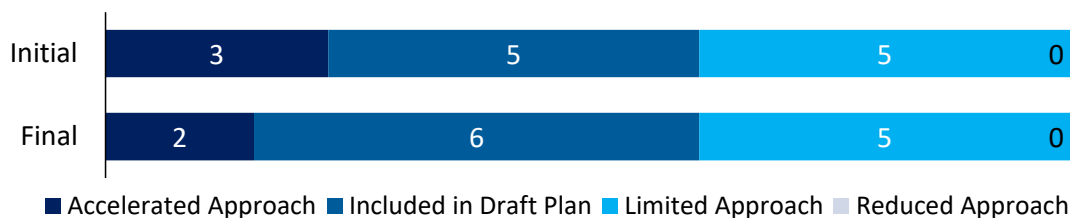
Q

Pacing Investments in the Underground Distribution System



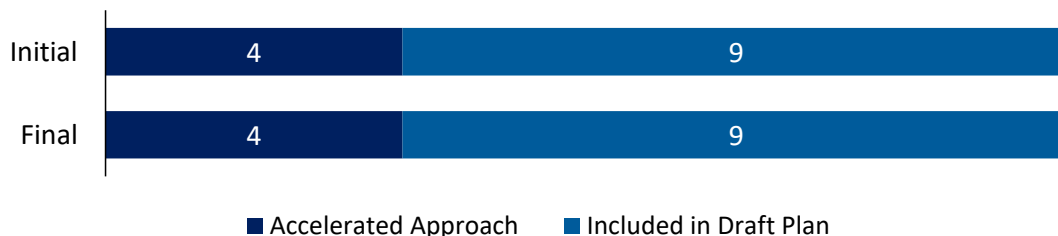
Q

Reliability Investments



Q

Serving a Growing City



Online Workbook

Impact of Choices on Rates | Preamble

Mid-Market &
Commercial



49

Impact of Hydro Ottawa's Plan

Hydro Ottawa has calculated the rate impact of implementing the options recommended by its planners and included it in its draft plans.

These priorities may change based on your input but Hydro Ottawa is looking for an investment program that aims to:

- **Minimize rate increases;**
- **Maintain reliability and service quality;**
- **Address key pressures to the system, including;**
 - **Aging infrastructure;**
 - **An expanding customer base and continued population growth, and;**
 - **The effects of severe weather events.**
- **Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs.**

If Hydro Ottawa continues with its current plan, it is estimated that the distribution portion of the bill will increase an average of **4.5%/4.2% per year for the period 2021-2025.**

At the end of the 5-year plan, the typical **mid-sized business/commercial** customer would see the distribution portion of their electricity bill increase by **\$358.90/ \$3,670.30**. As a result, the distribution charges on the typical **mid-sized business/commercial** customer's monthly bill would increase from **\$1,485.75/ \$16,277.93 in 2020 to \$1,844.65/ \$19,948.23 by 2025.**

Online Workbook

Impact of Hydro Ottawa's Plan

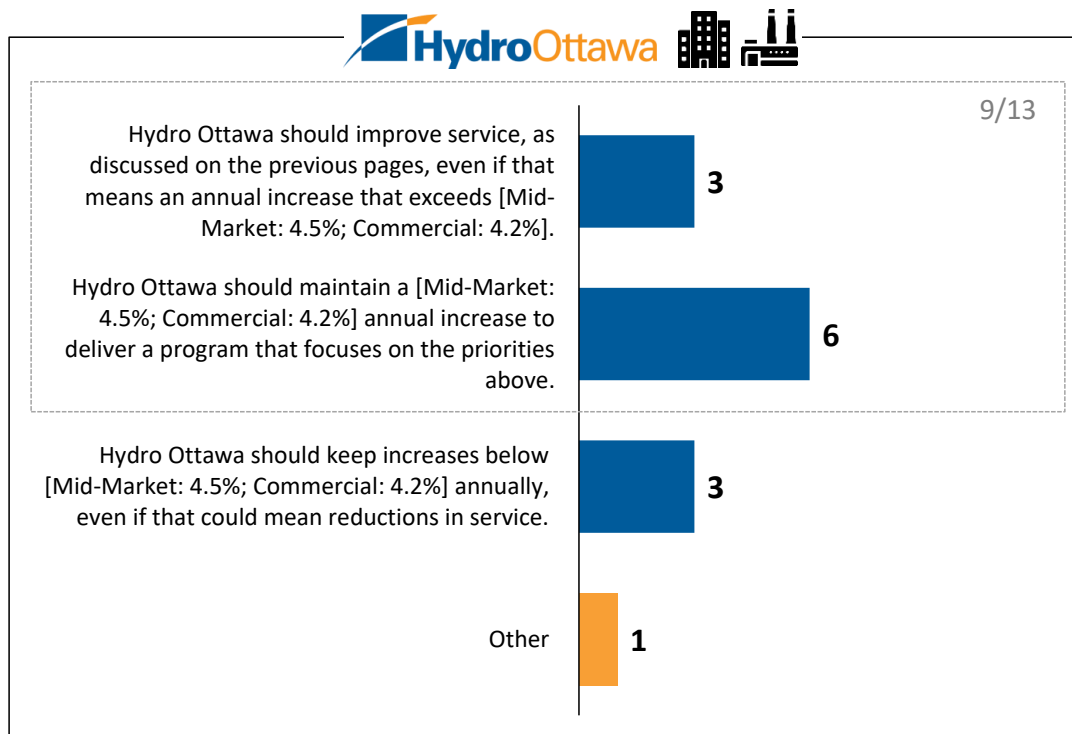
Mid-Market &
Commercial



50

Q

With regards to Hydro Ottawa's draft plan, which of the following statements best represents your view?



Q

Additional Feedback (Optional)

Verbatim Response (n=1)

You need to work with a budget based on inflation like every other business. We also need competition in hydro. Although it is not an hydro Ottawa issue the energy global adjustment is unfair, uncontrolled and not predictable.

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

Online Workbook

Final Comments

Mid-Market &
Commercial



51

Q

Now that you have considered the various choices Hydro Ottawa has to make and the cost implications of those choices, do you have any final comments for Hydro Ottawa?

Verbatim Responses (n=2)

11/13 of respondents did not provide additional feedback

However saying this there should be a cap put on the plan i.e between 4% and 6%...

Focus on electricity delivery and stop trying to compete with private industry.

* Note: Redactions have been made in order to protect the individual confidentiality of customers.

Online Workbook

Final Thoughts: Workbook Diagnostics

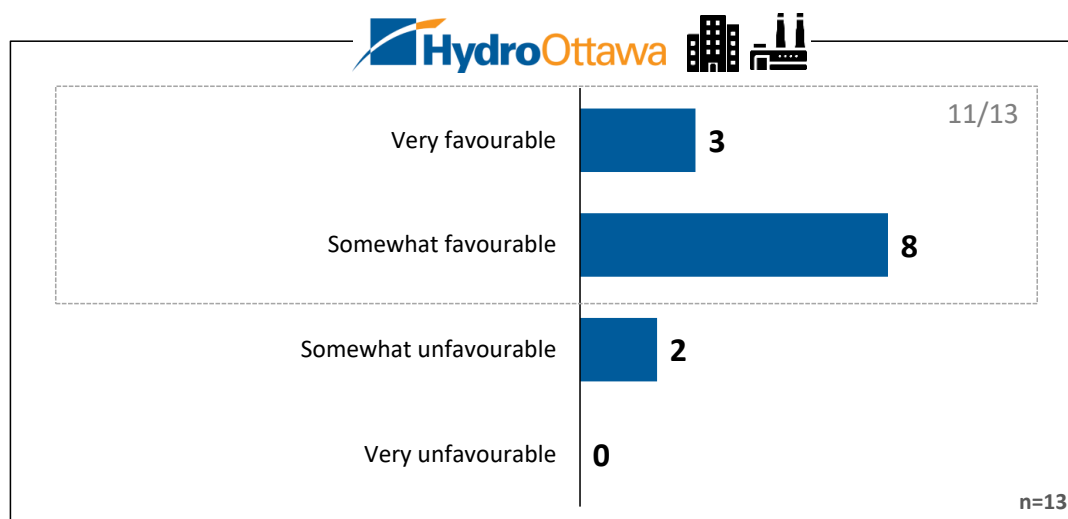
Mid-Market &
Commercial



52

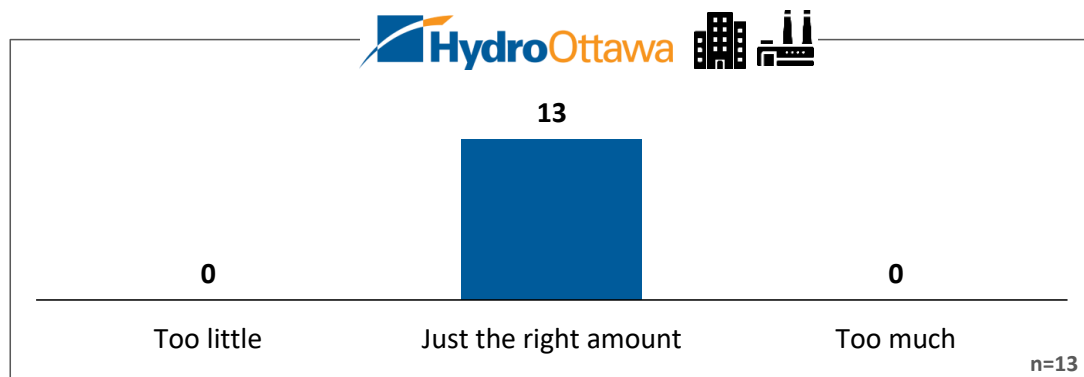
Q

Overall Impression: Did you have a favourable or unfavourable impression of the workbook you just completed?



Q

Volume of Information: Did Hydro Ottawa provide too much information, not enough, or just the right amount?





Building Understanding.

Personalized research to connect you and your audiences.

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Appendix 8.0



Legend	
	Residential customers
	Small Business customers

Residential and Small Business Online Workbook Layout

Hydro Ottawa Limited Customer Consultation

2

Have your say: 2021-2025 Rate Application

Hydro Ottawa Limited (Hydro Ottawa) is looking for your input on choices that will help shape the service you receive and the price you pay.



Hydro Ottawa is developing its business plan for 2021 to 2025. This plan will determine the level of spending and investments Hydro Ottawa makes in equipment and infrastructure and the services it provides, as well as the rates you pay.



Hydro Ottawa is accountable to the provincial regulator, the **Ontario Energy Board (OEB)**, both in terms of sharing what customers say and demonstrating how they considered those views when undertaking the planning process.



You don't need to be an electricity expert to participate in this consultation. This workbook is focused on basic choices and provides the background information you need to answer the questions.

Building on previous customer feedback, the goal of this consultation is to allow Hydro Ottawa to better understand the needs and preferences of customers like you, and help them align their plan with what you have shared.

While your view may not always align exactly with the available options, please select the one that is closest to your point of view.

Those who complete the questions that follow will be invited to enter a draw to win one of four (4) \$500 cash prizes.

Depending on how much feedback you wish to provide, this consultation should take approximately 30-45 minutes to complete. If you need to pause and return at a later time to finish your feedback, your completed answers will be saved

If you are reading this on a smaller mobile device, you may want to consider accessing the survey from a tablet, desktop or laptop instead so that it is easier for you to read.

All individual responses will be kept confidential.

Innovative Research Group (INNOVATIVE), an independent research company, has been hired by Hydro Ottawa to gather your feedback.

Are you completing this customer consultation as a...

- ☐ Hydro Ottawa Residential Customer
- ☐ Hydro Ottawa Small Business Customer

Hydro Ottawa Limited Customer Consultation

3

Have your say: 2021-2025 Rate Application

More about you/your organization

In order to group responses with those from similar customers, we need a little more information about you. This information will be treated as confidential and only be used to analyse the feedback from this consultation.

Please enter the first three characters of your residential/organization's postal code. (_ _ _)

Are you the person primarily responsible for paying the electricity bill in your household?

- ☐ Yes – I pay the bill
- ☐ Yes – Shared responsibility
- ☐ No

Which of the following best describes your living situation?

- ☐ I pay rent for my housing
- ☐ I own my home
- ☐ I live in housing where I do not pay rent

Including yourself, what is the TOTAL number of people currently living in your household? (_)

As part of your job, do you make decisions or influence decisions about electricity management?

- ☐ Yes
- ☐ No

Thinking about the areas of your organization that you manage, how much would you estimate is spent every month on electricity as a Hydro Ottawa customer?

- ☐ Less than \$500
- ☐ \$500 to less than \$1,000
- ☐ \$1,000 to less than \$1,500
- ☐ \$1,500 to less than \$2,000
- ☐ \$2,000 or more
- ☐ Don't know

Which of the following best describes the sector in which your business operates?

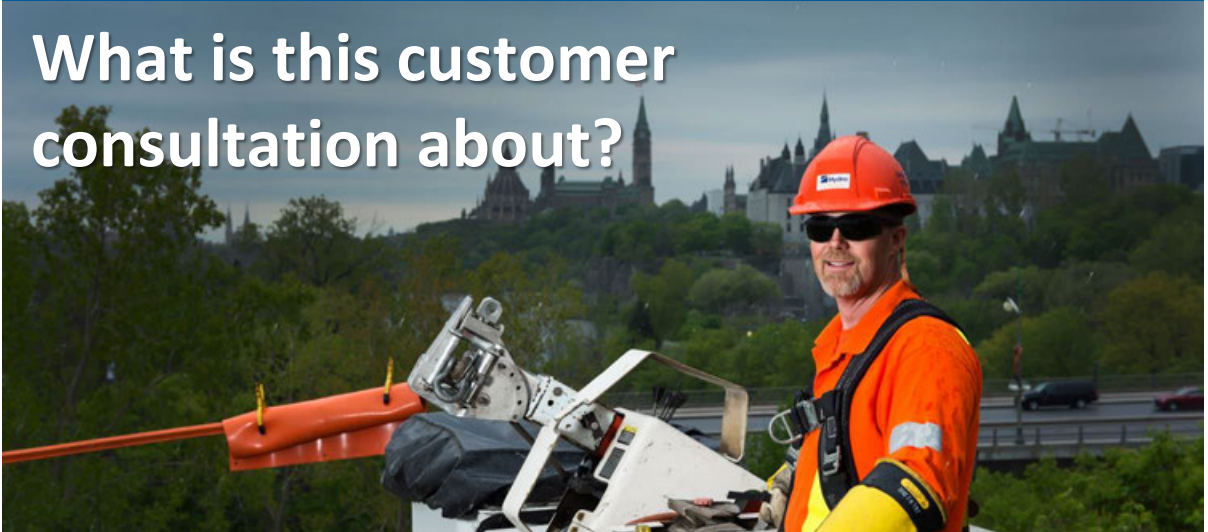
- | | |
|--|--|
| <input type="checkbox"/> Public Administration | <input type="checkbox"/> Retail |
| <input type="checkbox"/> Health Care | <input type="checkbox"/> Warehouse |
| <input type="checkbox"/> Education/Academic | <input type="checkbox"/> Multi-Unit Residential |
| <input type="checkbox"/> Manufacturing/Industrial | <input type="checkbox"/> Consulting Services |
| <input type="checkbox"/> Data Centre | <input type="checkbox"/> Construction Services |
| <input type="checkbox"/> Hospitality | <input type="checkbox"/> Other (Please specify: _____) |
| <input type="checkbox"/> Food Services/Accommodation | |

Hydro Ottawa Limited Customer Consultation

Have your say: 2021-2025 Rate Application

4

What is this customer consultation about?



This consultation is about gathering your feedback on finding the right balance between the services you receive from Hydro Ottawa over the next five years and the price you pay.

Hydro Ottawa has important decisions to make about the pace and mix of expenditures it makes in equipment and infrastructure, the services it provides you as a customer, and the rates you pay.

Every five years, Hydro Ottawa submits a plan for its proposed rates and spending to the Ontario Energy Board for approval. They are now in the process of finalizing that plan.

- Earlier in 2019, Hydro Ottawa asked thousands of customers about their priorities and preferred outcomes for electricity distribution service.
- Using the feedback shared by customers, Hydro Ottawa built a plan that is intended to align with customer preferences. Want to learn more about how Hydro Ottawa plans? [Click here \(001\)](#)
- Hydro Ottawa is now coming back to its customers with a series of expenditure options in order to finalize its draft plan for the next five years.

How will this customer consultation work?



Hydro Ottawa will ask for your feedback on a number of decisions it needs to make in order to finalize their plan. These decisions will impact both the services you receive, as well as the price you pay on the distribution portion of your electricity bill.



For each decision, Hydro Ottawa has identified the option that it feels balances customer feedback received to date to limit cost impacts, while prudently investing in the distribution system. These options have been included in the current plan, but may be influenced by your feedback.



Once you have finished sharing your thoughts on these decisions, you will have an opportunity to review your responses and the estimated total rate impact of those choices. You will be able to change your responses until you feel you have found the right mix of investments and estimated rate impact.

LINK TO NEXT PAGE

Hydro Ottawa Limited Customer Consultation

5

Have your say: 2021-2025 Rate Application

How will your views impact Hydro Ottawa's plans and rates?

The Ontario Energy Board (OEB) sets electricity rates in Ontario.



Electricity distributors like Hydro Ottawa are funded by the distribution rates paid by its customers. Electricity distributors are required to file a rate application with the OEB to request a change in distribution rates based on its plans for capital and operating costs.

As a customer, how are my interests protected?

The OEB requires all electricity distributors in Ontario, like Hydro Ottawa, to consider customer needs and preferences as they develop their business plan and distribution system plan.

The OEB then reviews Hydro Ottawa's plan and proposed rates in an open and transparent public process known as a rate hearing. Any individual or group may participate during Hydro Ottawa's application to ask questions or seek more information about Hydro Ottawa's plan and application.

Hydro Ottawa will be held accountable for the way you were consulted, the information shared with you and the ways in which the plan considers what you say.

At the end of the process, the OEB will weigh the evidence and decide on the rates Hydro Ottawa can charge its customers.

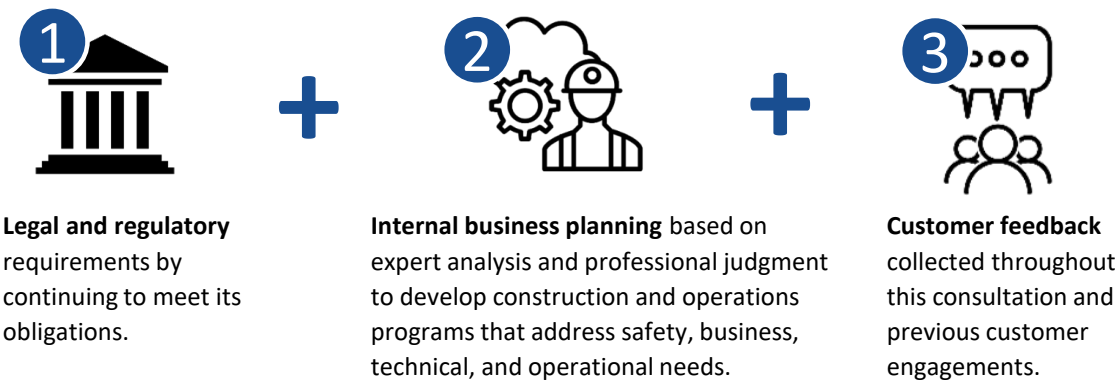
Do you feel that the purpose of Hydro Ottawa's customer consultation is clear?

- ☐ Very clear
- ☐ Somewhat clear
- ☐ Not clear at all

Pop-up: 001

How does Hydro Ottawa plan?

Hydro Ottawa is proposing a plan that is responsive to:



Legal and Regulatory Obligations

There are three key organizations responsible for setting the policy direction of Ontario's electricity system. The decisions made by these organizations impact how utilities operate their business and serve customers.



Policy
The **Ontario Ministry of Energy, Northern Development and Mines** (MNDM) creates energy policy for the province.



Regulation
The electricity industry in Ontario is regulated by the **Ontario Energy Board** (OEB). One of the OEB's roles is to review the business and distribution plans of all electricity distributors and approve the rates that they charge customers.



Operations and Planning
The **Independent Electricity System Operator** (IESO) manages the provincial electricity grid, plans for the province's future energy needs, and develops conservation programs.

[LINK TO NEXT PAGE](#)

Pop-up: 001

Internal business planning

Hydro Ottawa closely monitors the pressures on the distribution system, and develops and recommends solutions to address these challenges as part of its business planning process.



A Growing Community

- **Hydro Ottawa is serving a growing city.** Significant growth in Ottawa will occur in the downtown core, which will require new underground infrastructure. In addition, new residential subdivisions and business parks need to be connected and serviced by the distribution system.
- Hydro Ottawa must make investments to increase distribution system capacity in order to meet these future demands.



Aging Infrastructure

- A large part of Hydro Ottawa's distribution system was installed in the 1950s and 1960s. This infrastructure has served its customers well, but in some cases it is nearing or has reached its end-of-life and must be replaced.
- Hydro Ottawa actively monitors its distribution system, prioritizes asset replacement, and paces investments in order to provide safe and reliable electricity, delivered at a reasonable cost to customers.



Weather

- Hydro Ottawa's distribution system is exposed to the elements, including strong winds, tornadoes, freezing rain, and flooding. While it may be impossible or impractical to completely guard against extreme weather, proactive steps are being taken to "harden" the distribution system to prevent or reduce the length of power outages caused by extreme weather.
- In the past year alone, severe weather has presented a unique set of challenges that have included the touchdown of two tornadoes in September 2018, and flooding in April 2019.



Innovation

- The expansion of the distribution system needs to accommodate the growth of electric vehicles and customer-generated renewable electricity.
- Investment in technologies will enable customers to better understand, manage and monitor their electricity consumption.
- Automation of the electricity distribution system will improve reliability and restoration time in the event of an unscheduled power outage.

Information Technology



- Hydro Ottawa must ensure its information technology meets the needs of its business and its customers.
- Hydro Ottawa is taking proactive steps to prevent cyberattacks that could impact the protection of customer information and distribution system.

Pop-up: 001

Customer feedback



Hydro Ottawa is incorporating customer feedback into the planning process more than ever before.

Every day, Hydro Ottawa interacts with its customers through multiple channels. These touchpoints help identify customer needs and preferences and influence how Hydro Ottawa plans and works to better serve its customers.

	Customer Interaction	<ul style="list-style-type: none">• Telephone• In person• Email• Web chat• Social media• Website• Community events
	Customer Research	<ul style="list-style-type: none">• Customer satisfaction and public safety awareness surveys• Customer focus groups• Website and social media analytics

Hydro Ottawa Limited Customer Consultation

Have your say: 2021-2025 Rate Application

Understanding Ontario's electricity system and Hydro Ottawa's role

Ontario's electricity system is owned and operated by public, private and municipal corporations across the province. It is made up of three key components: **generation**, **transmission** and **distribution**.

Generation

Where electricity comes from

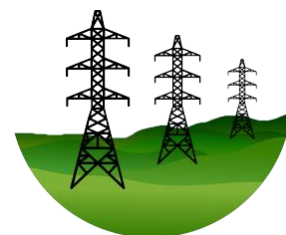
Ontario's electricity is generated using a mix of nuclear, gas-fired, and water power (hydro), as well as biomass and renewable sources such as wind and solar technology. In Ontario, a number of companies own these generating stations but approximately half of the electricity is generated by Ontario Power Generation. The Independent Electricity System Operator (IESO) balances the supply of, and demand for, electricity on a second-by-second basis and directs its flow across the high-voltage transmission lines.



Transmission

How electricity travels across Ontario

Once generated, electricity must be transported to electrical substations across the province. Due to the large amount of power and long distances, transmission normally takes place at high voltages with the lines suspended on large, steel towers. The province has more than 30,000 kilometres of 'electricity highway', most of which is owned and operated by Hydro One.



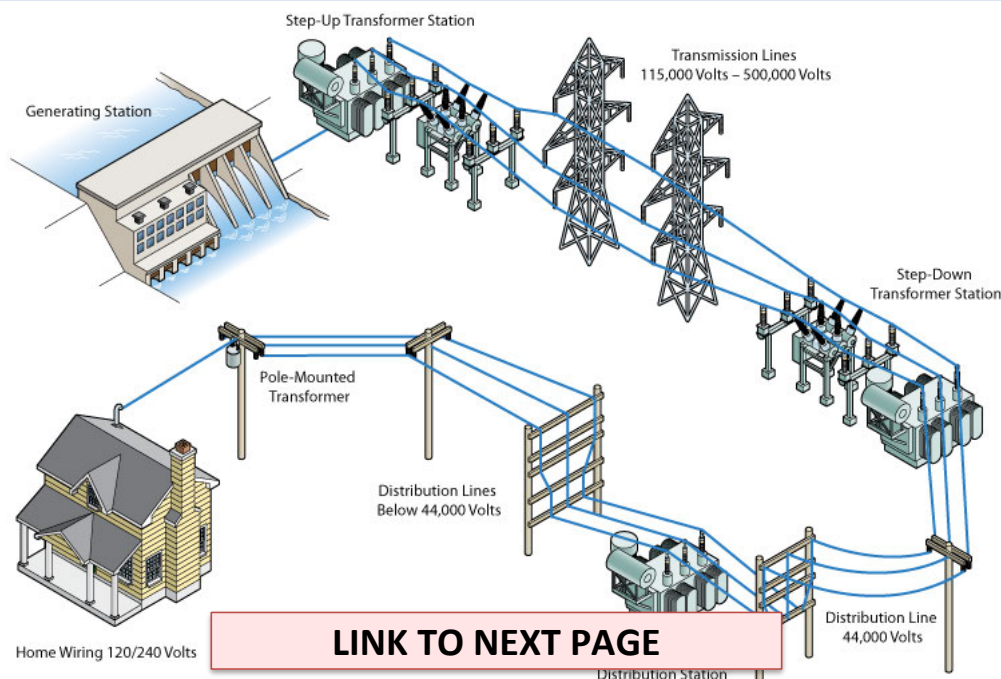
Local Distribution

How electricity is delivered to the end-consumer



Hydro Ottawa is responsible for the last step of the journey: distributing electricity to customers. Its local distribution system is connected to the transmission grid through its distribution stations and transformers. This allows the voltage to be decreased so it can be distributed and safely used in homes and organizations across Hydro Ottawa's service territory.

Hydro Ottawa's distribution system is complex. It consists of approximately 50,000 poles, 2,700 km of overhead power lines, 3,000 km of underground cable, and 45,000 transformers.



[LINK TO NEXT PAGE](#)

Hydro Ottawa Limited Customer Consultation

Have your say: 2021-2025 Rate Application

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Before this consultation, how familiar were you with various parts of the electricity system, how they work together, and for which services Hydro Ottawa is responsible?

- ☐ Very familiar
- ☐ Somewhat familiar
- ☐ Not familiar at all
- ☐ Don't know

Thinking generally about the electricity system in Ontario, including *generation, transmission and local distribution*, do you agree or disagree with the following statements?

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Don't Know
The cost of my electricity bill has a major impact on my finances and requires I do without some other important priorities.					
The cost of my electricity bill has a major impact on the bottom line of my organization and results in some important spending priorities and investments being put off.					
Customers are well served by the electricity system in Ontario.					

Hydro Ottawa is entirely funded through the rates its customers pay and does not receive taxpayer money for its operations or investments.

Before this consultation, were you aware of how Hydro Ottawa received its funding?

- ☐ Very familiar
- ☐ Somewhat familiar
- ☐ Not familiar at all
- ☐ Don't know

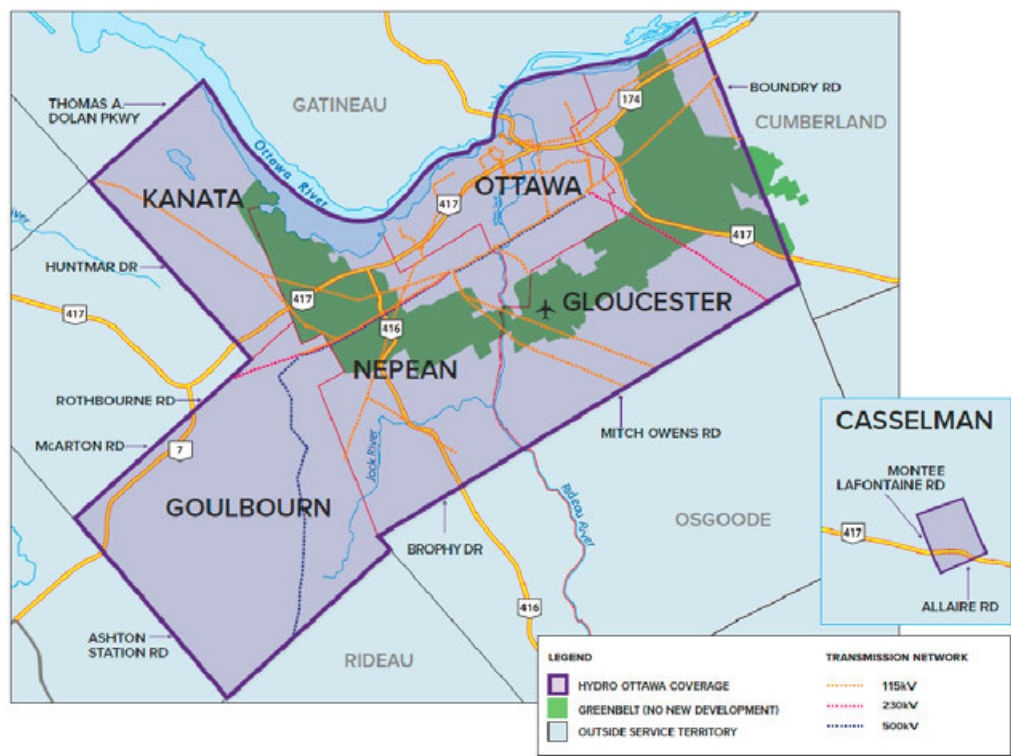
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Have your say: 2021-2025 Rate Application

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Hydro Ottawa fast facts

- Private business corporation 100% owned by its shareholder, the City of Ottawa
- Third largest municipally-owned electricity distributor in Ontario
- Serves approximately 335,000 homes and businesses (more than one million consumers)
- Service territory of 1,116 square kilometers that includes most of the City of Ottawa and the Village of Casselman
- Over 600 employees
- Does not receive taxpayer money to fund its operations or its investments in the distribution system
- Entirely funded through the rates its customers pay



Thinking specifically about the services provided to you and your community by Hydro Ottawa, how satisfied or dissatisfied are you with the services that you receive?

☐ Very satisfied
 ☐ Somewhat satisfied
 ☐ Neither satisfied or dissatisfied
 ☐ Somewhat dissatisfied
 ☐ Very dissatisfied
 ☐ Don't know

Is there anything in particular that Hydro Ottawa can do to improve its services to you?

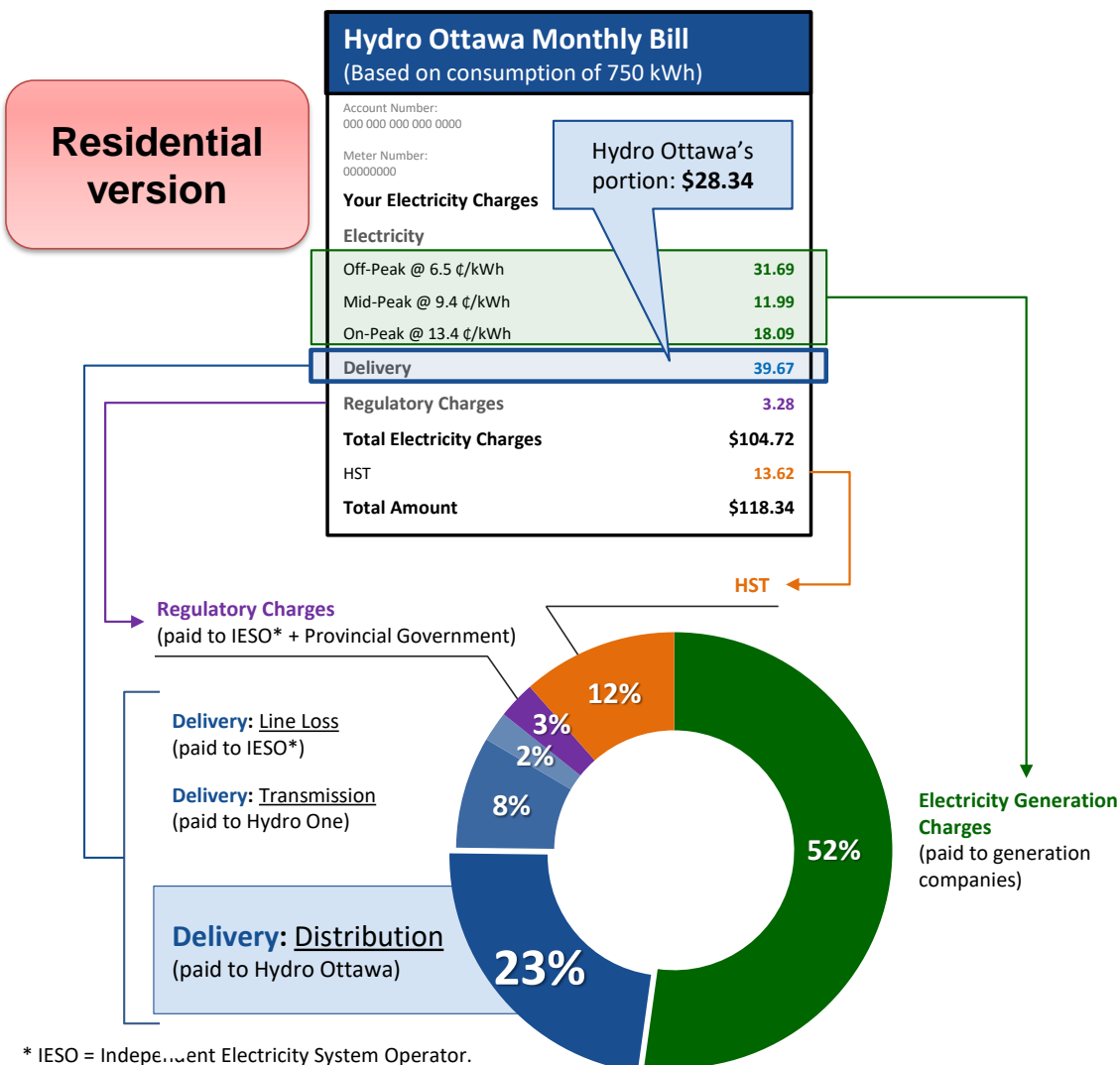
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Have your say: 2021-2025 Rate Application

How much of your bill goes to Hydro Ottawa?

Every item and charge on your bill is mandated by the provincial government or regulated by the Ontario Energy Board (OEB), the provincial energy regulator.

- While Hydro Ottawa is responsible for collecting payment for the entire electricity bill, it retains only a portion of the delivery charge.
- Hydro Ottawa's portion makes up about **23%/22%** of a typical **residential/small business** customer's bill.
- The remainder of your bill is collected for the other companies responsible for generating and transmitting electricity, and to regulatory agencies and the federal and provincial governments.



Note: The sample bill above reflects rates as of May 1, 2019. These numbers do not include the 8% Provincial Rebate.

Note: Graphs may not always total 100% due to rounding.

Before this survey, how familiar were you with the amount of your electricity bill that went to Hydro Ottawa?

- ☐ Very familiar
- ☐ Somewhat familiar
- ☐ Not familiar

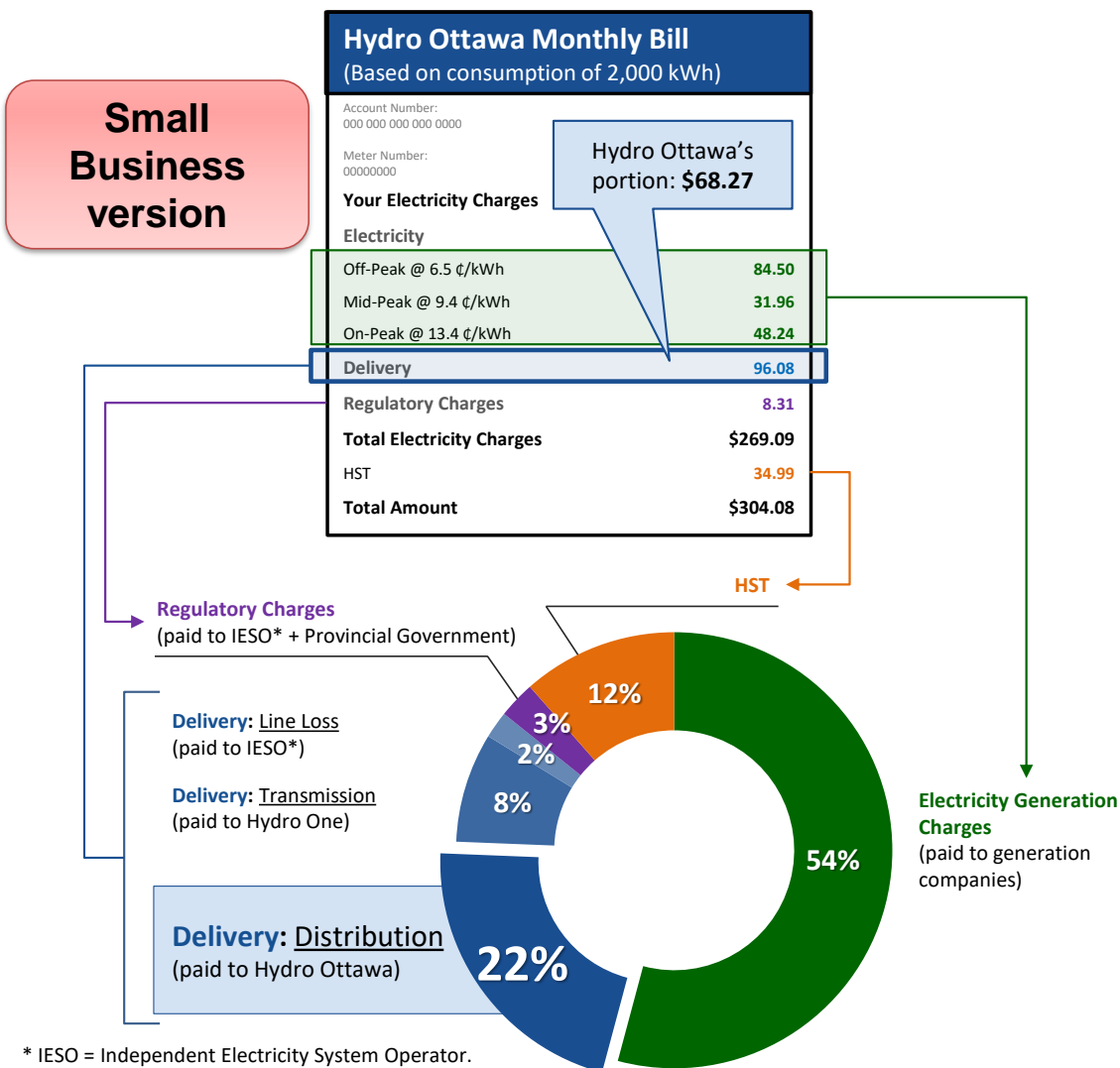
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Have your say: 2021-2025 Rate Application

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Note: Graphs may not always total 100% due to rounding.

Before this survey, how familiar were you with the amount of your electricity bill that went to Hydro Ottawa?

- ☐ Very familiar
- ☐ Somewhat familiar
- ☐ Not familiar

Hydro Ottawa Limited Customer Consultation

Have your say: 2021-2025 Rate Application



Hydro Ottawa's Preliminary Plan
Planning for the future

Hydro Ottawa Limited Customer Consultation

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Have your say: 2021-2025 Rate Application

How did customer feedback shape Hydro Ottawa's preliminary plan?

Hydro Ottawa engages with its customers both in day-to-day interactions and in a variety of customer engagement surveys. **However, this consultation is unique, as it focuses on Hydro Ottawa's business plan that will cover the five year period from 2021 to 2025.**

Preliminary customer engagement found that:

- The clear majority of residential and small business customers are satisfied with the current service they receive;
- Despite being the top priorities, customers don't just expect Hydro Ottawa to focus exclusively on price and reliability;
- Among competing priorities, price, reliability, and investing in new technology are the top three priorities for both residential and small business customers.

Understanding that many customers are satisfied with the level of service they receive from Hydro Ottawa, including with the reliability of the distribution system, and value minimizing price increases above all else, Hydro Ottawa has developed a business plan that emphasizes four core principles:

1. **Minimize rate increases;**
2. **Maintain reliability and service quality;**
3. **Address key pressures to the system, including;**
 - **Aging infrastructure;**
 - **An expanding customer base and continued population growth, and;**
 - **The effects of severe weather events.**
4. **Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs.**

Do you agree or disagree with the principles outlined above?

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Somewhat disagree
- ☐ Strongly disagree
- ☐ Don't know enough to say

Is there anything that you would change about the four core principles outlined above? If yes, what would you change?

Hydro Ottawa Limited Customer Consultation

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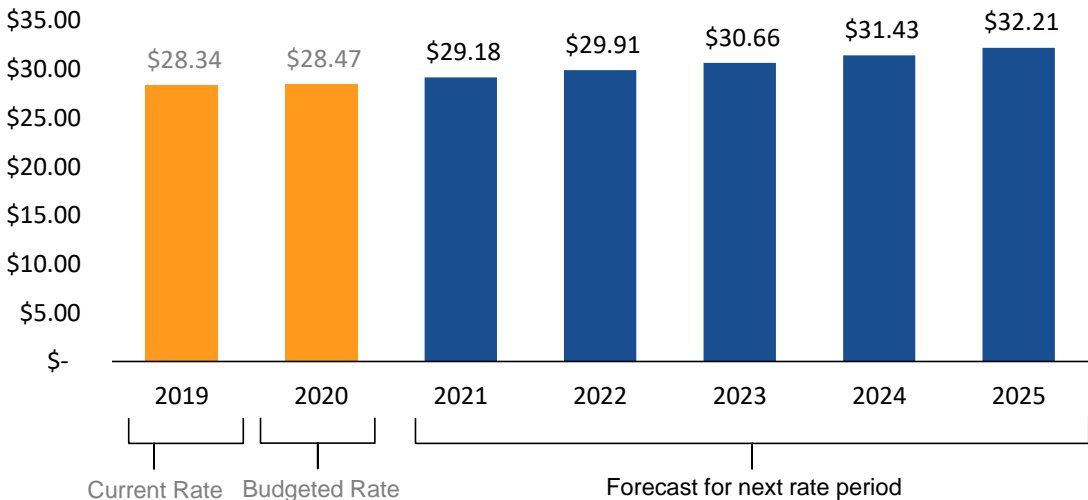
Have your say: 2021-2025 Rate Application

How much will this proposed plan cost me?

If Hydro Ottawa continues with its current plan, it is estimated that the distribution portion of the bill will increase an average of **2.5%/3.5% per year for the period 2021-2025.**

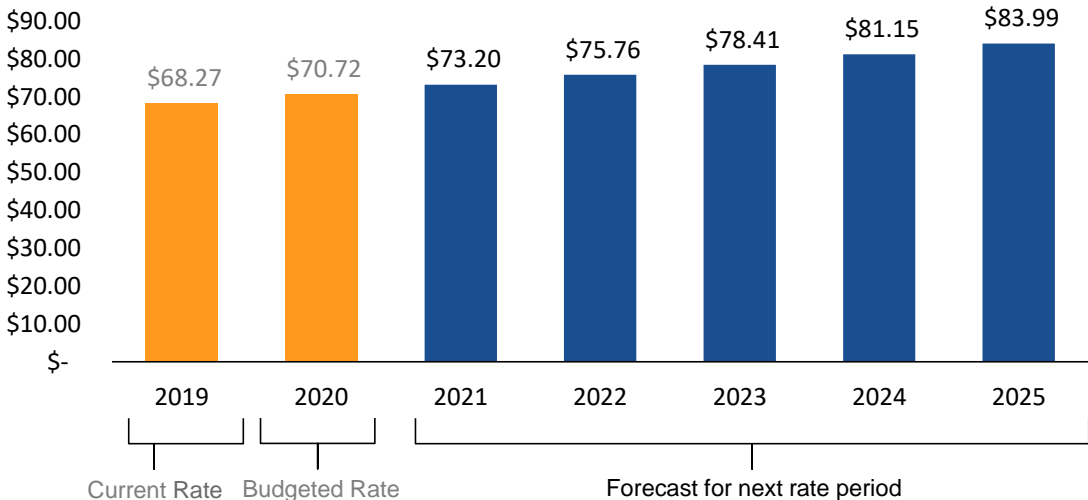
At the end of the 5-year plan, the typical **residential/small business** customer would see the distribution portion of their electricity bill increase by **\$3.74/\$13.27**. As a result, the distribution charges on the typical **residential/small business** customer's monthly bill would increase from **\$28.47/\$70.72** in 2020 to **\$32.21/\$83.99** by 2025.

Estimated Residential Monthly Distribution Charge, per Year*



* These estimates are preliminary, and are subject to your feedback as the business plan is finalized.

Estimated Small Business Monthly Distribution Charge, per Year*



Hydro Ottawa is looking for your input on its preliminary plan to ensure it is making the spending decisions that matter to you, the customer.

The following sections of this workbook will explore some of the choices Hydro Ottawa needs to make to help finalize its proposed plan.

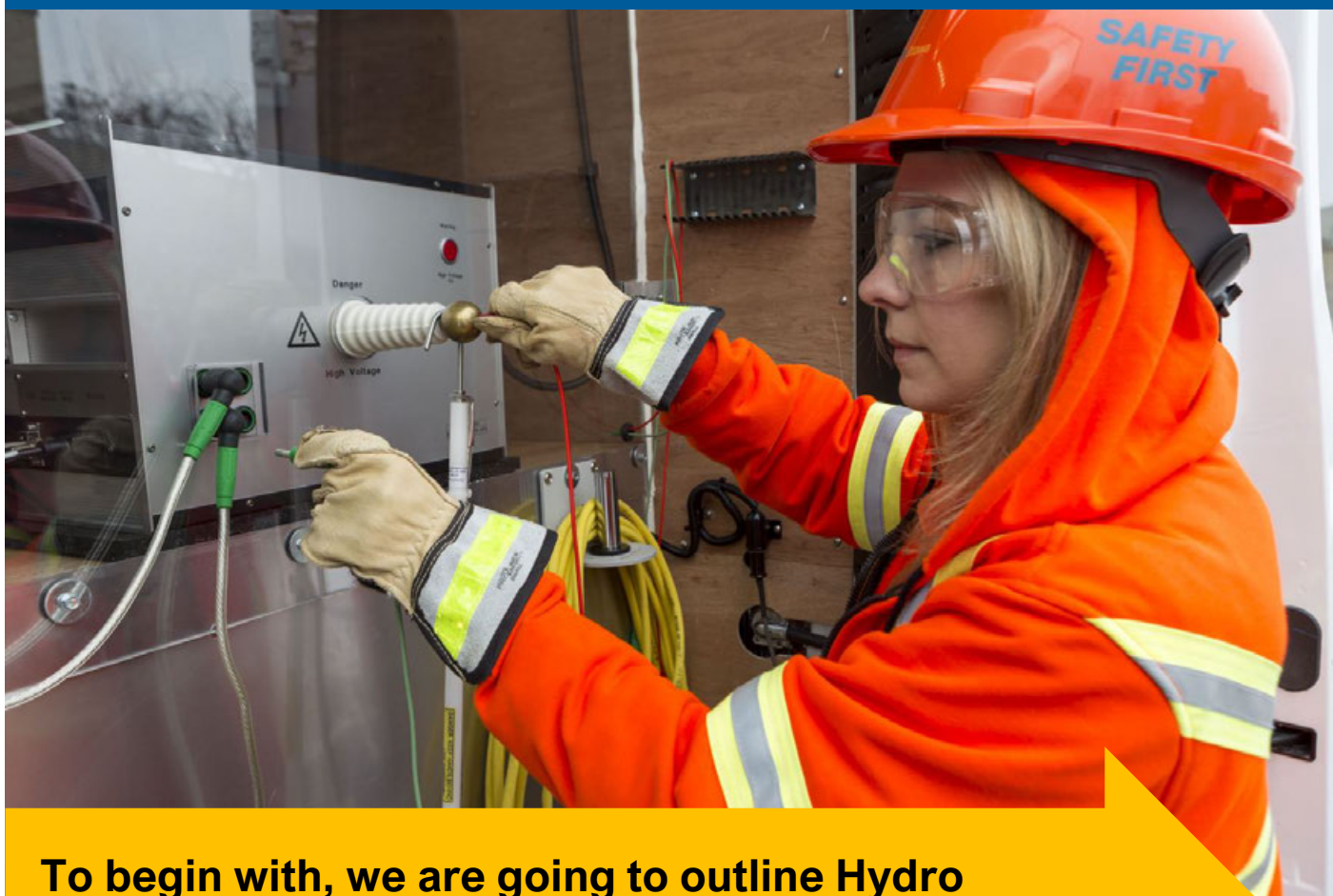
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Have your say: 2021-2025 Rate Application

Like most businesses, Hydro Ottawa manages both an operating budget and a capital budget.

- Hydro Ottawa's **operating budget** covers recurring expenses, such as the maintenance of tools, equipment and assets, and employee payroll.
- Its **capital budget** covers items that, once purchased, have lasting benefits over many years. This includes much of the equipment that is part of the distribution system, such as overhead and underground infrastructure, computers and information systems, vehicles and facilities.



To begin with, we are going to outline Hydro Ottawa's preliminary operating plan.

Hydro Ottawa Limited Customer Consultation

Have your say: 2021-2025 Rate Application

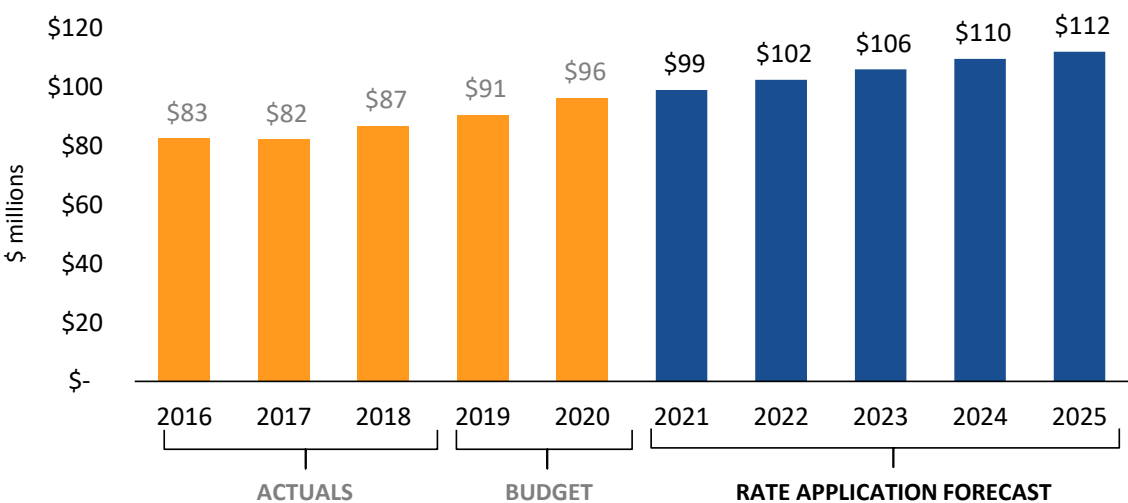
18

Operating expenses

Here we want to focus on operating expenses and how Hydro Ottawa compares to its peers.

Cost drivers contributing to Hydro Ottawa’s operating budget can largely be attributed to ongoing maintenance and management of the distribution system. The preliminary five-year plan, between 2021 and 2025, would include an estimated \$529 million for operations.

Hydro Ottawa’s Annual Operating Expenses



What are the key operating cost drivers for the 2021 - 2025 rate application?



Proactive and Reactive Distribution System Maintenance

Includes power outage restoration work due to storms, vegetation management such as tree trimming for storm hardening, underground locates to ensure safe work, distribution system inspections and cleaning up contaminated sites to protect the environment.



Employees, Equipment and Facilities

Hydro Ottawa relies upon a skilled and experienced workforce that is equipped with the tools necessary to perform their work safely and efficiently. Ongoing employee training is required as the workforce is renewed due to retirements. This ensures that employees continue to work safely and keep pace with the new skill sets associated with a more sophisticated distribution system.



Information Technology (IT) and Communications

Many IT systems service Hydro Ottawa’s day-to-day business activities and require ongoing support, maintenance and protection, including cyber security. The need and cost of software licensing is also increasing. Examples include an electrical distribution system that allows two-way communication of electricity data (Smart Grid); a Supervisory Control and Data Acquisition System (SCADA); a Geographic Information System (GIS); a Customer Care and Billing System; an Outage Management System; and Enterprise Resource Planning and Human Resources Systems.

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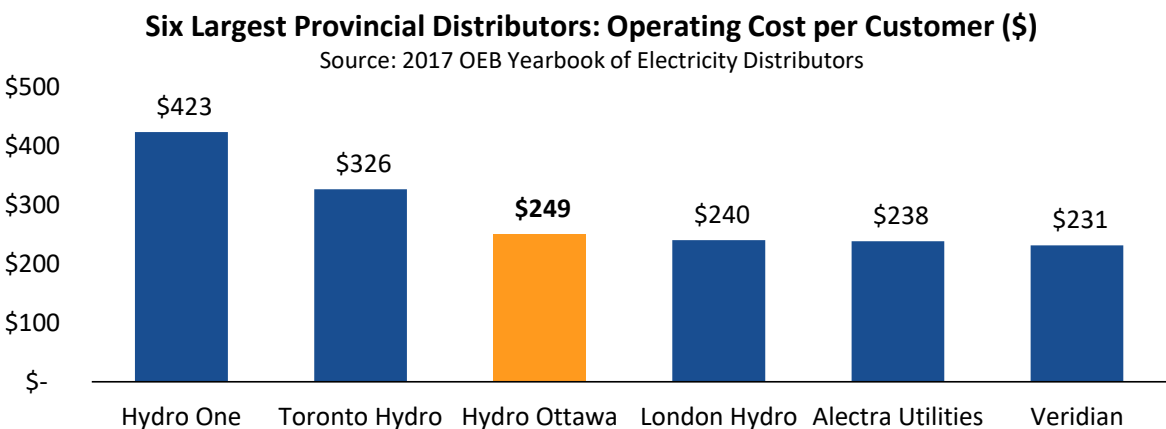
Have your say: 2021-2025 Rate Application

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Finding efficiencies

Hydro Ottawa is continuing its focus on productivity and continuous improvement initiatives; which offset continuing costs and improves organizational effectiveness.

Hydro Ottawa's total operating costs are reported every year to the OEB and benchmarked against other distribution companies in Ontario. In the last year of publicly available data collected by the OEB, Hydro Ottawa's total operating cost per customer was **\$249**. This was, and historically has been, lower than the average Ontario distribution company cost of **\$304** per customer.



The choices Hydro Ottawa makes in its operating budget are primarily driven by technical analysis and expert assessments of best practices.

As promised earlier, this workbook does not ask questions that expect you to be an electricity expert.

The OEB runs an open and transparent review process where experts from the OEB and intervenor groups review and have the opportunity to question Hydro Ottawa's analyses and assessments. Anyone, including you are welcome to participate in the OEB process.

This workbook leaves detailed discussion of Hydro Ottawa's operating budget to experts from the OEB and intervenors in the formal OEB review; the workbook focuses on collecting your views on competing trade-offs in investments.

Does this customer engagement process seem like the right approach to bring customer needs and preferences into Hydro Ottawa's plan?

- ☐ Definitely the right approach
- ☐ Probably the right approach
- ☐ Probably not the right approach
- ☐ Definitely not the right approach
- ☐ Don't know

Are there things that you would change about how Hydro Ottawa brings customer needs and preferences into Hydro Ottawa's plan? If so, what would you change?

Hydro Ottawa Limited Customer Consultation

Have your say: 2021-2025 Rate Application



We would now like to get your feedback on Hydro Ottawa's preliminary capital investment plan.

Hydro Ottawa Limited Customer Consultation

Have your say: 2021-2025 Rate Application

Capital plan

In addition to its operating budget, Hydro Ottawa needs to consider its capital budget, which also impacts customer bills.

Hydro Ottawa estimates that the capital expenditure required to address system renewal, maintain system reliability and safety, and invest in infrastructure priorities between 2021 and 2025 is estimated to be \$517 million.

Hydro Ottawa classifies this cost into four areas as follows:



System Access

Investments that allow Hydro Ottawa to meet its obligation to connect customers to the grid, and service new developments (e.g. a new subdivision or new infrastructure work such as the Light Rail Transit project).



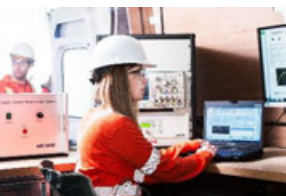
System Renewal

Planned end-of-life and emergency asset replacement, such as poles, cables, and transformers.



System Service

New infrastructure projects or station upgrades that improve distribution system reliability and capacity, including capital contributions to Hydro One for associated expansion work.

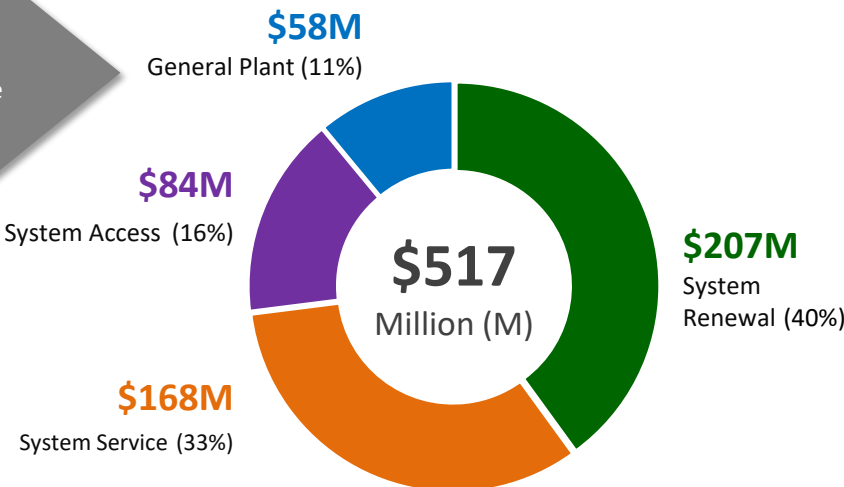


General Plant

Investments needed to support the business that includes fleet, facilities, facilities-related equipment, information technology equipment and software and security.

Each of these four investment categories helps Hydro Ottawa pace and prioritize projects.

2021-2025 Forecasted Capital Investments



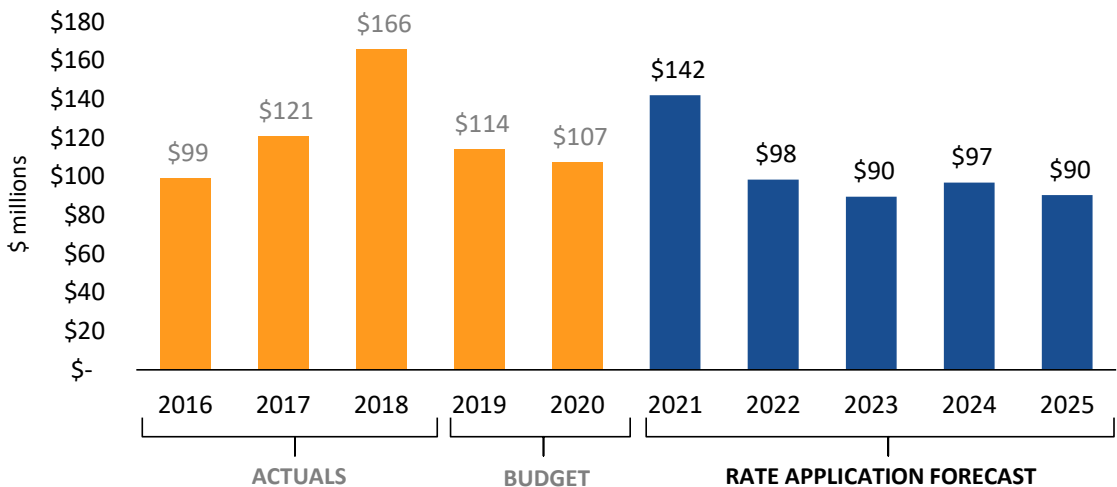
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Have your say: 2021-2025 Rate Application

Hydro Ottawa's Annual Capital Budget



* These estimates are preliminary, and are subject to your feedback as business plans are finalized.

Capital Cost Drivers and Trends

Hydro Ottawa's capital budget covers items that, once purchased, have lasting benefits over many years. Year-over-year, regardless of external drivers, Hydro Ottawa will need to make investments in the core distribution system, including poles, wires, cables and transformers. Other investments are periodically required to maintain operational effectiveness and efficiency. Some examples have been included below.

2016-2020

- Consolidation of technical and administrative employees in one building and operational staff in two strategically-located operations centres (South and East Ottawa)
- Customer Care and Billing System (CC&B) upgrades
- Fibre optic network (communications)
- Expansion of distribution station capacity to provide basic levels of service and supply growing communities
- Replacement of aging distribution system infrastructure

2021-2025

- South Nepean Municipal Transformer Station (in service 2021)
- Expansion of distribution station capacity to provide basic levels of service and supply growing communities
- Ongoing replacement of existing aging distribution system
- Replacement of a higher than normal number of vehicles that have reached or are beyond their end-of-life

Want to learn more about past and future Hydro Ottawa initiatives? [Click here](#) [\[link to next page\]](#).

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Past highlights and proposed future initiatives

2016-2020 Key Highlights

POP UP FROM PREVIOUS PAGE

- Average of \$40 million, per year, invested in the distribution system to replace aging infrastructure, such as overhead power lines and underground cables to maintain reliability and safety
- Approximately \$95 million invested in a new facility, designed to match the current scale and configuration of Hydro Ottawa's service territory. This included the consolidation of facilities into one new administrative building, along with two new operations centres built in close proximity to the 416/417 Highways. Two former headquarters will be sold by the end of this year.
- \$75 million is being invested in a new transformer station in South Ottawa to increase electricity supply (capacity) to facilitate growth. Completion in early 2021
- Average of \$15 million, per year, invested in asset enhancements, such as grid technologies, to improve distribution system operation and performance
- Average of \$9 million, per year, allocated to distribution system relocations and expansions, including the Light Rail Transit, Main Street and Elgin Street improvement initiatives
- Approximately \$30 million invested in fibre optic network upgrades to increase reliability and performance of business communications systems
- Approximately \$3 million, per year, invested towards customer service enhancements and deploying more self-serve features
- Approximately \$3 million, per year, invested in new and replacement technology to increase business integration and efficiencies
- Approximately \$2.7 million in the acquisition of a new Supervisory Control and Data Acquisition System (SCADA) to improve distribution system monitoring, analytics and outage response

2021-2025 Proposed Key Initiatives

- An average of \$41 million, per year, budgeted for ongoing replacement of aging overhead power lines, underground cables and metering infrastructure
- An average of \$14 million, per year, in distribution system upgrades to increase electricity supply in growing communities
- \$17 million in vehicle replacements over the five-year period which are fully depreciated and no longer cost-effective, reliable or safe to operate
- \$15 million investment in systems and software for enterprise resource planning software programs, data analytics and productivity improvements
- Approximately \$2 million, per year, allocated towards customer services that include self-serve options, outage communications, community outreach, education (i.e. safety and energy management) and business automation and analytics
- Approximately \$500,000 investment in Supervisory Control and Data Acquisition System (SCADA) to enhance the timing, accuracy and type of field information available to power outage response teams

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Have your say: 2021-2025 Rate Application24

System Access



Non-discretionary expenditures

All proposed expenditures in Hydro Ottawa’s business plan are regarded as necessary in order to provide customers with the services they require today and in the future. However, federal, provincial and municipal governments as well as, regulators may set requirements and standards that Hydro Ottawa must satisfy. These non-discretionary expenditures can be broken down into four categories:

- 1. **Connecting customers:** This includes connecting customers to the grid when a new home or building is constructed or modified.
- 2. **Relocating equipment:** This includes moving equipment like overhead power lines and underground cables for road widening and other municipal infrastructure needs such as Light Rail Transit.
- 3. **Mandated services:** This includes installing and maintaining meters and distributing electricity from the grid.
- 4. **Compliance requirements:** This includes meeting and maintaining regulatory, technical, environmental and safety standards.



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Have your say: 2021-2025 Rate Application

As federal, provincial and municipal demands change, Hydro Ottawa may need to implement unplanned, non-discretionary expenditures. It has a decision to make about how to accommodate unexpected non-discretionary spending which could impact other planned priorities.

Which of the following statements best represents your point of view regarding Hydro Ottawa's approach to discretionary and non-discretionary spending?

- ☐ When Hydro Ottawa encounters unforeseen increases in non-discretionary requirements, planned discretionary expenditures should be deferred to keep rate impacts down, even if that could result in a potential decline in service in the near future.
- ☐ When Hydro Ottawa encounters unforeseen increases in non-discretionary requirements, it should not defer planned discretionary expenditures, even if that could result in cost increases to customers over the next five years.
- ☐ Don't know

Additional Feedback (Optional)

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What type of equipment does Hydro Ottawa operate and maintain?

1



Stations

A substation decreases the high voltage of electricity transmission customers to be safely used. Hydro Ottawa's stations include:

- Power lines
- Transformers
- Switches
- Circuit breakers

2



Overhead Distribution

Hydro Ottawa's overhead assets include:

- Poles and attachments
- Transformers
- Switches

3



Underground Distribution

Hydro Ottawa's underground assets include:

- Cables
- Vault transformers
- Switchgear
- Civil structures

To the best of your knowledge, how does your home or organization receive electrical service?

- ☐ Overhead wires
- ☐ Underground cable
- ☐ Don't know

Hydro Ottawa has some decisions to make about the level of its capital expenditures and is seeking your input on the options under consideration. The options presented include an estimate of the monthly bill impact, in addition to the estimated 2.5%/3.5% annual increase if Hydro Ottawa continues with its current draft plan.

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System Renewal

40%

Pacing investments in the overhead distribution system

Poles and wires are one of the most visible parts of Hydro Ottawa’s distribution system. Hydro Ottawa owns and maintains 50,000 poles across its service territory. More than 20% of these poles have exceeded their end-of-life service of 53 years.

Hydro Ottawa routinely inspects its poles to identify replacement priorities. To sustain the overhead distribution system and address its aging assets, Hydro Ottawa maintains historic replacement levels.



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Hydro Ottawa is considering three options for continued investment in the overhead distribution system:

1. **Accelerated Approach:** Increased replacement of aging overhead transformers, switches, and poles to catch up and get ahead of growing number of poles at, or beyond, their end-of-life.
2. **Included in Draft Plan:** Defer catch up in aging infrastructure to manage rate impact. Modest decrease of approximately \$1M per year in renewal of overhead infrastructure from 2016 to 2020 levels. Move to more targeted renewals of specific poor condition assets and less full renewals of broad areas.
3. **Reduced Approach:** Deferral of proactive switch renewal, and pole replacement. Move to replacement of only critical assets.

Which of the following options do you prefer?

	Option	Outcome
	<div>Accelerated Approach <u>Additional</u> \$0.04 per bill each year (\$0.20 more per bill by 2025) <u>Additional</u> \$0.13 per bill each year (\$0.65 more per bill by 2025)</div>	<ul style="list-style-type: none">Increasing the replacement levels to address higher-risk assets, such as poles, which are at or near end-of-life.Increasing investments in switches to enhance operational efficiency.Reducing requirement for emergency renewals.
	<div>Included in Draft Plan <i>Within 2.5% annual increase</i> <i>Within 3.5% annual increase</i></div>	<ul style="list-style-type: none">Moderate slowing of asset replacement.Increased future costs to catch up on expected end-of-life infrastructure.Some increase in emergency renewal replacements, significant increase not expected for next five years.Minor increases in customer impact as targeted and emergency renewals will result in more piecemeal replacements.
	<div>Reduced Approach <u>Decrease</u> of \$0.03 per bill each year (\$0.15 less per bill by 2025) <u>Decrease</u> of \$0.08 per bill each year (\$0.40 less per bill by 2025)</div>	<ul style="list-style-type: none">Need for catch up in future years, requiring significant levels of investment.Degradation in system reliability due to lower switch renewal. Switch failures typically occur on operation, resulting in longer restoration times.Moderate increases in targeted and emergency renewal, possibly resulting in multiple service visits in certain areas.

Additional Feedback (Optional)

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System Renewal



Pacing investments in the underground distribution system

The focus of Hydro Ottawa’s underground renewal program is on the replacement of end-of-life cable. The polymer cable which services most residential subdivisions and suburban commercial properties has an expected life of 45 years. 40% of this cable has exceeded its end-of-life and a further 31% has been in service for between 35 and 45 years.

Hydro Ottawa routinely tests and tracks underground cable failures to target and prioritize cable replacement. Given the age of this underground infrastructure, Hydro Ottawa has and will continue to see increased cable faults in the coming years.

Between 2021 and 2025, Hydro Ottawa plans to increase its investments in cable replacement, over historic levels in order to maintain overall distribution system reliability. Further increases in renewal investment will be required beyond 2025, to address these aging assets.



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Hydro Ottawa is considering four options when it comes to underground cable renewal:

- 1. Accelerated Approach:** Renewal of aging assets with increased spending directed to underground transformers and cables.
- 2. Enhanced Approach:** Renewal of aging assets with increased spending targeted for cable replacement.
- 3. Included in Draft Plan:** Balanced investment, defer catch up in replacement of aging infrastructure to manage rate impact. Continued and modest increases in proactive replacement of assets at higher risk of failure.
- 4. Reduced Approach:** Defer any increase in proactive asset replacement, moving to only critical repairs of the system.

Which of the following options do you prefer?

Option	Outcome
Accelerated Approach <u>Additional</u> \$0.14 per bill each year (\$0.70 more per bill by 2025) <u>Additional</u> \$0.40 per bill each year (\$2.00 more per bill by 2025)	<ul style="list-style-type: none">Increasing proactive replacement of aging infrastructure with a focus on transformer and cable replacement. Reduced asset risk and future investment to catch up.Accelerating asset renewal enabling rapid roll out of increased system capacity (EVs) and improved operations (faster restoration when outages occur).Reliability improvements reducing frequency and duration of outages.Reducing maintenance costs related to oil leaks.
Enhanced Approach <u>Additional</u> \$0.07 per bill each year (\$0.35 more per bill by 2025) <u>Additional</u> \$0.20 per bill each year (\$1.00 more per bill by 2025)	<ul style="list-style-type: none">Replacing aging cables to reduce failure risk, with slowed investment in other underground infrastructure such as switches, and transformers.Manageable future investment will be required to catch-up.Increased rate of cable replacement will provide some improvements in asset failure and outage frequency.
Included in Draft Plan <i>Within 2.5% annual increase</i> <i>Within 3.5% annual increase</i>	<ul style="list-style-type: none">Moderate rate of asset replacement, which is still higher than the 2016-2020 programManageable level of future investment required to catch-up.Maintenance of system reliability with minor impact in service reliability.
Reduced Approach <u>Decrease</u> of \$0.07 per bill each year (\$0.35 less per bill by 2025) <u>Decrease</u> of \$0.20 per bill each year (\$1.00 less per bill by 2025)	<ul style="list-style-type: none">Need for catch up in future years, requiring significant levels of investment.Potential reduction on system reliability with increasing outages in specific areas due to cable failures.

Additional Feedback (Optional)

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Have your say: 2021-2025 Rate Application

System Service

33%

Reliability experience

In order to provide feedback on Hydro Ottawa's plans, it's important to understand how the distribution system has performed in the past, as well as what's expected in the future.

A core objective of Hydro Ottawa's 2021-2025 rate application is to maintain current levels of reliability, while making targeted improvements to those areas experiencing below average service.

- The five-year average number of outages (excluding major event days and loss of supply from Hydro One) has decreased slightly between 2014 and 2018, from 1.02 to 0.84 (total number of annual outages).
- The five year average duration of outages (excluding major event days and loss of supply from Hydro One) has decreased slightly between 2014 and 2018, from 1.17 to 1.14 (total annual hours).

What is most likely to cause an outage?

Although both the number and duration of outages have decreased compared to the previous five-year average, defective equipment remains the top cause of outages within Hydro Ottawa's control.

That said, in 2018, severe weather presented a unique set of challenges for Hydro Ottawa's distribution system. One section of this consultation will focus on the impacts of severe weather, and the options for preparing the distribution system for more frequent and extreme weather.

Causes of Unscheduled Power Outages (five-year average: 2014 to 2018)



10%

Animal Contact: outages caused by animals such as birds and squirrels coming in contact with overhead power lines or transformers.



27%

Equipment Failure: unscheduled power outages from equipment failure usually occur with distribution assets that are beyond or approaching the end of their expected useful lives.



24%

Weather Related Events: adverse weather such as heavy rain, lightening, ice, snow, wind, extreme temperatures, freezing rain and frost can disrupt the distribution system.



39%

Other: includes tree contact (10%), and human interference (11%) (such as construction workers accidentally cutting power lines or motor vehicle accidents involving contact with distribution assets). 9% of outages are unknown, but most likely caused by animal contact.

Note: statistics do not include loss of supply from Hydro One.

Have you experienced any power outages at your home or at your business in the past 12 months which lasted longer than one minute? If so, approximately how many of these power outages did you experience?

- ☐ No outages
- ☐ 1 outage
- ☐ 2 outages
- ☐ 3 or more outages
- ☐ Don't know

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Have your say: 2021-2025 Rate Application

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System Service



Reliability investments

Reliability investments are targeted towards areas in the City experiencing below average reliability, or, increased reliability risk due to growing demands on the distribution system.

Between 2021 and 2025, investments under this program are estimated to be \$5M for neighbourhoods experiencing the most frequent number of power outages. In addition, approximately \$8M is planned to add redundancy between substations to ensure adequate electricity supply is available to be re-routed when needed.



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Have your say: 2021-2025 Rate Application

Hydro Ottawa is considering four options when it comes to reliability investments:

- 1. Accelerated Approach:** Build power lines/new connections between substations to improve reliability. Enhance monitoring of substation and distribution equipment.
- 2. Included in Draft Plan:** Only build critical connections between substations. Enhance monitoring of station and distribution equipment.
- 3. Limited Approach:** Improve reliability for neighbourhoods experiencing the most frequent number of power outages. Enhance monitoring of substation and distribution equipment.
- 4. Reduced Approach:** Only improve reliability for neighbourhoods experiencing the most frequent number of power outages.

Which of the following options do you prefer?

Option	Outcome
Accelerated Approach <u>Additional</u> \$0.02 per bill each year (\$0.10 more per bill by 2025) <u>Additional</u> \$0.05 per bill each year (\$0.25 more per bill by 2025)	<ul style="list-style-type: none">Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral.Increase system resilience and performance through addition of connections on distribution network. Supports reduction in outage duration.Target investments to areas that have below average reliability.
Included in Draft Plan <i>Within 2.5% annual increase</i> <i>Within 3.5% annual increase</i>	<ul style="list-style-type: none">Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral.Maintain system resilience and performance through addition of connections on distribution network. Maintains outage duration at current levels.Target investments to areas that have below average reliability.
Limited Approach <u>Decrease</u> of \$0.04 per bill each year (\$0.20 less per bill by 2025) <u>Decrease</u> of \$0.10 per bill each year (\$0.50 less per bill by 2025)	<ul style="list-style-type: none">Assess assets and identify issues early through installation of monitoring and control equipment in stations. Reduced financial and reliability risk related to investment deferral.Target investments to areas that have below average reliability.
Reduced Approach <u>Decrease</u> of \$0.05 per bill each year (\$0.25 less per bill by 2025) <u>Decrease</u> of \$0.15 per bill each year (\$0.75 less per bill by 2025)	<ul style="list-style-type: none">Target investments to areas that have below average reliability.No investment to improve/enhance reliability.

Additional Feedback (Optional)

Hydro Ottawa Limited Customer Consultation

Have your say: 2021-2025 Rate Application

System Service

33%

Preparing for potential increases in severe weather

Hydro Ottawa’s distribution system is designed to withstand environmental stresses and impacts, however, weather-related outages have been increasing in terms of frequency and severity over recent years. During 2018 there were three major events which, combined, resulted in system asset replacements of approximately \$4M.

In addition to impacting Hydro Ottawa’s equipment, these events increase the resources required to safely and quickly respond to the storm damage and coordinate and communicate restoration efforts to customers.

Hydro Ottawa is currently in the process of completing a climate change vulnerability assessment to determine what steps should be taken to mitigate the impacts of changing climates. While the recommendations from this assessment have not yet been finalized, there are a number of steps Hydro Ottawa could consider taking to prepare for an increasing frequency of severe weather events. For example, changing pole replacement practices and standards would increase overhead structure strength and provide greater clearances from trees and vegetation.

Hydro Ottawa wants to know what your preferences are with respect to making investments in system resilience for severe weather that may or may not materialize over this rate period.



Which of the following options do you prefer?

- ☐ I would be willing to pay \$0.05- \$0.10 more per monthly bill by 2025 for Hydro Ottawa to take measures to prepare for severe weather that may or may not occur.
- ☐ Hydro Ottawa should not invest in measures to prepare for severe weather that may or may not occur.

Additional Feedback (Optional)

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Have your say: 2021-2025 Rate Application

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System Service



Serving a growing city

The population in Hydro Ottawa’s service territory continues to grow. Hydro Ottawa must be prepared to serve new customers, while maintaining acceptable levels of service for existing customers. This means regularly assessing the capacity and reliability of its distribution system and its resilience to extreme weather events, and taking action when gaps are found.

A number of Hydro Ottawa’s substations are approaching capacity and cannot accommodate future customer growth. Delaying planned investments could result in a decline in reliability for existing customers.

Hydro Ottawa’s current plan only includes critical capacity investments; however, there is also an option to make further investments to get ahead of the growing demand for electricity supply.



Which of the following options do you prefer?

	Option	Outcome
	Accelerated Approach Additional \$0.09 per bill each year (\$0.45 more per bill by 2025)	<ul style="list-style-type: none">• Increase distribution system capacity investment to meet and exceed growing demand for electricity supply.• Distribution system capacity is moved ahead of the demand for electricity, eliminating reliability risk during peak demand days.
	Included in Draft Plan <i>Within 2.5% annual increase</i> <i>Within 3.5% annual increase</i>	<ul style="list-style-type: none">• Slow distribution system capacity to critical investment only.• Distribution system capacity maintains pace with demand for electricity, or slightly lagging. No impact on ability to connect customers.• Results in modest increase to risk in reliability to areas of growth and increased risk of longer outages or inability to restore power to some customers if outages occur on peak demand days.

Additional Feedback (Optional)

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Innovation: Investing for the future

Electricity distribution service is in the midst of unprecedented change – evolving towards a more decentralized, customer-centric, technologically-advanced and environmentally sustainable model.

Hydro Ottawa plans to continue engaging in research and development activities which offer value to its customers. This includes supporting the connection of Distributed Energy Resources (DERs). This small scale generation is connected to the grid close to the communities they serve. Hydro Ottawa’s Great DR – phase two project (currently known as MiGen), where customers generate their own power and store what’s not immediately used, is an example of innovation that is incorporated into the 2021-2025 plan.

Hydro Ottawa has also been actively involved in assessing and addressing customer needs within the emerging electric vehicle market, as well as, participating in a Battery Energy Storage Project, as part of the Smart Grid Program.

Looking forward, opportunities to develop new rate models and explore new energy services will offer customers more choice and control over their electricity needs.



Do you support Hydro Ottawa’s strategy of leading change and engaging in industry projects that could shape the future of the energy marketplace?

- ☐ Yes
- ☐ No
- ☐ Don’t know

Do you believe Hydro Ottawa should limit expenditures to those necessary to serve today’s customers and existing needs, if this option could lower rate impacts in the short term?

- ☐ Yes
- ☐ No
- ☐ Don’t know

Additional Feedback (Optional)

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Have your say: 2021-2025 Rate Application

General Plant

11%

Keeping the business running

Hydro Ottawa is more than just poles and wires – it’s a business that needs to invest in tools, trucks, equipment, and facilities to maintain the distribution system and service its customers.

The types of expenditures in this category are:

- **Information Technology:** Systems required to securely operate the distribution system, manage customer information and privacy, and keep employees working effectively and efficiently.
- **Vehicles:** Bucket trucks and other vehicles used to move employees, equipment, and supplies throughout Hydro Ottawa’s service territory to support the safe and reliable operation of the grid.
- **Facilities:** Warehouse, operations centres and administrative office.
- **Tools and Equipment:** Specialized safety tools and equipment to mitigate the risks associated with maintaining electricity distribution infrastructure.

When deciding whether to continue to maintain existing tools or replace them, Hydro Ottawa considers whether the risks and costs of continuing to use them outweighs the benefits of waiting longer to replace them. Hydro Ottawa must also consider the lead times required to replace some utility vehicles, such as bucket trucks, which can be as long as 18 months.



As a company, Hydro Ottawa needs equipment to maintain its distribution system and IT systems to manage the distribution system and customer information. Which of the following statements best represents your point of view?

- ☐ Hydro Ottawa should find ways to make do with the business equipment it already has.
- ☐ Hydro Ottawa should make the investments necessary to ensure its staff has the equipment they need to manage the distribution system efficiently and reliably.

Additional Feedback (Optional)

Hydro Ottawa Limited Customer Consultation

Have your say: 2021-2025 Rate Application

General Plant

11%

Vehicle replacement

Hydro Ottawa operates a fleet of vehicles to build and maintain a safe and reliable electricity system.

As with other equipment, Hydro Ottawa has a vehicle replacement policy that weighs whether it is more cost effective to repair a vehicle, rather than replace it.

For instance, a large bucket truck is typically replaced if it meets one of the following criteria; 12 years of service, 200,000 kilometres or 10,000 engine hours.

Between 2021-2025, Hydro Ottawa has identified \$17M in vehicle replacements using the approach described in Option 2, below.

Hydro Ottawa has a decision to make about how they proceed with vehicle replacements over the next five year period. Hydro Ottawa will not be expanding its vehicle inventory as part of this rate application.



Which of the following vehicle replacement options do you prefer?

- ☐ **Option 1:** Using a run-to-failure approach, replace vehicles only when they can no longer operate, knowing that some larger vehicles require an 18 month lead time to replace. This approach may impact restoration times and efficiency.
- ☐ **Option 2:** Make investments in the fleet on a vehicle-by-vehicle basis weighing age, kilometers driven, engine hours, repair history, availability of parts and internal mechanic assessments of the general vehicle condition.
- ☐ **Option 3:** Replace vehicles once they have reached the end of their recommended age, regardless of their condition, which is the most expensive and lowest risk option.

Additional Feedback (Optional)

Hydro Ottawa Limited Customer Consultation

Have your say: 2021-2025 Rate Application

General Plant

11%

Finding efficiencies through technology investments

Within a rapidly changing energy landscape, adopting the right technologies is critical to Hydro Ottawa’s continued business success and customer satisfaction. At Hydro Ottawa, decisions are based on two objectives: enhancing service to its customers, and enhancing organizational effectiveness that will increase agility and resilience in response to industry change.

Building upon the technology investments Hydro Ottawa made throughout 2016 to 2020, over the course of 2021 to 2025, Hydro Ottawa plans to continue adopting innovative technologies to solve business issues, increase efficiencies and enhance customer services.

These plans include a broader range of products and services to help customers manage their time and access information and services. Hydro Ottawa also plans to upgrade its Customer Care and Billing (CC&B) system in order to utilize account data to offer a more personalized customer experience.

Operationally, continued investment in Smart Grid technologies, including the Supervisory Control and Data Acquisition System (SCADA) and Geographical Information System (GIS) will enhance the timing, accuracy and type of field information available to outage response teams.

Hydro Ottawa is mindful that price and the increasing cost of electricity remains a key concern for customers. As this rate application will demonstrate, there will be a continued evolution of the business systems within the company to increase productivity through automation.



Do you support Hydro Ottawa’s view that prudent technological investments are necessary in order to meet its ongoing business and customer needs?

- ☐ Yes
- ☐ No
- ☐ Don’t know

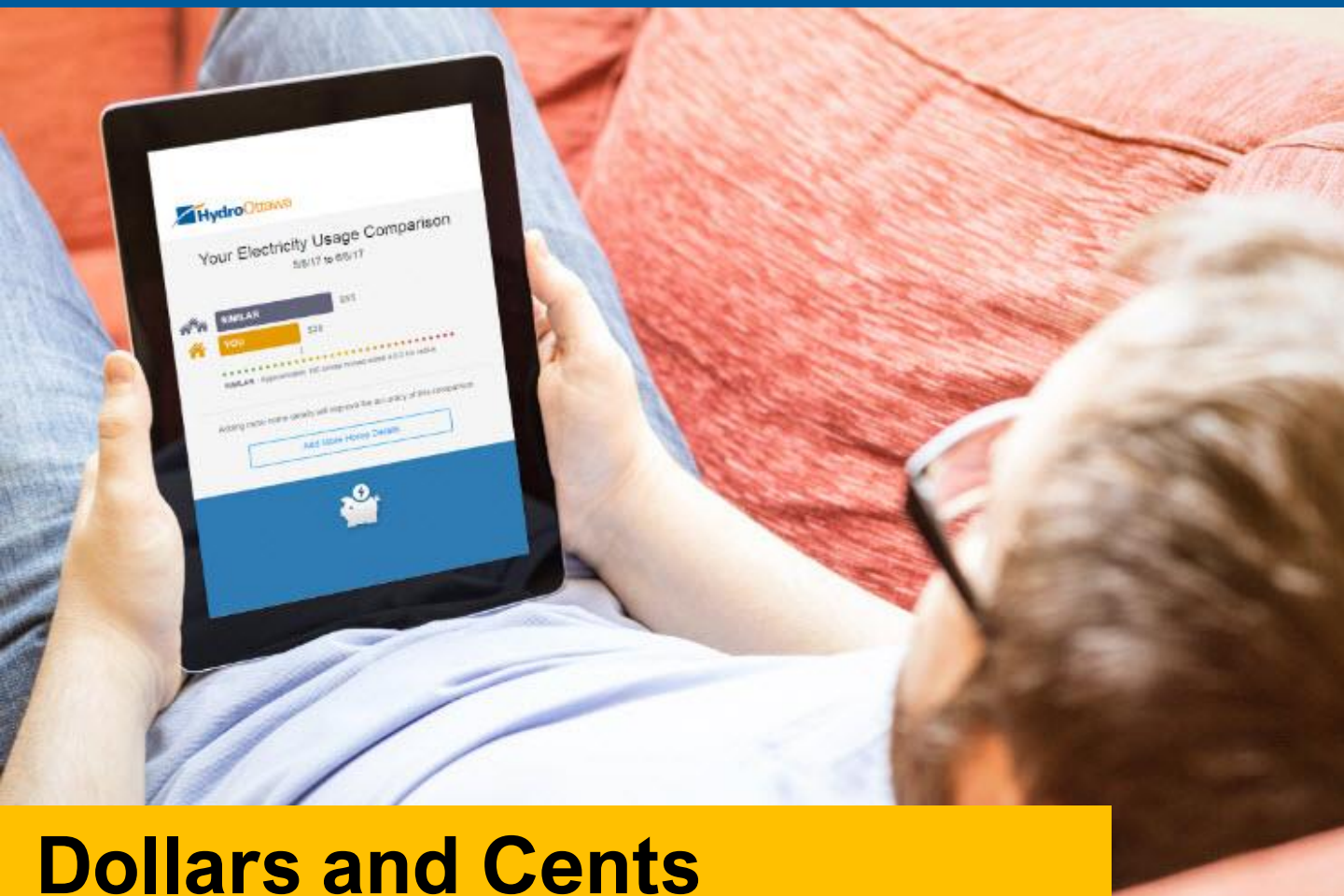
[If yes to above] And which of the following options do you prefer?

- ☐ Prioritizing and pacing investments to increase productivity, improve customer service and reliability
- ☐ Prioritizing and pacing investments only to improve productivity, reduce operating costs and lower rates over the 2021-2025 period
- ☐ No preference
- ☐ Don’t know

Additional Feedback (Optional)

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Dollars and Cents

What this preliminary plan would cost you

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Have your say: 2021-2025 Rate Application

Investment Alternative Summary



Throughout this workbook, you have been asked about some key choices that could impact your rates. Below is a summary of your answers to the questions that could impact your rates.

At the bottom of this page you will find the total bill impact of all the answers.

Having seen the total bill impact, please review your answers and change your responses if you desire; your potential rate impact will be re-calculated. You will have the opportunity to adjust your answers again until you feel you've reached the best balance for you.

Pacing Investments in the Overhead Distribution System

- ☐ **Accelerated Approach:** Additional \$0.04/\$0.13 per bill each year (\$0.20/\$0.65 more per bill by 2025)
- ☐ **Included in Draft Plan:** Within 2.5%/3.5% annual increase
- ☐ **Reduced Approach:** Decrease of \$0.03/\$0.08 per bill each year (\$0.15/\$0.40 less per bill by 2025)

Pacing Investments in the Underground Distribution System

- ☐ **Accelerated Approach:** Additional \$0.14/\$0.40 per bill each year (\$0.70/\$2.00 more per bill by 2025)
- ☐ **Enhanced Approach:** Additional \$0.07/\$0.20 per bill each year (\$0.35/\$1.00 more per bill by 2025)
- ☐ **Included in Draft Plan:** Within 2.5%/3.5% annual increase
- ☐ **Reduced Approach:** Decrease of \$0.07/\$0.20 per bill each year (\$0.35/\$1.00 less per bill by 2025)

Reliability Investments

- ☐ **Accelerated Approach:** Additional \$0.02/\$0.05 per bill each year (\$0.10/\$0.25 more per bill by 2025)
- ☐ **Included in Draft Plan:** Within 2.5%/3.5% annual increase
- ☐ **Limited Approach:** Decrease of \$0.04/\$0.10 per bill each year (\$0.20/\$0.50 less per bill by 2025)
- ☐ **Reduced Approach:** Decrease of \$0.05/\$0.15 per bill each year (\$0.25/\$0.75 less per bill by 2025)

Serving a Growing City

- ☐ **Accelerated Approach:** Additional \$0.09/\$0.25 per bill each year (\$0.45/\$1.25 more per bill by 2025)
- ☐ **Included in Draft Plan:** Within 2.5%/3.5% annual increase

The total impact of your choices would result in:

+/- \$X.XX per bill each year (+/- \$X.XX per bill by 2025)

This is in addition to the estimated 2.5%/3.5% annual increase if Hydro Ottawa continues with its current draft plan.

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Have your say: 2021-2025 Rate Application

Impact of Hydro Ottawa's Plan

Hydro Ottawa has calculated the rate impact of implementing the options recommended by its planners and included it in its draft plans.

These priorities may change based on your input but Hydro Ottawa is looking for an investment program that aims to:

- **Minimize rate increases;**
- **Maintain reliability and service quality;**
- **Address key pressures to the system, including;**
 - **Aging infrastructure;**
 - **An expanding customer base and continued population growth, and;**
 - **The effects of severe weather events.**
- **Make prudent investments in emerging technologies to enhance service offerings and/or reduce operating costs.**

If Hydro Ottawa continues with its current plan, it is estimated that the distribution portion of the bill will increase an average of **2.5%/3.5% per year for the period 2021-2025.**

At the end of the 5-year plan, the typical **residential/small business** customer would see the distribution portion of their electricity bill increase by **\$3.74/\$13.27**. As a result, the distribution charges on the typical **residential/small business** customer's monthly bill would increase from **\$28.47/\$70.72 in 2020 to \$32.21/\$83.99 by 2025.**

With regards to Hydro Ottawa's draft plan, which of the following statements best represents your view?

- ☐ Hydro Ottawa should improve service, as discussed on the previous pages, even if that means an annual increase that exceeds **2.5%/3.5%**.
- ☐ Hydro Ottawa should maintain a **2.5%/3.5%** annual increase to deliver a program that focuses on the priorities above.
- ☐ Hydro Ottawa should keep increases below **2.5%/3.5%** annually, even if that could mean reductions in service.
- ☐ Other
- ☐ Don't know

Now that you have considered the various choices Hydro Ottawa has to make and the cost implications of those choices, do you have any final comments for Hydro Ottawa?

Hydro Ottawa Limited Customer Consultation

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Have your say: 2021-2025 Rate Application

Demographics and Final Thoughts

These final few questions are for statistical purposes only.

Please indicate your gender.

- ☐ Male
- ☐ Female
- ☐ Self-identified [Please specify: _____]

What age category do you fall into?

- ☐ Under 18
- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 65 or older

To the best of your ability, which category best describes your household's after tax income?

- ☐ Less than \$28,000
- ☐ Just over \$28,000 to \$39,000
- ☐ Just over \$39,000 to \$48,000
- ☐ Just over \$48,000 to \$52,000
- ☐ More than \$52,000
- ☐ I prefer not to say

Including yourself, how many people work at your organization?

- ☐ 1 person
- ☐ 2 to 5 people
- ☐ 6 to 10 people
- ☐ 11 to 25 people
- ☐ 26 to 50 people
- ☐ More than 50 people
- ☐ Prefer not to say

Overall Impression: Did you have a favourable or unfavourable impression of the workbook you just completed?

- ☐ Very favourable
- ☐ Somewhat favourable
- ☐ Somewhat unfavourable
- ☐ Very unfavourable
- ☐ Don't know

Volume of Information: Did Hydro Ottawa provide too much information, not enough, or just the right amount?

- ☐ Too little
- ☐ Just the right amount
- ☐ Too much

Hydro Ottawa Limited Customer Consultation

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Have your say: 2021-2025 Rate Application

Thanks for Participating!

You have now completed Hydro Ottawa's customer consultation.

Please enter your email and customer billing address if you wish to be entered into the draw for your chance to win one of **four (4) \$500 cash prizes**.

Your email will be used to contact you if you are one of the randomly selected prize winners and your billing address will be used to verify that you are a Hydro Ottawa customer. Your email and customer billing address will be treated as strictly confidential and will not be shared with any third parties. This information will be deleted once the draw is complete.

☐ I do not wish to be entered into the draw

Email Address*: _____

Confirm Email*: _____

Billing Address

Address*: _____

City: _____

Postal Code*: _____

* Mandatory fields

Note: Only Hydro Ottawa customers are permitted to participate in this voluntary review, therefore, postal codes are collected and used by Innovative Research Group Inc. solely for maintaining the integrity of the consultation by validating legitimate participation in the process. Your personal information shall remain under the custody and control of Innovative Research Group Inc. and will not be disclosed to any third parties.

If you have any additional questions or comments about this customer engagement, email:

HydroOttawa@innovativeresearch.ca

AUDITED FINANCIAL STATEMENTS

Appended to this Schedule are the following copies of audited financial statements for Hydro Ottawa:

- Attachment 1-3-1(A): 2017 Audited Financial Statements¹
- Attachment 1-3-1(B): 2018 Audited Financial Statements

¹ This Attachment includes 2016 comparatives.

Hydro Ottawa Limited

Financial Statements

December 31, 2017

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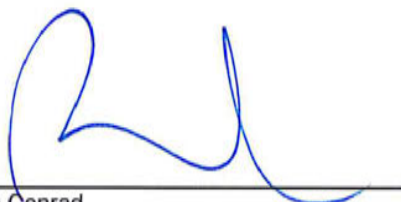
Report of Management

Management is responsible for the integrity of the financial data reported by Hydro Ottawa Limited ['the Company']. Fulfilling this responsibility requires the preparation and presentation of financial statements and other data using management's best judgment, estimates and International Financial Reporting Standards as issued by the International Accounting Standards Board.

Management maintains appropriate systems of internal control and corporate-wide policies and procedures, which provide reasonable assurance that the Company's assets are safeguarded and that financial records are relevant and reliable.

The Board of Directors of the Company, with the advice of the Audit Committee of Hydro Ottawa Holding Inc., ensures that management fulfills its responsibility for financial reporting and internal control. At regular meetings, the Audit Committee, including the Chair of the Board of Directors of the Company, reviews internal controls and financial reporting matters with management for Hydro Ottawa Holding Inc. and its subsidiaries. The Chair of the Board of Directors of the Company, as well as the Chief Executive Officer and the Chief Financial Officer, advise the Board of Directors of the Company of any matters of concern raised by the Audit Committee in reviewing the financial affairs of the Company.

On behalf of Management,

A blue ink signature of Bryce Conrad, consisting of a large, stylized 'B' followed by a horizontal line.

Bryce Conrad
President and Chief Executive Officer

A blue ink signature of Geoff Simpson, consisting of a complex, scribbled signature above a horizontal line.

Geoff Simpson
Chief Financial Officer



KPMG LLP
150 Elgin Street, Suite 1800
Ottawa ON K2P 2P8
Canada
Telephone 613-212-5764
Fax 613-212-2896

INDEPENDENT AUDITORS' REPORT

To the Shareholder of Hydro Ottawa Limited

We have audited the accompanying financial statements of Hydro Ottawa Limited, which comprise the balance sheet as at December 31, 2017, the statements of income, comprehensive income, changes in equity and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. KPMG Canada provides services to KPMG LLP.



Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of Hydro Ottawa Limited as at December 31, 2017, and its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards.

A handwritten signature in black ink that reads 'KPMG LLP'. The signature is written in a cursive, stylized font. Below the signature is a long, horizontal, slightly curved line.

Chartered Professional Accountants, Licensed Public Accountants

Ottawa, Canada

April 19, 2018

Hydro Ottawa Limited

Statement of Income
Year ended December 31, 2017
[in thousands of Canadian dollars]

	2017 \$	2016 \$
Revenue and other income		
Power recovery revenue	896,528	974,207
Distribution revenue	171,400	165,729
Conservation and demand management income	23,976	19,643
Other revenue	18,558	16,941
	1,110,462	1,176,520
Expenses		
Purchased power	910,810	968,069
Operating costs [Note 17]	111,868	107,205
Depreciation [Notes 7 and 9]	36,884	33,544
Amortization [Note 8]	7,171	8,285
	1,066,733	1,117,103
Income before the undernoted items	43,729	59,417
Financing costs [Note 18]	17,612	16,514
Income before income taxes	26,117	42,903
Income tax expense [Note 19]	13,170	11,898
Net income	12,947	31,005
Net movements in regulatory balances, net of tax [Note 6]	23,513	3,340
Net income after net movements in regulatory balances	36,460	34,345

The accompanying notes are an integral part of these financial statements

Hydro Ottawa Limited

Statement of Comprehensive Income
Year ended December 31, 2017
[in thousands of Canadian dollars]

	2017 \$	2016 \$
Net income after net movements in regulatory balances	36,460	34,345
Other comprehensive income		
Items that will not be subsequently reclassified to net income		
Actuarial loss on post-employments benefits, net of tax	(405)	(94)
Net movement in regulatory balances related to other comprehensive income, net of tax	405	94
Total comprehensive income	36,460	34,345

The accompanying notes are an integral part of these financial statements

Hydro Ottawa Limited

Balance Sheet

As at December 31, 2017

[in thousands of Canadian dollars]

	2017 \$	2016 \$
Assets		
Current assets		
Cash	-	6,367
Accounts receivable [Note 5]	178,889	186,882
Prepaid expenses	3,172	3,627
	182,061	196,876
Non-current assets		
Property, plant and equipment [Note 7]	963,663	879,169
Intangible assets [Note 8]	72,347	62,963
Investment properties [Note 9]	2,456	2,149
Total assets	1,220,527	1,141,157
Regulatory balances [Note 6]	25,466	13,744
Total assets and regulatory balances	1,245,993	1,154,901
Liabilities and shareholder's equity		
Current liabilities		
Bank indebtedness	12,256	-
Accounts payable and accrued liabilities [Note 11]	148,575	173,170
Income taxes payable	116	2,451
	160,947	175,621
Non-current liabilities		
Deferred revenue [Note 3(m)]	95,383	77,004
Employee future benefits [Note 12(b)]	13,334	12,501
Customer deposits [Note 7]	31,423	18,402
Notes payable [Note 13]	567,185	507,185
Deferred income tax liability [Note 19]	16,797	7,684
Other liabilities	756	-
Total liabilities	885,825	798,397
Shareholder's equity		
Share capital [Note 15]	167,081	167,081
Retained earnings	168,578	152,718
Total liabilities and shareholder's equity	1,221,484	1,118,196
Regulatory balances [Note 6]	24,509	36,705
Total liabilities, shareholder's equity and regulatory balances	1,245,993	1,154,901

Contingent liabilities and commitments [Notes 21 and 22]

On behalf of the Board:

Director

Director

Hydro Ottawa Limited

Statement of Changes in Equity
Year ended December 31, 2017
[in thousands of Canadian dollars]

	Share capital	Accumulated other comprehensive income	Retained earnings	Total
	\$	\$	\$	\$
Balance at December 31, 2015	167,081	-	135,873	302,954
Net income after net movements in regulatory balances	-	-	34,345	34,345
Dividends [Note 15]	-	-	(17,500)	(17,500)
Balance at December 31, 2016	167,081	-	152,718	319,799
Net income after net movements in regulatory balances	-	-	36,460	36,460
Dividends [Note 15]	-	-	(20,600)	(20,600)
Balance at December 31, 2017	167,081	-	168,578	335,659

The accompanying notes are an integral part of these financial statements

Hydro Ottawa Limited

Statement of Cash Flows
Year ended December 31, 2017
[in thousands of Canadian dollars]

	2017	2016
	\$	\$
Net inflow (outflow) of cash related to the following activities:		
Operating		
Net income after net movements in regulatory balances	36,460	34,345
Adjustments for:		
Depreciation	36,884	33,544
Amortization	7,171	8,285
Loss on disposal of property, plant and equipment [Note 7]	514	834
Amortization of deferred revenue	(2,262)	(1,622)
Employee future benefits	198	1,647
Financing costs	17,612	16,514
Income tax expense	13,170	11,898
Other	(168)	(200)
Additions to deferred revenue	20,641	20,828
Net change in non-cash working capital and other operating balances [Note 20]	17,486	(5,744)
Change in customer deposits	(2,889)	3,649
Financing costs paid	(19,234)	(17,223)
Income tax refunded	102	303
Income taxes paid	(6,095)	(1,350)
Net movements in regulatory balances	(23,513)	(3,340)
	96,077	102,368
Investing		
Acquisition of property, plant and equipment	(115,656)	(113,910)
Acquisition of intangible assets	(17,627)	(11,788)
Proceeds from disposal of property, plant and equipment	1,183	640
	(132,100)	(125,058)
Financing		
Issuance of notes payable	60,000	60,000
Dividends paid [Note 15]	(20,600)	(17,500)
Repayment of advances from parent	(22,000)	(19,000)
	17,400	23,500
Net change in cash	(18,623)	810
Cash, beginning of year	6,367	5,557
(Bank indebtedness) cash, end of year	(12,256)	6,367

The accompanying notes are an integral part of these financial statements

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

1. DESCRIPTION OF BUSINESS AND CORPORATE INFORMATION

Hydro Ottawa Limited [the 'Company'] was incorporated on October 3, 2000 pursuant to the *Business Corporations Act* (Ontario) as mandated by the Ontario government's *Electricity Act, 1998*. The Company is a wholly owned subsidiary of Hydro Ottawa Holding Inc., which in turn is wholly owned by the City of Ottawa. The Company is incorporated and domiciled in Canada with the registered head office located at 3025 Albion Road North, Ottawa, Ontario, K1G 3S4.

Hydro Ottawa Limited is a regulated electricity distribution company that owns and operates electricity infrastructure in the City of Ottawa and the Village of Casselman and is responsible for the safe, reliable delivery of electricity to homes and businesses in its licensed service area. In addition to billing for distribution services, Hydro Ottawa Limited invoices customers for amounts it is required to pay to other organizations in Ontario's electricity system for providing wholesale generation and transmission services and for debt retirement.

2. BASIS OF PRESENTATION

(a) Statement of compliance

These financial statements have been prepared by management on a going-concern basis in accordance with International Financial Reporting Standards ['IFRS'], and have been approved and authorized by the Company's Board of Directors for issue on April 19, 2018.

(b) Basis of measurement

The Company's financial statements are prepared on a historical cost basis, except for the valuation of other employee future benefits as explained in Note 3(j)(ii).

(c) Functional and presentation currency

These financial statements are presented in Canadian dollars, which is the Company's functional currency.

(d) Use of estimates

The preparation of financial statements in conformity with IFRS requires management to make estimates, and assumptions that affect the reported amounts of revenue, expenses, assets, liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements.

Due to the inherent uncertainty involved in making such estimates, actual results could differ from estimates recorded in preparing these financial statements, including changes as a result of future decisions made by the Ontario Energy Board ['OEB'] or the Ontario provincial government. Management reviews its estimates on an ongoing basis using the most current information available. The financial statements have, in management's opinion, been properly prepared using reasonable limits of materiality and within the framework of the significant accounting policies. Significant areas where estimates are made in the application of IFRS are as follows:

(i) Accounts receivable

Accounts receivable, which includes unbilled revenue, are reported based on the amounts expected to be recovered less an estimated allowance for uncollectible amounts. Management utilizes historical loss experience in conjunction with the aging and arrears status of accounts receivable at year end in the determination of the allowance.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

2. BASIS OF PRESENTATION [CONTINUED]

(d) Use of estimates [continued]

(ii) Regulatory balances

The recognition and measurement of regulatory balances is subject to certain estimates and assumptions, including assumptions made in the interpretation of the OEB's regulations and decisions.

(iii) Useful lives of depreciable assets

Depreciation and amortization expense is calculated based on estimates of the useful lives of property, plant and equipment, intangible assets and investment properties. Management estimates the useful lives of the various types of assets using assumptions and estimates of life characteristics of similar assets based on a long history of industry experience.

(iv) Impairments of non-financial assets

Non-financial assets are reviewed by management for impairment using the future cash flows method. By their nature, estimates of future cash flows, including estimates of future capital expenditures, revenue, operating expenses, discount rates and market pricing are subject to measurement uncertainty.

(v) Employee future benefits

The measurement of employee future benefits involves the use of numerous estimates and assumptions. Actuaries make assumptions for items such as discount rates, future salary increases and mortality rates in the determination of benefits expenses and accrued benefit obligations.

(vi) Deferred income taxes

Tax interpretations, regulations and legislation in which the Company operates are subject to change. Deferred income tax assets are assessed by management at the end of each reporting period to determine the likelihood that they will be realized from future taxable income.

3. SIGNIFICANT ACCOUNTING POLICIES

(a) Regulation

The Company is regulated by the OEB under the authority of the *Ontario Energy Board Act, 1998*. The OEB is charged with the responsibilities of approving or setting rates for the transmission and distribution of electricity, and ensuring that distribution companies fulfil obligations to connect and service customers.

For fiscal year ended December 31, 2017, the Company continued to operate under a custom incentive rate-setting application ['Custom IR'] prescribed by the OEB. The Custom IR is one of the rate setting options contained in the *Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* ['RRFE'] policy. The RRFE provides distributors three rate-setting methods: 4th Generation IR, Custom IR and Annual IR Index. The Company filed a custom incentive rate-setting application with the OEB on April 29, 2015 seeking approval to change the rates that the Company charges for electricity delivery, retail services, allowances, loss factor and specific services charges for a period of five years, to be effective January 1, 2016 to December 31, 2020. This application requested a revenue requirement to recover costs, and provide a rate of return on a deemed capital structure applied to rate base assets.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(a) Regulation [continued]

The key components of Hydro Ottawa's Custom IR framework included the establishment of several regulatory accounts, namely: an asymmetrical earnings sharing mechanism variance account, revenue requirement differential variance account related to capital additions, new facilities deferral account, connection cost recovery agreement deferral account, and the efficiency adjustment mechanism deferral account. An annual IR application is required to set rates each year for 2017 to 2020. 2017 rates were set based on Hydro Ottawa's Year 2 IR annual update.

On August 14, 2017, Hydro Ottawa filed its Custom IR year 3 update application for distribution rates and other charges, effective January 1, 2018. This application was approved in December 2017 and included adjustments to base rates, low voltage, transmission, retailer services and specific services charges. As well it includes the approval for the disposition of certain deferral and variance accounts as at December 31, 2016 including interest projected to December 31, 2017. Hydro Ottawa also applied to change the composition of certain distribution service rates. The fixed monthly charge for residential customers for 2018 is adjusted upward while the variable usage rate is lowered as stipulated in OEB's residential rate design policy. The distribution rates for residential classes will be fully fixed effective January 1, 2020.

The Company applies for distribution rates based on estimated costs. Once rates are approved, they are not adjusted as a result of actual costs being different from those that were estimated, other than for certain prescribed costs that are eligible for deferral treatment and are either collected or refunded in future rates. The OEB has the general power to include or exclude costs and revenue in the rates of a specific period, resulting in a change in the timing of accounting recognition from that which would have applied in an unregulated company.

The Company continues to assess the likelihood of recovery of all regulatory debit balances subject to recovery through a future rate filing. The absence of OEB approval is a consideration in this evaluation. If the requirement for a provision becomes more likely than not, the Company will recognize the provision in operating costs for the year.

The following regulatory treatments have resulted from the adoption of IFRS 14 *Regulatory Deferral Accounts* ['IFRS 14'], which permits rate-regulated entities to use its existing rate-regulated activities practices if and only if, in its first IFRS financial statements, it recognized regulatory deferral account balances by electing to apply the requirements of IFRS 14:

(i) Regulatory balances

Regulatory debit balances primarily represent costs that have been deferred because it is probable that they will be recovered in future rates. Similarly, regulatory credit balances can arise from differences in amounts billed to customers for electricity services and the costs that the Company incurs to purchase these services.

The Company accrues interest on the regulatory balances as directed by the OEB.

Regulatory balances principally comprise the following:

- Regulatory asset/liability refund account ['RARA'/'RLRA'] consists of balances of regulatory assets or regulatory liabilities approved for disposition by the OEB through temporary additional rates referred to as rate riders.
- Settlement variances relate primarily to the charges the Company incurred for transmission services, the commodity, wholesale market operations and the global adjustment that were not settled with customers during the year. The nature of the settlement variances is such that the balance can fluctuate between assets and liabilities over time, and they are reported at year-end dates in accordance with rules prescribed by the OEB.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(a) Regulation [continued]

(i) Regulatory balances [continued]

- In its Guidelines released December 19, 2014 with an update on August 11, 2016, the OEB advised Distributors to continue to rely on the Lost Revenue Adjustment Mechanism to track and dispose of lost revenues ['LRAM'] that result from approved Conservation and Demand Management ['CDM'] programs between 2015 and 2020, noting that the same process as described in the OEB guidelines released April 26, 2012 regarding the 2011 to 2014 period should be followed. The Company is to record the difference between the actual validated CDM activities and activities included in the Company's load forecast multiplied by the appropriate variable distribution rate. On May 19, 2016 the OEB released an updated policy for LRAM that clarified the inclusion of peak demand savings in the LRAM calculation.
- Earnings sharing mechanism ['ESM'] variance account captures 50% of any regulated earnings above Hydro Ottawa's approved return on equity for years 2016 to 2020.
- Other Post-employment Benefits deferral account ['OPEB deferral account'] was authorized by the OEB in 2011 to record the adjustment to employee future benefits other than pension relating to the cumulative actuarial gains or losses. This account is adjusted annually to record any changes in the cumulative actuarial gains or losses. No interest charges are recorded on this account as instructed by the OEB.

(ii) Other regulatory variances and deferred costs

Other regulatory variances and deferred costs principally comprise the following:

- The OEB allows electricity distributors to record in a deferral account the difference between low voltage charges paid to Hydro One Networks Inc. ['HONI'] and those charged to customers.
- The OEB allows electricity distributors to record in deferral accounts the net cost of providing retailer billing services and transaction request services. As of January 1, 2016, the Company has incorporated the net costs into its revenue requirement and will no longer record the net cost into the deferral accounts.
- In its Guidelines released June 16, 2009, the OEB created four new deferral accounts to allow distributors to begin recording expenditures for certain activities relating to the connection of renewable generation and the development of a smart grid. These deferral accounts were authorized to be used to record qualifying incremental capital investments or operating, maintenance and administrative expenses. These accounts have been subsequently discontinued and future investments should be addressed in LDC's consolidated distribution plan.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(a) Regulation [continued]

(iii) Income taxes

The Company is considered to be a Municipal Electric Utility ['MEU'] and is required to make payments in lieu of corporate income taxes [PILS] as contained in the *Electricity Act, 1998*, as all of its share capital is indirectly owned by the City of Ottawa and not more than 10% of its income is derived from activities carried on outside the municipal boundaries of the City of Ottawa. The *Electricity Act, 1998* provides that a MEU that is exempt from tax under the *Income Tax Act (Canada)* ['ITA'] and the *Taxation Act, Ontario* ['TAO'] is required to make, for each taxation year, a PILS payment to the Ontario Electricity Financial Corporation in an amount approximating the tax that it would be liable to pay under the ITA and the TAO if it were not exempt from tax.

The Company follows the liability method for recording income taxes. Under the liability method, current income taxes payable are recorded based on taxable income. Deferred income taxes arising from temporary differences in the accounting and tax basis of assets and liabilities are provided based on substantively enacted tax rates that will be in effect when the differences are expected to reverse.

The *Accounting Procedures Handbook* ['AP Handbook'] provides for the recovery of income taxes by the Company through annual distribution rate adjustments as approved by the OEB. The Company recognizes regulatory balances for the amounts of future income taxes expected to be refunded to or recovered from customers in future electricity rates.

(b) Revenue recognition

The Company recognizes revenue when it is likely that economic benefits will flow to the Company and where the revenue can be reliably measured. Revenue is measured at the fair value of the consideration received or receivable, excluding any discounts, rebates and sales taxes. The Company has determined that it acts as a principal in the following revenue arrangements and therefore has presented them on a gross basis.

(i) Power recovery

Power recovery revenue represents the pass-through of the cost of power to the consumer as purchased by the Company and is recognized when electricity is delivered to the customer, as measured by meter readings or usage estimates. Power recovery revenue is regulated by the OEB and includes charges to customers for the electricity commodity, the transmission of electricity and the administration of the wholesale electricity system.

(ii) Distribution sales

The Company charges customers for the delivery of electricity, based on rates established by the OEB. The rates are intended to allow the Company to recover its prudently incurred costs and earn a fair return on invested capital. Distribution sales are recognized when electricity is delivered to the customer, as measured by meter readings or usage estimates.

(iii) Unbilled revenue

Unbilled revenue represents an estimate of the electricity consumed by customers that has not yet been billed as at year-end.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(b) Revenue recognition [continued]

(iv) Other

Other revenue related to the provision of services is recognized as services are rendered. Other revenue includes contract revenue, commercial services revenue and capital contributions.

Contract revenue and commercial services revenue are accounted for using the percentage-of-completion method, whereby revenue and the corresponding costs are recognized proportionately with the degree of completion of the services under contract. Losses on contracts are fully recognized when they become evident.

Capital contributions received from electricity customers to construct or acquire property, plant and equipment for the purpose of connecting a customer to the Company distribution network are recorded to deferred revenue. Since the contributions will provide customers with ongoing access to the supply of electricity, these contributions are classified as deferred revenue, and recognized as other revenue at an equivalent rate to that used for the depreciation of the related property, plant and equipment.

(c) Government grant income

CDM income stems from the delivery of provincial government programs that promote conservation. Government grants under CDM programs are recognized when there is reasonable assurance that the grant will be received and all related conditions will be met. Grants under full cost recovery funding are recognized as income on a systematic basis over the period to match to the costs they are intended to compensate. CDM performance incentives under full cost recovery funding are recognized when it is probable that future economic benefits will flow to the Company, and the amount can be measured reliably.

(d) Interest income and financing costs

Interest income is recognized as it accrues under the effective interest method and comprises interest earned on cash.

Financing costs are calculated using the effective interest rate method and are recognized as an expense unless they are capitalized as part of the cost of a qualifying asset.

(e) Financial instruments

All financial instruments are initially recorded at fair value. When financial instruments are not measured at fair value through profit and loss ['FVTPL'], then directly attributable transaction costs are included in the initial measurement. The fair value of a financial instrument is the amount of consideration that would be agreed upon in an arm's-length transaction between willing parties. The subsequent measurement of each financial instrument depends on the classification elected by the Company at the time of initial recognition.

The Company classifies and measures its financial instruments as follows:

- Cash and accounts receivable are classified as loans and receivable and are measured at amortized cost using the effective interest method, less any impairment if applicable.
- Bank indebtedness, accounts payable and accrued liabilities, customer deposits and notes payable are classified as other financial liabilities and are measured at amortized cost using the effective interest rate method.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(e) Financial instruments [continued]

Financial instruments that are measured at fair value are classified using a three-level hierarchy. The levels reflect the inputs used to measure the fair values of financial assets and financial liabilities, and are as follows:

- Level 1: inputs are unadjusted quoted prices of identical instruments in active markets;
- Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly; and
- Level 3: inputs for the liabilities that are not based on observable market data [unobservable inputs].

All financial assets except for those classified as FVTPL are subject to review for impairment at least at each reporting date. Financial assets are impaired only when an event has occurred after the initial recognition of the asset and that event has an impact on the estimated future cash flows of the financial asset. Impairment losses, if any, are recognized in net income. An impairment loss is reversed if the reversal can be related objectively to an event occurring after the impairment loss was recognized.

(f) Property, plant and equipment

Property, plant and equipment consist principally of electricity distribution infrastructure, buildings and fixtures, land, rolling stock, furniture and equipment, and assets under construction.

Emergency capital spare parts that are expected to be used for more than one year, are considered to be assets under construction and are depreciated only once they are put into service.

Property, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment losses, if any. Self-constructed asset costs comprise all directly attributable expenditures to bring the asset into operation including labour, materials, employee benefits, transportation, contracted services and borrowing costs. Where parts of an item in property, plant and equipment are significant and have different estimated economic useful lives, they are accounted for as separate items [major components] of property, plant and equipment. Certain assets may be acquired or constructed with financial assistance in the form of contributions from customers. Contributions from customers are treated as deferred revenue.

The cost of major inspections and maintenance is recognized in the carrying value of an asset provided that the Company will derive future economic benefits from the expenditure. The carrying amount of a replaced part is derecognized. The costs of day-to-day servicing, repairs, and maintenance, are expensed as incurred.

Depreciation is recorded on a straight-line basis over the estimated service life of each component of property, plant and equipment.

Gains and losses on disposal of retired, sold or otherwise derecognized property, plant and equipment are recognized in income and are calculated as the difference between net proceeds from disposal and the carrying amount of the asset.

The estimated useful lives, residual values and depreciation methods are reviewed at each year-end with the effect of any changes in estimate being accounted for on a prospective basis.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(f) Property, plant and equipment [continued]

Estimated service lives for property, plant and equipment classes are as follows:

Land and buildings	
Land	Indefinite
Buildings and fixtures	20 to 75 years
Distribution assets	10 to 60 years
Equipment and other	
Furniture and equipment	5 to 10 years
Rolling stock	7 to 15 years

Assets under construction and land are not subject to depreciation. Borrowing costs are capitalized as a component of the cost of self-constructed property, plant and equipment assets that take a substantial period of time to get ready for their intended use. The capitalization rate is the Company's weighted average cost of borrowing.

(g) Intangible assets

Intangible assets include land rights, capital contributions, computer software and assets under development.

Intangible assets with finite lives are measured at cost less accumulated amortization and accumulated impairment losses, if any. Intangible assets are amortized on a straight-line basis over the estimated service lives of the related assets.

Intangible assets are derecognized on disposal or when no further future economic benefits are expected from their use. Gains or losses on disposal of intangible assets are recognized in income and are calculated as the difference between net proceeds from disposal and the carrying amount of the asset.

The estimated useful lives and amortization methods are reviewed at each year-end with the effect of any changes in estimate being accounted for on a prospective basis.

Estimated service lives for intangible assets with finite lives are as follows:

Land rights	50 years
Computer software	5 to 10 years
Capital contributions	45 years

Borrowing costs are capitalized as a component of cost of self-constructed intangible assets that take a substantial period of time to get ready for their intended use. The capitalization rate is the Company's weighted average cost of borrowing.

(h) Investment properties

Investment property is land and/or buildings held for purposes other than for use in the Company's operating activities. The Company holds investment property either for potential expansion of the service delivery network or as excess administrative property. Investment properties are measured at cost plus transaction costs, and have estimated service lives ranging between 25 and 50 years. Any gain or loss arising from the sale of an investment property is immediately recognized in income. Rental income and operating expenses from investment property are presented as part of other revenue.

Hydro Ottawa Limited

Notes to the Financial Statements
 Year ended December 31, 2017
 [in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(i) Impairment of non-financial assets

At the end of each reporting period, or earlier if required, management uses its judgment to assess whether there is an indication that the carrying amount of a non financial asset [or cash generating unit, 'CGU'] exceeds its recoverable amount. A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. This assessment involves the consideration of whether any events or changes in circumstances could have affected the recoverability of the carrying amount of a non financial asset or CGU. Management considers various indicators including, but not limited to, adverse changes in the industry or economic conditions, changes in the degree or method of use of an asset, a lower than expected economic performance of an asset or a significant change in market returns or interest rates. If any indication exists, the Company estimates the asset's recoverable amount, which is the higher of an asset or CGU's fair value less costs of disposal and its value in use. If the carrying value of a non financial asset exceeds its recoverable amount, the difference is immediately recognized as an impairment loss in profit or loss.

Intangible assets not yet available for use are tested for impairment [within their respective CGUs] at least annually, and whenever there is an indication that the asset may be impaired.

When determining the recoverable amount, the Company determines its value-in-use by discounting estimated future cash flows to their present value using a discount rate that reflects changes in the time value of money and the risks specific to the asset or the CGU. The discount rate estimated and used by management represents the weighted average cost of capital determined for the CGU being tested.

At the end of a reporting period, if there is any indication that an impairment loss recognized in a prior period no longer exists or has decreased, the loss is reversed up to its recoverable amount. The carrying amount following the reversal must not be higher than the carrying amount that would have prevailed [net of amortization] had the original impairment not been recognized in prior periods.

(j) Employee future benefits

(i) Pension plan

The Company provides pension benefits for its employees through the Ontario Municipal Employees Retirement System ['OMERS'] Fund [the 'Fund']. OMERS is a multi-employer pension plan that provides pensions for employees of Ontario municipalities, local boards, public utilities and school boards. The Fund is a defined benefit pension plan, which is financed by equal contributions from participating employers and employees and by the investment earnings of the Fund.

Although the plan is a defined benefit plan, sufficient information is not available to the Company to account for it as such because it is not possible to attribute the fund assets and liabilities between the various employers who contribute to the Fund. As a result, the Company accounts for the plan as a defined contribution plan, and contributions payable as a result of employee service are expensed as incurred as part of operating costs. The Company shares in the actuarial risks of the other participating entities in the plan, and its future contributions may therefore be increased due to actuarial losses relating to the other participating entities. In addition, the Company's contributions could be increased if other entities withdraw from the plan.

(ii) Other post-employment benefits

Employee future benefits other than pensions provided by the Company include life insurance and a retirement grant. These plans provide benefits to certain employees when they are no longer providing active service.

Employee future benefits expense is recognized in the period during which the employees render services.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(j) Employee future benefits [continued]

(ii) Other post-employment benefits [continued]

Employee future benefits are recorded on an accrual basis. The accrued benefit obligation and current service costs are calculated using the projected benefit method prorated on service and based on assumptions that reflect management's best estimates. The current service cost for a period is equal to the actuarial present value of benefits attributed to employees' services rendered in the period. Actuarial gains and losses resulting from experience different from that assumed or from changes in actuarial assumptions are recognized in OCI. However, for the Company, these amounts are reclassified to a regulatory debit balance as permitted by the OEB.

(iii) Employee benefits

The Company provides short-term employee benefits, such as: salaries, employment insurance, short-term compensated absences, health and dental care. These benefits are recognized as the related service is rendered and is measured on an undiscounted basis. Short-term employee benefits are recognized as an expense unless they qualify for capitalization as part of the cost of an item of materials and supplies, property, plant and equipment, intangible assets or recoverable projects. A liability is recognized in respect of any unpaid short-term employee benefits for services rendered in the reporting period.

The Company recognizes a liability for the expected cost of accumulated non-vested sick leave benefits at the end of the reporting period. The Company presents its non-vested sick leave obligation as a non-current liability since it does not expect to settle all of its sick leave benefits within twelve months.

(k) Customer deposits

Customer deposits are cash collections from customers to guarantee the payment of energy bills and fulfillment of construction obligations. Deposits estimated to be refundable to customers within the next fiscal year are classified as current liabilities and included in accounts payable and accrued liabilities.

(l) Provisions and contingencies

The Company recognizes provisions when there is a present legal or constructive obligation as a result of a past event, it is probable that an outflow of economic benefits will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation. If the effect is material, provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and, where appropriate, the risks specific to the liability. Provisions are remeasured at each balance sheet date.

The evaluation of the likelihood of the contingent events requires judgment by management as to the probability of exposure to potential loss. Actual results could differ from these estimates.

A contingent asset is not recognized in the financial statements. However, a contingent asset is disclosed where an inflow of economic benefits is probable.

(m) Deferred revenue

In certain situations, financial assistance in the form of contributions is required from customers to finance additions to property, plant and equipment. This occurs when the estimated revenue resulting from the addition to property, plant and equipment is less than the cost of providing the service or where special equipment is needed to supply the customers' specific requirements. Since the contributions will provide customers with ongoing access to the supply of electricity, these contributions are classified as deferred revenue, and recognized as other revenue at an equivalent rate to that used for the depreciation of the related property, plant and equipment.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(n) Leases

Leases in which the Company assumes all of the risks and rewards of ownership are classified as finance leases. Upon initial recognition, the leased asset is measured at an amount equal to the lower of its fair value and the present value of the minimum lease payments. Subsequent to initial recognition, the asset is accounted for in accordance with the accounting policy applicable to the asset. Payments under finance leases are apportioned between interest expense and a reduction of the outstanding liability.

All other leases are classified as operating leases and the leased assets are not recognized on the Company's balance sheets. Payments made under operating leases are recognized in net income on a straight-line basis over the term of the lease.

4. NEW ACCOUNTING PRONOUNCEMENTS

A number of new standards, amendments and interpretations are not yet effective for the year ended December 31, 2017, and have not been applied in preparing these financial statements.

(a) Revenue from contracts with customers

In May 2014, the International Accounting Standards Board ['IASB'] published a new standard, IFRS 15 Revenue from Contracts with Customers ['IFRS 15'], which replaces most of the detailed guidance on revenue recognition that currently exists under IFRS. IFRS 15 provides a standardized five-step model to recognize all types of revenue earned from customer contracts, while previous IFRSs allowed significant room for judgment in devising and applying revenue recognition policies and practices. IFRS 15 is more prescriptive in many areas, such as the combination of related contracts for revenue recognition purposes, unbundling of multiple performance obligations within a single contract and the capitalization of costs of obtaining or fulfilling a contract. IFRS 15 also contains additional disclosure requirements. IFRS 15 is effective for annual periods beginning on or after January 1, 2018. As the majority of the Company's revenue [power recovery revenue and distribution revenue] is generated from electricity distribution at regulated prices, and not significant bundled contracts of combined products and services, IFRS 15 will not have a material impact on the accounting for these revenue streams. However, IFRS 15 will impact the Company's revenue-related disclosures.

(b) Financial instruments

In July 2014, the IASB issued the final version of IFRS 9 Financial Instruments ['IFRS 9'], which replaces International Accounting Standard 39 Financial Instruments: Recognition and Measurement ['IAS 39']. IFRS 9 includes revised guidance on the classification and measurement of financial instruments, including basing the classification of financial instruments on their contractual cash flow characteristics and the entity's business model for managing financial assets, whereas IAS 39 bases the classifications on specific definitions for each category. Moreover, IFRS 9 simplifies the current IAS 39 classifications into three main categories [amortized cost, fair value through other comprehensive income and fair value through profit or loss], and introduces a new expected credit loss model for measuring impairment of financial assets. The standard is effective for annual periods beginning on or after January 1, 2018. As the Company does not have significant complex financial instruments, IFRS 9 will not have an impact on the accounting for its financial instruments. Management is currently evaluating the impact of adopting the new expected credit loss model for measuring impairment.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

4. NEW ACCOUNTING PRONOUNCEMENTS [CONTINUED]

(c) Leases

In January 2016, the IASB issued a new standard, IFRS 16 Leases ['IFRS 16'], which replaces accounting requirements introduced more than 30 years ago that are no longer considered suitable and is a major revision of the way in which companies account for leases. IFRS 16 introduces a new definition of a lease, and removes the current requirement for lessee's to account for leases as either operating or finance leases, depending on complex rules and tests which use 'bright-lines', and may result in all-or-nothing being recognised on the balance sheet. Under IFRS 16, all leases from the lessee's perspective will have to be recognized on the balance sheet, except for exempted short-term [< 1 year] and low value leases. The new standard becomes effective for reporting periods beginning on or after January 1, 2019. Early adoption is permitted if IFRS 15 is also adopted. The Company continues to analyze IFRS 16 and the impact on its financial statements.

5. ACCOUNTS RECEIVABLE

	2017 \$	2016 \$
Electricity receivable	54,056	70,370
Unbilled revenue	84,963	103,253
Other receivables	36,934	9,091
Less: allowance for doubtful accounts [Note 16(c)]	(2,371)	(1,721)
	173,582	180,993
Due from related party [Note 23]	5,307	5,889
	178,889	186,882
Aging:		
Outstanding for 30 days or less	87,682	75,253
Outstanding for more than 30 days but not more than 120 days	6,016	7,943
Outstanding for more than 120 days	2,599	2,154
Unbilled revenue	84,963	103,253
Less: allowance for doubtful accounts	(2,371)	(1,721)
	178,889	186,882

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

6. REGULATORY BALANCES

Information about the Company's regulatory balances is as follows:

	Remaining recovery/ reversal [years]	2016 \$	Balances arising in the year \$	Recovery/ reversal \$	Other movements ⁽¹⁾ \$	2017 \$
Regulatory debit balances						
RARA	1	274	(5,679)	4,868	975	438
Settlement variances	1-5	2,496	(805)	-	817	2,508
OPEB deferral account	1-5	147	635	-	-	782
LRAM	1-5	1,469	1,102	-	-	2,571
Regulatory asset for deferred income taxes	(2)	7,684	9,113	-	-	16,797
Other variances and deferred costs	1-5	1,674	682	13	1	2,370
		13,744	5,048	4,881	1,793	25,466
Regulatory credit balances						
RLRA	1	409	15,162	(15,083)	976	1,464
Settlement variances	1-5	36,137	(16,193)	-	817	20,761
ESM	1-5	-	1,385	-	-	1,385
Other variances and deferred costs	1-5	159	740	-	-	899
		36,705	1,094	(15,083)	1,793	24,509

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

6. REGULATORY BALANCES [CONTINUED]

	Remaining recovery/ reversal [years]	2015 \$	Balances arising in the year \$	Recovery/ reversal \$	Other movements ⁽¹⁾ \$	2016 \$
Regulatory debit balances						
RARA	1	205	68	1	-	274
Settlement variances	1-5	5,502	(3,006)	-	-	2,496
OPEB deferral account	1-5	4,432	(4,285)	-	-	147
LRAM	1-5	-	1,628	-	(159)	1,469
Regulatory asset for deferred income taxes	(2)	-	7,684	-	-	7,684
Other variances and deferred costs	1-5	4,291	(2,776)	-	159	1,674
		14,430	(687)	1	-	13,744
Regulatory credit balances						
RLRA	1	3,266	1,618	(4,475)	-	409
Settlement variances	1-5	29,919	6,218	-	-	36,137
Stranded meters	1	5,974	(5,974)	-	-	-
LRAM	1-5	159	-	-	(159)	-
Regulatory liability for deferred income taxes	(2)	513	(513)	-	-	-
Other variances and deferred costs	1-5	994	(994)	-	159	159
		40,825	355	(4,475)	-	36,705

⁽¹⁾ Other movements represent reclassifications of balances

⁽²⁾ The balance is being reversed through timing differences in the recognition of deferred income tax assets

The following regulatory balances include accrued interest which is presented in net movements in regulatory balances:

- The RARA/RLRA includes accrued interest costs of \$129 [2016 – \$27].
- Settlement variances include accrued interest costs of \$137 [2016 – \$268].
- Other variance and deferred costs include accrued interest earned of \$37 [2016 – \$15].

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

7. PROPERTY, PLANT AND EQUIPMENT

	Land and buildings \$	Distribution assets \$	Equipment and other \$	Assets under construction \$	Total \$
Cost					
Balance at December 31, 2015	84,209	714,765	23,441	42,849	865,264
Additions, net of transfers	849	90,696	5,998	11,188	108,731
Disposals	(2)	(1,544)	(153)	-	(1,699)
Balance at December 31, 2016	85,056	803,917	29,286	54,037	972,296
Additions, net transfers	1,389	97,518	9,004	15,057	122,968
Disposals	-	(2,602)	(2,862)	-	(5,464)
Balance at December 31, 2017	86,445	898,833	35,428	69,094	1,089,800
Accumulated depreciation					
Balance at December 31, 2015	(5,183)	(48,391)	(6,344)	-	(59,918)
Depreciation	(2,643)	(27,340)	(3,451)	-	(33,434)
Disposals	1	178	46	-	225
Balance at December 31, 2016	(7,825)	(75,553)	(9,749)	-	(93,127)
Depreciation	(2,587)	(30,277)	(3,909)	-	(36,773)
Disposals	-	1,206	2,557	-	3,763
Balance at December 31, 2017	(10,412)	(104,624)	(11,101)	-	(126,137)
Net book value					
At December 31, 2016	77,231	728,364	19,537	54,037	879,169
At December 31, 2017	76,033	794,209	24,327	69,094	963,663

During the year, the Company capitalized borrowing costs of \$1,276 [2016 – \$808] to property, plant and equipment. The average annual interest rate for 2017 was 3.5% [2016 – 3.7%].

During the year, the Company incurred a loss on disposal of property, plant and equipment of \$514 [2016 – \$834].

On December 13, 2017, the Company acquired the primary distribution assets of the Public Services and Procurement Canada ['PSPC'] campuses of Tunney's Pasture, Confederation Heights and the Central Experimental Farm. PSPC agreed to pay the Company \$14,586 to fund future expenditures related to the asset transfer and replacement and direct maintenance and administration, the supply and installation of meters, and the decommissioning and installation of PSPC's equipment. The Company has determined that the acquisition of the group of assets does not constitute a business, and has recognized the individual identifiable assets acquired on the basis of their fair value of \$1,436, at the date of purchase.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

8. INTANGIBLE ASSETS

	Land rights \$	Computer software \$	Capital contributions \$	Assets under development \$	Total \$
Cost					
Balance at December 31, 2015	1,810	49,842	17,045	4,051	72,748
Additions, net of transfers	473	2,116	3,044	5,857	11,490
Balance at December 31, 2016	2,283	51,958	20,089	9,908	84,238
Additions, net transfers	11	14,077	687	1,780	16,555
Disposals	-	(1,063)	-	-	(1,063)
Balance at December 31, 2017	2,294	64,972	20,776	11,688	99,730
Accumulated amortization					
Balance at December 31, 2015	(98)	(12,719)	(173)	-	(12,990)
Amortization	(59)	(7,775)	(451)	-	(8,285)
Balance at December 31, 2016	(157)	(20,494)	(624)	-	(21,275)
Amortization	(59)	(6,657)	(455)	-	(7,171)
Disposals	-	1,063	-	-	1,063
Balance at December 31, 2017	(216)	(26,088)	(1,079)	-	(27,383)
Net book value					
At December 31, 2016	2,126	31,464	19,465	9,908	62,963
At December 31, 2017	2,078	38,884	19,697	11,688	72,347

The Company is party to various Connection and Cost Recovery Agreements ['Capital contributions'] with HONI. These agreements govern the construction by HONI of new or modified transformer stations for the purpose of serving the Company's customers, including anticipated electricity load growth.

During the year, the Company capitalized borrowing costs of \$322 [2016 – \$81] to intangible assets. The average annual interest rate for 2017 was 3.5% [2016 – 3.7%].

Hydro Ottawa Limited

Notes to the Financial Statements
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9. INVESTMENT PROPERTIES

	2017 \$	2016 \$
Net book value, beginning of year	2,149	2,213
Additions	418	46
Depreciation	(111)	(110)
Net book value, end of year	2,456	2,149

The fair value of investment properties is \$8,913, which is based on the latest Municipal Property Assessment Corporation valuation dated May 23, 2017.

10. CREDIT FACILITY

The Company continues to maintain a \$90,000 revolving demand credit facility and a \$600 commercial card facility available from Hydro Ottawa Holding Inc. As at December 31, 2017, the Company has drawn \$12,256 [December 31, 2016 – \$nil] in bank indebtedness and \$nil [December 31, 2016 – \$22,000] in bankers acceptances against this credit facility. The rate of interest is based on the rate applicable to Hydro Ottawa Holding Inc.'s outstanding bankers' acceptances drawn on that date. Otherwise, the rate of interest is based on the Bank of Canada's 'Bankers Acceptances 1 month' rate.

11. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

	2017 \$	2016 \$
Purchased power payable	79,120	92,874
Accounts payable and accrued liabilities	34,049	31,062
Customer deposits	15,972	17,296
Customer credit balances	11,203	7,391
Due to related parties [Note 23]	8,231	24,547
	148,575	173,170

12. EMPLOYEE FUTURE BENEFITS

(a) Pension plans

The Company's participating employer contributions under OMERS for the year ended December 31, 2017 amounted to \$5,689 [2016 – \$5,512].

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

12. EMPLOYEE FUTURE BENEFITS [CONTINUED]

(b) Other employee future benefits

Employee future benefits are calculated using an annual compensation rate increase of 2.0% [2016 – 2.0%] and a discount rate of 3.4% [2016 – 3.9%] to calculate the liabilities. The valuations also include several other economic and demographic assumptions including mortality rates. The mortality assumption is based on the *Canadian Pensioners' Mortality* report published by the Canadian Institute of Actuaries in February 2014.

Information about the Company's employee future benefits other than pension plans is as follows:

	2017 \$	2016 \$
Defined benefit obligation, beginning of year	12,501	10,707
Current service costs	294	333
Past service costs	-	1,630
Interest on accrued benefit obligation	482	490
Benefit payments	(634)	(593)
Actuarial loss (gain)	691	(66)
Defined benefit obligation, end of year	13,334	12,501

An actuarial extrapolation was performed as at December 31, 2017. As a result of this exercise, the Company increased the accumulated liability by \$833 [December 31, 2016 – increased by \$1,794 based on an actuarial valuation].

Significant changes in actuarial assumptions related to discount rates, future health and dental costs, mortality rates and retirement age may affect the valuation of the defined benefit obligation.

13. NOTES PAYABLE

The Company currently has the following promissory notes and grid promissory notes payable to Hydro Ottawa Holding Inc.:

	2017 \$	2016 \$
4.97% promissory note, due December 19, 2036	50,000	50,000
4.14% for the first five years [3.99% thereafter] promissory note, due May 14, 2043	107,185	107,185
2.72% for the first five years [2.61% thereafter] promissory note, due February 3, 2025	138,667	138,667
3.77% for the first five years [3.64% thereafter] promissory note, due February 2, 2045	121,333	121,333
2.72% for the first five years [2.61% thereafter] promissory note, due June 25, 2025	15,999	15,999
3.77% for the first five years [3.64% thereafter] promissory note, due June 25, 2045	14,001	14,001
3.72% grid promissory note, due on demand	60,000	60,000
4.12% grid promissory note, due on demand	60,000	-
	567,185	507,185

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
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13. NOTES PAYABLE [CONTINUED]

The grid promissory note facility bears fixed-rate interest based on the cost of long-term debt for Ontario's Regulated Utilities in accordance with the OEB's cost of capital calculations. Amounts are due on demand, and Hydro Ottawa Holding Inc. does not intend to recall any amounts of this note in 2018.

The promissory notes and the grid promissory note facility are subordinated and postponed to the obligation of the Company to a third party for the payment in full of any secured indebtedness and any and all security interests granted to secure such obligations of the Company.

14. CAPITAL DISCLOSURES

The Company's main objectives when managing capital are to:

- Ensure continued access to funding to maintain and improve the operations and infrastructure of the Company;
- Ensure compliance with covenants related to the credit facilities and senior unsecured debentures entered into by its parent company, Hydro Ottawa Holding Inc.; and
- Align Hydro Ottawa Limited's capital structure with the debt to equity structure recommended by the OEB.

The Company's capital consists of the following:

	2017 \$	2016 \$
Intercompany advances	-	22,000
Notes payable	567,185	507,185
Total debt	567,185	529,185
Shareholder's equity	335,659	319,799
Total capital	902,844	848,984
Debt capitalization ratio	62.82 %	62.33 %

The Company is in compliance with all financial covenants and limitations associated with its credit facilities and its long-term debt.

The Company is deemed by the OEB to have a capital structure that is funded by 56% long-term debt, 4% short-term debt and 40% equity. The OEB uses this deemed structure only as a basis for setting distribution rates. As such, the Company's actual capital structure may differ from the OEB deemed structure.

The Company met its capital management objectives, which have not changed during the year.

Hydro Ottawa Limited

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15. SHARE CAPITAL

(a) Authorized

Unlimited number of voting first preferred shares, redeemable at one dollar per share
Unlimited number of non-voting second preferred shares, redeemable at ten dollars per share
Unlimited number of non-voting third preferred shares, redeemable at one hundred dollars per share
Unlimited number of voting fourth preferred shares [ten votes per share], redeemable at one hundred dollars per share
Unlimited number of voting Class A common shares
Unlimited number of non-voting Class B common shares
Unlimited number of non-voting Class C common shares, redeemable at the price at which such shares are issued

The above shares are without nominal or par value.

Holders of second preferred shares, fourth preferred shares and common shares are entitled to receive dividends as and when declared by the Board of Directors at their discretion.

(b) Issued

	2017 \$	2016 \$
154,789,001 Class A common shares	167,081	167,081

Any invitation to the public to subscribe for shares of the Company is prohibited by shareholder resolution.

On April 20, 2017, the Board of Directors declared a \$10,600 dividend on the common shares of the Company outstanding on December 31, 2016. The dividend was paid to the sole shareholder, Hydro Ottawa Holding Inc. on April 28, 2017 [2016 – April 21, 2016, the Board of Directors declared a \$7,500 dividend which was paid on April 29, 2016].

On September 21, 2017, the Board of Directors declared a \$10,000 dividend on the common shares of the Company outstanding on June 30, 2017. The dividend was paid to the sole shareholder, Hydro Ottawa Holding Inc. on September 29, 2017 [2016 – September 22, 2016, the Board of Directors declared a \$10,000 dividend which was paid on September 29, 2016].

16. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

(a) Fair value disclosures

The carrying values of the Company's financial instruments, except for notes payable, approximates fair value because of the short maturity and nature of the instruments.

The Company has estimated the fair value of the notes payable as at December 31, 2017 as amounting to \$573,211 [December 31, 2016 – \$509,027]. The fair value has been determined based on discounting all future payments of interest and the principal repayment on January 1, 2018, at the estimated interest rate of 3.7% [2016 – 3.7%] that would be available to the Company on December 31, 2017.

(b) Market risk

The Company is exposed to market risk, which is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market prices. Market prices are comprised of three types of risks: interest rate risk, foreign exchange risk and commodity price risk.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

16. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(b) Market risk [continued]

(i) Interest rate risk

The Company is exposed to interest rate risk on its borrowings. The Company mitigates exposure to interest rate risk by fixing interest rates on its notes payable with its parent company. Under Hydro Ottawa Holding Inc.'s credit facilities, any advances on its operating line would expose the Company to fluctuations in short term interest rates related to prime rate loans and bankers' acceptances as all short-term financing requirements are obtained through its parent company, which passes on its borrowing costs. The interest rate risk is deemed to be low due to the immaterial cost of its short-term borrowings. For the most part, the borrowing requirements are for a very short duration as the advances serve to bridge gaps between the cash outflow related to the monthly power bill and the inflows related to the settlements with customers and, as such, there is very limited exposure to interest rate risk.

A sensitivity analysis was conducted to examine the impact of a change in the prime rate on the Company's advances from Hydro Ottawa Holding Inc. A variation of 1% [100 basis points], with all other variables held constant, would increase or decrease the annual interest expense by approximately \$278.

(ii) Foreign exchange risk

As at December 31, 2017, the Company has limited exposure to fluctuations in foreign currency exchange rates. The Company does purchase a small proportion of goods and services that are denominated in foreign currencies, predominately the US dollar. The impact of the fluctuation of foreign currencies on the gains or losses of accounts payable denoted in foreign currencies is not material.

(iii) Commodity price risk

The Company does not have commodity price risk due to the flow-through nature of power purchases.

(c) Credit risk

Credit risk is the risk that a counterparty will default on its obligations, causing a financial loss to the Company. Concentration of credit risk associated with accounts receivable is limited due to the large number of customers the Company services. The Company has approximately 332,000 customers, the majority of which are residential. As a result, the Company did not earn a significant amount of revenue and does not have a significant receivable from any individual customer.

The Company performs ongoing credit evaluations of its customers and requires collateral to support non-residential customer accounts receivable on specific accounts to mitigate significant losses in accordance with OEB legislation. As at December 31, 2017, the Company held security deposits related to power recovery and distribution sales in the amount of \$15,121 [December 31, 2016 – \$14,600] with respect to these customers.

The Company monitors and limits its exposure to credit risk on a continuous basis.

The carrying amount of accounts receivable is reduced by an allowance for doubtful accounts based on the credit risk applicable to particular customers, historical, and other information. The Company records an allowance for doubtful accounts when the recoverability of an amount becomes doubtful. When the receivable amount is deemed to be uncollectible, it is written off and the allowance for doubtful accounts is adjusted accordingly. Subsequent recoveries of receivables previously provisioned or written off result in a reduction of operating costs in the statement of income. As at December 31, 2017, the allowance for doubtful accounts was \$2,371 [December 31, 2016 – \$1,721].

For details of accounts receivable and the aging of the accounts, refer to Note 5.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

16. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(c) Credit risk [continued]

As at December 31, 2017, there were no significant concentrations of credit risk with respect to any class of financial assets or counterparties and approximately 5% [December 31, 2016 – 5%] of the Company's accounts receivable [excluding unbilled revenue] were aged more than 30 days. The Company's maximum exposure to credit risk is equal to the carrying value of accounts receivable less customer deposits held.

(d) Liquidity risk

Liquidity risk is the risk that the Company will not meet its financial obligations as they come due. The Company's parent, Hydro Ottawa Holding Inc., manages all the financing and investing activities for the Company. The Company has access to credit facilities with Hydro Ottawa Holding Inc. The liquidity risks associated with financial commitments at December 31, 2017 relate to grid promissory notes, promissory notes or advances issued from its parent company, Hydro Ottawa Holding Inc., and accounts payable and accrued liabilities in the amount of \$148,575 [December 31, 2016 – \$173,170] that are due within one year.

The Company continues to have access to a \$90,000 [2016 – \$90,000] credit facility with Hydro Ottawa Holding Inc. as well as a \$600 commercial card facility. As at December 31, 2017, the Company has drawn \$12,256 [December 31, 2016 – \$nil] in bank indebtedness and \$nil [December 31, 2016 – \$22,000] in bankers acceptances against this credit facility [Note 10]. These credit facilities are available to the Company to help meet its financial obligations as they come due.

17. OPERATING COSTS

	2017 \$	2016 \$
Employee costs	74,021	74,128
Outside services	31,777	26,970
Operating and maintenance	7,922	7,839
General and administrative	30,977	29,865
Capital recovery	(32,829)	(31,597)
	111,868	107,205

18. FINANCING COSTS

	2017 \$	2016 \$
Long-term interest	18,472	16,479
Short-term interest and fees	738	924
Less: capitalized borrowing costs	(1,598)	(889)
	17,612	16,514

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

19. INCOME TAXES

Income tax expense recognized in net income comprises the following:

	2017 \$	2016 \$
Current tax expense		
Current income tax expense	3,828	3,648
Deferred tax expense		
Origination and reversal of temporary differences	9,342	8,250
Income tax expense recognized in net income	13,170	11,898

Income tax expense recognized in other comprehensive income comprises the following:

	2017 \$	2016 \$
Income tax effect of actuarial losses on defined benefit obligations	(229)	(53)

The provision for income taxes differs from the amount that would have been recorded using the combined Canadian federal and Ontario statutory income tax rates. A reconciliation between the statutory and effective tax rates is provided as follows:

	2017 \$	2016 \$
Federal and Ontario statutory income tax rate	26.50 %	26.50 %
Income before income taxes	49,630	46,243
Income taxes at statutory rate	13,152	12,254
Increase (decrease) in income taxes resulting from:		
Permanent differences	49	42
Other	(31)	(398)
	13,170	11,898
Effective income tax rate	26.54 %	25.73 %

The Company, as a rate-regulated enterprise, can recognize deferred income tax assets and liabilities and related regulatory balances for the amount of deferred income taxes expected to be refunded to, or recovered from, customers in future electricity rates.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

19. INCOME TAXES [CONTINUED]

Significant components of the Company's deferred income liability are as follows:

	2017 \$	2016 \$
Property, plant and equipment and intangible assets	(22,170)	(13,437)
Employee future benefits	4,807	4,507
Other temporary differences	566	1,246
	(16,797)	(7,684)

Movements in the deferred income tax (liability) asset during the year were as follows:

	2017 \$	2016 \$
Deferred tax, beginning of year	(7,684)	513
Recognized in net income	(9,342)	(8,250)
Recognized in OCI related to employee future benefits	229	53
Deferred tax, end of year	(16,797)	(7,684)

The Company's regulatory deferral account debit balance for the amounts of deferred income taxes expected to be refunded/ (collected) to/from customers in future electricity rates is \$16,797 [2016 – \$7,684].

As at December 31, 2017, the Company had corporate minimum tax credit carryforwards of \$nil [December 31, 2016 – \$470].

20. CHANGES IN NON-CASH WORKING CAPITAL AND OTHER OPERATING BALANCES

	2017 \$	2016 \$
Accounts receivable	7,993	(19,375)
Prepaid expenses	455	(2,079)
Accounts payable and accrued liabilities	349	10,278
Net change in accruals related to property, plant and equipment	(6,970)	5,135
Net change in accruals related to intangible assets	1,073	297
Customer deposits in accounts receivable [Note 7]	14,586	-
	17,486	(5,744)

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

21. CONTINGENT LIABILITIES

Purchasers of electricity in Ontario including the Company, through the Independent Electricity System Operator ['IESO'], are required to provide security to mitigate the risk of their default based on their expected activity in the market. The IESO could draw on these guarantees if the Company fails to make a payment required by a default notice issued by the IESO. A prudential support obligation is calculated based upon a default protection amount and the distributor's trading limit less a reduction for the distributor's credit rating. As at December 31, 2017, the Company had drawn standby letters of credit in the amount of \$10,000 [December 31, 2016 – \$10,000] against its credit facility to cover its prudential support obligation.

The Company participates with other electrical utilities in Ontario in an agreement to exchange reciprocal contracts of indemnity through the Municipal Electrical Association Reciprocal Insurance Exchange. The Company is liable for additional assessments to the extent premiums collected and reserves established are not sufficient to cover the cost of claims and costs incurred. If any additional assessments were required in the future, their cost would be charged to income in the year during which they occur.

The Company is party to connection and cost recovery agreements with HONI as described in Note 8. To the extent that the cost of the project is not recoverable from future transformation connection revenues, the Company is obligated to pay a capital contribution equal to the difference between these revenues and the construction costs allocated to the Company.

Various lawsuits have been filed against the Company for incidents that arose in the ordinary course of business. In the opinion of management, the outcomes of the lawsuits, now pending, are neither determinable nor material. Should any loss result from the resolution of these claims, such losses would be claimed through the Company's insurance carrier, with any unrecoverable amounts charged to income in the year of resolution.

22. COMMITMENTS

The Company has \$155,335 in total open commitments for 2018 to 2024. This includes commitments relating to a customer information system services agreement, construction projects, facilities, and overhead and underground services.

23. RELATED PARTY TRANSACTIONS

Transactions with related parties occur in the normal course of business, and are transacted at the amount of consideration determined and agreed to by the related parties. Trade amounts due from and to related parties are non-interest bearing, result from normal operations and are due within one year.

(a) Transactions with ultimate shareholder and its subsidiaries

During the year, the Company earned revenue from the sale of electricity to the City of Ottawa and its subsidiaries, which is billed at prices and terms approved by the OEB, and earned other revenue totaling \$744 [2016 – \$1,322]. The Company also received \$2,028 [2016 – \$4,484] in contributions relating to the upgrade and/or expansion of the Company's existing electricity distribution infrastructure.

The Company incurred \$2,269 [2016 – \$2,263] in property tax expenses and purchased \$606 [2016 – \$481] in fuel, permits and other services during the year, which is included in operating costs. The Company also incurred \$2,872 [2016 – \$nil] in building permit costs and development charges, which are included in property, plant and equipment.

At December 31, 2017, the Company's accounts receivable and customer deposits include \$4,716 [December 31, 2016 – \$5,639] and \$2,129 [December 31, 2016 – \$4,641], respectively, while the Company's accounts payable and accrued liabilities include \$53 [December 31, 2016 – \$126] due to the City of Ottawa and its subsidiaries.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2017
[in thousands of Canadian dollars]

23. RELATED PARTY TRANSACTIONS [CONTINUED]

(b) Transactions with parent

During the year, the Company earned revenue of \$763 [2016 – \$914] relating to the provision of administrative and corporate services and interest charges. The Company also received \$2 [2016 – \$35] in contributions relating to the upgrade and/or expansion of the Company's existing electricity distribution infrastructure.

The Company incurred \$3,900 [2016 – \$3,931] in operating costs related to the purchase of administrative and corporate support services that includes compensation for certain key management personnel, and \$738 [2016 – \$926] in short-term financing costs. The Company also purchased power of \$13 [2016 – \$9].

At December 31, 2017, the Company's accounts payable and accrued liabilities include \$1,944 [December 31, 2016 – \$23,375] due in respect of the transactions described.

The Company incurred \$18,472 [2016 – \$16,479] in financing costs during the year on its notes payable to Hydro Ottawa Holding Inc. described in Note 13 of these financial statements.

(c) Transactions with other related parties

During the year, the Company earned revenue from the sale of electricity to other related parties, which is billed at prices and terms approved by the OEB, and earned other revenue of \$2,922 [2016 – \$1,336]. The Company also received \$1,305 [2016 – \$447] in contributions relating to the upgrade and/or expansion of the Company's existing electricity distribution infrastructure. During the year, the Company purchased power of \$2,161 [2016 – \$2,107], and incurred \$356 [2016 – \$3] in operating costs and \$43 [2016 – \$nil] in costs that are included in property, plant and equipment.

At December 31, 2017, the Company's accounts receivable include \$591 [December 31, 2016 – \$250] and customer deposits include \$nil [December 31, 2016 – \$2,642] due in respect of the transactions above while accounts payable and accrued liabilities include \$6,234 [December 31, 2016 – \$1,046] due to other related parties.

24. COMPARATIVE FIGURES

In certain instances, the 2016 information presented for comparative purposes has been reclassified to conform to the financial statement presentation adopted for the current year.

Hydro Ottawa Limited

Financial Statements

December 31, 2018

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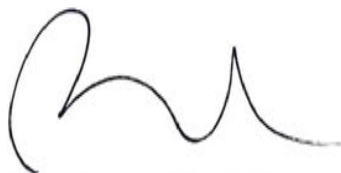
Report of Management

Management is responsible for the integrity of the financial data reported by Hydro Ottawa Limited ['the Company']. Fulfilling this responsibility requires the preparation and presentation of financial statements and other data using management's best judgment, estimates and International Financial Reporting Standards as issued by the International Accounting Standards Board.

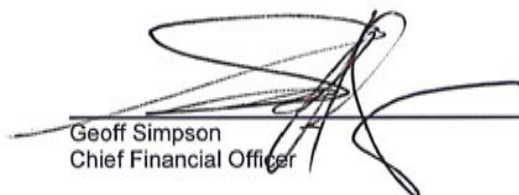
Management maintains appropriate systems of internal control and corporate-wide policies and procedures, which provide reasonable assurance that the Company's assets are safeguarded and that financial records are relevant and reliable.

The Board of Directors of the Company, with the advice of the Audit Committee of Hydro Ottawa Holding Inc., ensures that management fulfills its responsibility for financial reporting and internal control. At regular meetings, the Audit Committee, including the Chair of the Board of Directors of the Company, reviews internal controls and financial reporting matters with management for Hydro Ottawa Holding Inc. and its subsidiaries. The Chair of the Board of Directors of the Company, as well as the Chief Executive Officer and the Chief Financial Officer, advise the Board of Directors of the Company of any matters of concern raised by the Audit Committee in reviewing the financial affairs of the Company.

On behalf of Management,

A handwritten signature in black ink, consisting of a large, stylized 'B' followed by a series of loops and a final upward stroke.

Bryce Conrad
President and Chief Executive Officer

A handwritten signature in black ink, featuring a large, stylized 'G' followed by several loops and a final downward stroke.

Geoff Simpson
Chief Financial Officer



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INDEPENDENT AUDITORS' REPORT

To the Shareholder of Hydro Ottawa Limited

Opinion

We have audited the financial statements of Hydro Ottawa Limited (the "Entity"), which comprise:

- the balance sheet as at December 31, 2018
- the statement of income for the year then ended
- the statement of comprehensive income for the year then ended
- the statement of changes in equity for the year then ended
- the statement of cash flows for the year then ended
- and notes to the financial statements, including a summary of significant accounting policies

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements, present fairly, in all material respects, the financial position of the Entity as at December 31, 2018, and its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRS).

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the **"Auditors' Responsibilities for the Audit of the Financial Statements"** section of our auditors' report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. KPMG Canada provides services to KPMG LLP.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with International Financial Reporting Standards (IFRS), and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Entity's financial reporting process.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.



- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

A handwritten signature in black ink that reads 'KPMG LLP' in a cursive, stylized font, with a horizontal line underneath.

Chartered Professional Accountants, Licensed Public Accountants

Ottawa, Canada

April 16, 2019

Hydro Ottawa Limited

Statement of Income
Year ended December 31, 2018
[in thousands of Canadian dollars]

	2018 \$	2017 \$
Revenue and other income		
Power recovery revenue [Note 18]	857,383	896,528
Distribution revenue [Note 18]	181,050	171,400
Conservation and demand management income	24,865	23,976
Other revenue [Note 18]	22,112	18,581
	1,085,410	1,110,485
Expenses		
Purchased power	864,442	910,810
Operating costs [Note 19]	115,768	111,891
Depreciation [Notes 7 and 9]	40,148	36,884
Amortization [Note 8]	9,508	7,171
	1,029,866	1,066,756
Income before the undernoted items	55,544	43,729
Financing costs [Note 20]	19,759	17,612
Income before income taxes	35,785	26,117
Income tax expense [Note 21]	13,318	13,170
Net income	22,467	12,947
Net movements in regulatory balances, net of tax [Note 6]	14,692	23,513
Net income after net movements in regulatory balances	37,159	36,460

The accompanying notes are an integral part of these financial statements

Hydro Ottawa Limited

Statement of Comprehensive Income
Year ended December 31, 2018
[in thousands of Canadian dollars]

	2018 \$	2017 \$
Net income after net movements in regulatory balances	37,159	36,460
Other comprehensive income		
Items that will not be subsequently reclassified to net income		
Actuarial gain (loss) on post-employments benefits, net of tax	674	(405)
Net movement in regulatory balances related to other comprehensive income, net of tax	(674)	405
Total comprehensive income	37,159	36,460

Hydro Ottawa Limited

Balance Sheet

As at December 31, 2018

[in thousands of Canadian dollars]

	2018 \$	2017 \$
Assets		
Current assets		
Accounts receivable [Note 5]	162,814	179,120
Prepaid expenses	3,928	3,172
	166,742	182,292
Non-current assets		
Property, plant and equipment [Note 7]	1,112,259	963,663
Intangible assets [Note 8]	66,174	72,347
Investment properties [Note 9]	2,338	2,456
Total assets	1,347,513	1,220,758
Regulatory balances [Note 6]	34,667	25,466
Total assets and regulatory balances	1,382,180	1,246,224
Liabilities and shareholder's equity		
Current liabilities		
Bank indebtedness [Note 10]	27,673	12,256
Accounts payable and accrued liabilities [Note 11]	147,854	148,806
Income taxes payable	842	116
Advances from parent [Note 10]	47,000	-
	223,369	161,178
Non-current liabilities		
Deferred revenue [Note 12]	115,769	95,383
Employee future benefits [Note 13(b)]	12,367	13,334
Customer deposits	26,503	31,423
Notes payable [Note 14]	597,185	567,185
Deferred income tax liability [Note 21]	25,806	16,797
Other liabilities	571	756
Total liabilities	1,001,570	886,056
Shareholder's equity		
Share capital [Note 16]	167,081	167,081
Retained earnings	193,837	168,578
Total liabilities and shareholder's equity	1,362,488	1,221,715
Regulatory balances [Note 6]	19,692	24,509
Total liabilities, shareholder's equity and regulatory balances	1,382,180	1,246,224

Contingent liabilities and commitments [Notes 23 and 24]

On behalf of the Board:

Director

Director

Hydro Ottawa Limited

Statement of Changes in Equity
Year ended December 31, 2018
[in thousands of Canadian dollars]

	Share capital	Accumulated other comprehensive income	Retained earnings	Total
	\$	\$	\$	\$
Balance at December 31, 2016	167,081	-	152,718	319,799
Net income after net movements in regulatory balances	-	-	36,460	36,460
Dividends [Note 16]	-	-	(20,600)	(20,600)
Balance at December 31, 2017	167,081	-	168,578	335,659
Net income after net movements in regulatory balances	-	-	37,159	37,159
Dividends [Note 16]	-	-	(11,900)	(11,900)
Balance at December 31, 2018	167,081	-	193,837	360,918

Hydro Ottawa Limited

Statement of Cash Flows
Year ended December 31, 2018
[in thousands of Canadian dollars]

	2018	2017
	\$	\$
Net inflow (outflow) of cash related to the following activities:		
Operating		
Net income after net movements in regulatory balances	37,159	36,460
Adjustments for:		
Depreciation	40,148	36,884
Amortization	9,508	7,171
(Gain) loss on disposal of property, plant and equipment [Note 7]	(256)	514
Amortization of deferred revenue [Note 18]	(2,950)	(2,262)
Employee future benefits	87	198
Financing costs	19,759	17,612
Income tax expense	13,318	13,170
Other	(105)	(168)
Capital contributions from customers	11,685	12,063
Capital contributions from developers	11,651	8,578
Net change in non-cash working capital and other operating balances [Note 22]	880	17,486
Change in customer deposits	13,751	(2,889)
Financing costs paid	(21,823)	(19,234)
Income tax refunded	142	102
Income taxes paid	(4,000)	(6,095)
Net movements in regulatory balances	(14,692)	(23,513)
	114,262	96,077
Investing		
Acquisition of property, plant and equipment	(191,959)	(115,656)
Acquisition of intangible assets	(3,393)	(17,627)
Proceeds from disposal of property, plant and equipment	573	1,183
	(194,779)	(132,100)
Financing		
Issuance of notes payable	30,000	60,000
Dividends paid [Note 16]	(11,900)	(20,600)
Proceeds from (repayment of) advances from parent	47,000	(22,000)
	65,100	17,400
Net change in cash	(15,417)	(18,623)
(Bank indebtedness) cash, beginning of year	(12,256)	6,367
Bank indebtedness, end of year	(27,673)	(12,256)

The accompanying notes are an integral part of these financial statements

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2018
[in thousands of Canadian dollars]

1. DESCRIPTION OF BUSINESS AND CORPORATE INFORMATION

Hydro Ottawa Limited [the 'Company'] was incorporated on October 3, 2000 pursuant to the *Business Corporations Act* (Ontario) as mandated by the Ontario government's *Electricity Act, 1998*. The Company is a wholly owned subsidiary of Hydro Ottawa Holding Inc., which in turn is wholly owned by the City of Ottawa. The Company is incorporated and domiciled in Canada with the registered head office located at 3025 Albion Road North, Ottawa, Ontario, K1G 3S4.

Hydro Ottawa Limited is a regulated electricity distribution company that owns and operates electricity infrastructure in the City of Ottawa and the Village of Casselman and is responsible for the safe, reliable delivery of electricity to homes and businesses in its licensed service area. In addition to billing for distribution services, Hydro Ottawa Limited invoices customers for amounts it is required to pay to other organizations in Ontario's electricity system for providing wholesale generation and transmission services.

2. BASIS OF PRESENTATION

(a) Statement of compliance

These financial statements have been prepared by management on a going-concern basis in accordance with International Financial Reporting Standards ['IFRS'], and have been approved and authorized by the Company's Board of Directors for issue on April 16, 2019.

(b) Basis of measurement

The Company's financial statements are prepared on a historical cost basis, except for the valuation of other employee future benefits as explained in Note 3(k)(ii).

(c) Functional and presentation currency

These financial statements are presented in Canadian dollars, which is the Company's functional currency.

(d) Use of estimates and judgments

The preparation of financial statements in conformity with IFRS requires management to make estimates, judgments and assumptions that affect the reported amounts of revenue, expenses, assets, liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements.

Due to the inherent uncertainty involved in making such estimates, actual results could differ from estimates recorded in preparing these financial statements, including changes as a result of future decisions made by the Ontario Energy Board ['OEB'] or the Ontario provincial government. Management reviews its estimates and judgments on an ongoing basis using the most current information available. The financial statements have, in management's opinion, been properly prepared using careful judgment within reasonable limits of materiality and within the framework of the significant accounting policies. Significant areas where estimates and judgments are made in the application of IFRS are as follows:

i. Accounts receivable

Accounts receivable, which includes unbilled revenue, are reported based on the amounts expected to be recovered less a loss allowance for expected credit losses. Management utilizes historical loss experience and forward-looking information in conjunction with the aging and arrears status of accounts receivable at year-end in the determination of the allowance.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2018
[in thousands of Canadian dollars]

2. BASIS OF PRESENTATION [CONTINUED]

(d) Use of estimates and judgments [continued]

ii. Regulatory balances

The recognition and measurement of regulatory balances is subject to certain estimates, judgments and assumptions, including assumptions made in the interpretation of the OEB's regulations and decisions.

iii. Useful lives of depreciable assets

Depreciation and amortization expense is calculated based on estimates of the useful lives of property, plant and equipment, intangible assets and investment properties. Management estimates the useful lives of the various types of assets using assumptions and estimates of life characteristics of similar assets based on a long history of industry experience.

iv. Impairments of non-financial assets

Non-financial assets are reviewed by management for impairment using the future cash flows method. By their nature, estimates of future cash flows, including estimates of future capital expenditures, revenue, operating expenses, discount rates and market pricing are subject to measurement uncertainty.

v. Employee future benefits

The measurement of employee future benefits involves the use of numerous estimates and assumptions. Actuaries make assumptions for items such as discount rates, future salary increases and mortality rates in the determination of benefits expenses and accrued benefit obligations.

vi. Capital contributions

The timing of the satisfaction of performance obligations for capital contributions from customers is subject to certain estimates and assumptions.

vii. Deferred income taxes

Tax interpretations, regulations and legislation in which the Company operates are subject to change. Deferred income tax assets are assessed by management at the end of each reporting period to determine the likelihood that they will be realized from future taxable income.

3. SIGNIFICANT ACCOUNTING POLICIES

(a) Regulation

The Company is regulated by the OEB under the authority of the *Ontario Energy Board Act, 1998*. The OEB is charged with the responsibilities of approving or setting rates for the transmission and distribution of electricity, and ensuring that distribution companies fulfill obligations to connect and service customers.

For fiscal year ended December 31, 2018, the Company continued to operate under a custom incentive rate-setting application ['Custom IR'] prescribed by the OEB. The Custom IR is one of the rate setting options contained in the *Renewed*

Hydro Ottawa Limited

Notes to the Financial Statements
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3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(a) Regulation [continued]

Regulatory Framework for Electricity Distributors: A Performance-Based Approach policy. The Company filed a custom incentive rate-setting application with the OEB on April 29, 2015 seeking approval to change the rates that the Company charges for electricity delivery, retail services, allowances, loss factor and specific services charges for a period of five years, to be effective January 1, 2016 to December 31, 2020. This application requested a revenue requirement to recover costs, and provide a rate of return on a deemed capital structure applied to rate base assets. The key components of the Company's Custom IR framework included the establishment of several regulatory accounts, namely: an asymmetrical earnings sharing mechanism variance account, revenue requirement differential variance account related to capital additions, new facilities deferral account, connection cost recovery agreement deferral account, and the efficiency adjustment mechanism deferral account. An annual IR application is required to set rates each year for 2017 to 2020. 2018 rates were set based on the Company's Year 3 IR annual update.

The Company applies for distribution rates based on estimated costs. Once rates are approved, they are not adjusted as a result of actual costs being different from those that were estimated, other than for certain prescribed costs that are eligible for deferral treatment and are either collected or refunded in future rates.

In January 2014, the International Accounting Standards Board ['IASB'] issued IFRS 14 – *Regulatory Deferral Accounts* ['IFRS 14'], which permits rate-regulated entities to use its existing rate-regulated activities practices if and only if, in its first IFRS financial statements, it recognized regulatory deferral account balances by electing to apply the requirements of IFRS 14.

The Company has determined that certain debit and credit balances arising from rate-regulated activities qualify for the application of regulatory accounting treatment in accordance with IFRS 14 and the accounting principles prescribed by the OEB in the *Accounting Procedures Handbook for Electricity Distributors*. Regulatory debit and credit balances primarily represent costs that have been deferred because it is probable that they will be recovered in future rates, revenues that are required to be returned or collected to/from customers or balances that arise from differences in amounts billed to customers for electricity services and the costs that the Company incurs to purchase these services.

Regulatory balances principally comprise the following:

- Regulatory asset/liability refund account ['RARA'/RLRA'] consists of balances of regulatory assets or regulatory liabilities approved for disposition by the OEB through temporary additional rates referred to as rate riders.
- Settlement variances relate primarily to the charges the Company incurred for transmission services, commodity, wholesale market operations and global adjustment in comparison to those settled with customers during the year. The nature of the settlement variances is such that the balance can fluctuate between assets and liabilities over time, and they are reported at year-end dates in accordance with rules prescribed by the OEB.
- Lost Revenue Adjustment Mechanism ['LRAM'] account tracks and disposes of lost electricity distribution revenues that result from Conservation and Demand Management ['CDM'] programs.
- Earnings Sharing Mechanism ['ESM'] variance account captures 50% of any regulated earnings above Hydro Ottawa's approved return on equity for years 2016 to 2020.
- Other Post-employment Benefits deferral account ['OPEB deferral account'] was authorized by the OEB in 2011 to record the adjustment to employee future benefits other than pension relating to the cumulative actuarial gains or losses. This account is adjusted annually to record any changes in the cumulative actuarial gains or losses. No interest charges are recorded on this account as instructed by the OEB.

Other variances and deferred costs include the following:

- the difference between low voltage charges paid to Hydro One Networks Inc. ['HONI'] and those charged to customers.
- the difference between actual amount of gain/loss from disposal of fixed assets and the forecasted gain/loss.

Hydro Ottawa Limited

Notes to the Financial Statements
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[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(a) Regulation [continued]

- the difference between the 2014 starting point and current year ending point stretch factor as multiplied by the rate year plan revenue requirement for the relevant rate year, referred to as the Efficiency Adjustment Mechanism ['EAM'].

The Company accrues interest on the regulatory balances as directed by the OEB.

The Company continues to assess the likelihood of recovery of all regulatory debit balances subject to recovery through a future rate filing. The absence of OEB approval is a consideration in this evaluation. If the requirement for a provision becomes more likely than not, the Company will recognize the provision in operating costs for the year.

(b) Revenue recognition

Effective January 1, 2018, the Company has adopted IFRS 15 – *Revenue from Contracts with Customers* ['IFRS 15'] as described in Note 4(a)(i) of these financial statements.

Depending on whether certain criteria are met the Company recognizes revenue from contracts with customers when it transfers control over a product or service to a customer either over time or at a point in time. For revenue from other sources, the Company recognizes revenue over time taking into consideration the facts and circumstances of the arrangement.

Revenue is measured at the consideration received or receivable, excluding sales taxes and other amounts collected on behalf of third parties in the following revenue arrangements.

i. Power recovery

Power recovery revenue represents the flow-through of the cost of power to the consumer as purchased by the Company and is recognized over time as electricity is delivered to the customer, as measured by meter readings or usage estimates. Power recovery revenue is regulated by the OEB and includes charges to customers for the electricity commodity, the transmission of electricity and the administration of the wholesale electricity system. The Company has determined that it acts as a principal in this revenue arrangement and therefore has presented it on a gross basis.

ii. Distribution

The Company charges customers for the delivery of electricity, based on rates established by the OEB. The rates are intended to allow the Company to recover its prudently incurred costs and earn a fair return on invested capital. Distribution revenue is recognized over time as electricity is delivered to the customer, as measured by meter readings or usage estimates.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2018
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(b) Revenue recognition [continued]

iii. Other

Other revenue comprises revenue earned under contracts for service work related to distribution operations, pole attachment and duct rentals, capital contributions received from customers amortized to revenue, and other account-related charges such as account set-up and late payment fees. Revenue earned under contracts for service work related to distribution operations is recognized over time as the corresponding costs are recognized proportionately with the degree of completion of the services under contract. Losses on such contracts are fully recognized when they become evident. In certain situations, capital contributions are required from customers to finance additions to property, plant and equipment when the estimated revenue resulting from the addition to property, plant and equipment is less than the cost of providing the service or where special equipment is needed to supply the customers' specific requirements. Since the contributions will provide current and future customers with ongoing access to the supply of electricity, these contributions are classified as deferred revenue and amortized into revenue on a straight-line basis over time [the period a customer will receive services], which is typically equivalent to the rate used for the depreciation of the related property, plant and equipment [service life of the related assets]. All other revenues are recognized over time as services are rendered, except for revenue from certain account-related charges, which is recognized at a point in time.

Capital contributions received from developers to construct or acquire property, plant and equipment for the purpose of connecting future customers to the Company's distribution network are considered out of scope of IFRS 15. Capital contributions received from developers are recognized as deferred revenue and amortized into revenue from other sources at an equivalent rate to that used for the depreciation of the related property, plant and equipment.

Revenue from investment property is considered out of scope of IFRS 15, and accordingly classified as revenue from other sources. Rental income from investment property is recognized as revenue on a straight-line basis over the term of the lease.

(c) Government grant income

CDM income stems from the delivery of provincial government programs that promote conservation. Government grants under CDM programs are recognized when there is reasonable assurance that the grant will be received and all related conditions have been met. Grants under full cost recovery funding are recognized as income on a systematic basis over the period to match the costs they are intended to compensate. CDM performance incentives are recognized when it is probable that future economic benefits will flow to the Company, and the amount can be measured reliably.

(d) Interest income and financing costs

Interest income is recognized as it accrues under the effective interest method and comprises interest earned on cash.

Financing costs are calculated using the effective interest rate method and are recognized as an expense unless they are capitalized as part of the cost of a qualifying asset.

(e) Income taxes

The Company is considered to be a Municipal Electric Utility ["MEU"] and is required to make payments in lieu of corporate income taxes [PILS] as contained in the *Electricity Act, 1998*, as all of its share capital is indirectly owned by the City of Ottawa and not more than 10% of its income is derived from activities carried on outside the municipal boundaries of the City of Ottawa. The *Electricity Act, 1998* provides that a MEU that is exempt from tax under the *Income Tax Act* (Canada) ["ITA"] and the *Taxation Act*, Ontario ["TAO"] is required to make, for each taxation year, a PILs payment to the Ontario Electricity Financial Corporation in an amount equal to the tax that it would be liable to pay under the ITA and the TAO if it were not exempt from tax.

Hydro Ottawa Limited

Notes to the Financial Statements
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[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

The Company follows the liability method for recording income taxes. Under the liability method, current income taxes payable are recorded based on taxable income. Deferred income taxes arising from temporary differences in the accounting and tax basis of assets and liabilities are provided based on substantively enacted tax rates that will be in effect when the differences are expected to reverse.

The Company recognizes regulatory balances for the amounts of future income taxes expected to be refunded to or recovered from customers in future electricity rates as prescribed by the OEB.

(f) Financial instruments

Effective January 1, 2018, the Company has adopted IFRS 9 – *Financial Instruments* [‘IFRS 9’] as described in Note 4(a)(ii) of these financial statements.

Financial instruments are initially measured at the fair value of the consideration given or received plus transaction costs that are directly attributable to the acquisition or issue of the financial instrument.

The Company's financial assets, upon initial recognition, are classified as amortized cost or fair value [whereby subsequent changes in fair value are recognized either through OCI [‘FVOCI’] or through profit and loss [‘FVTPL’] as unrealized market adjustments]. Financial assets are classified based on the Company's business model for managing such assets and the contractual terms of the related cash flows.

The Company's financial liabilities, upon initial recognition, are classified as amortized cost or FVTPL. A financial liability is classified as FVTPL if it is classified as held-for-trading, it is a derivative or it is designated as such on initial recognition.

The Company classifies and subsequently measures its financial instruments as follows:

- Cash and accounts receivable are financial assets classified and measured at amortized cost using the effective interest method, less any impairment if applicable.
- Bank indebtedness, accounts payable and accrued liabilities, customer deposits and notes payable are financial liabilities classified and measured at amortized cost using the effective interest rate method.

The fair value of a financial instrument is the amount of consideration that would be agreed upon in an arm's-length transaction between willing parties. The Company's own credit risk and the credit risk of the counterparty are taken into account in determining the fair value of financial assets and liabilities. Financial instruments are classified using a three-level hierarchy. The levels reflect the inputs used to measure the fair values of financial assets and financial liabilities, and are as follows:

- Level 1: inputs are unadjusted quoted prices of identical instruments in active markets;
- Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly; and
- Level 3: inputs for the liabilities that are not based on observable market data [unobservable inputs].

All financial assets except for those classified as FVTPL or FVOCI are subject to review for impairment at least at each reporting date. Impairment losses, if any, are recognized in net income. An impairment loss is reversed if the reversal can be related objectively to an event occurring after the impairment loss was recognized.

As of January 1, 2018, the Company recognizes loss allowances for expected credit losses [‘ECL’s] on financial assets measured at amortized cost. The Company measures loss allowances for electricity receivables, unbilled revenue and trade receivables via a simplified approach as permitted by IFRS 9, at an amount equal to lifetime ECL.

When determining whether the credit risk of a financial asset has increased, the Company performs a quantitative and qualitative analysis based on the Company's historical experience and forward-looking information. The Company assumes that the credit risk on a financial asset has increased significantly if it is more than 30 days past due. The Company considers a financial asset to be in default when the borrower is unlikely to pay its credit obligations to the Company in full, without recourse by the Company to actions such as realizing security.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2018
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(f) Financial instruments [continued]

Loss allowances for financial assets measured at amortized cost are deducted from the gross carrying amount of the assets. The gross carrying amount of a financial asset is written off to the extent that there is no realistic prospect of recovery.

(g) Property, plant and equipment

Property, plant and equipment consist principally of electricity distribution infrastructure, buildings and fixtures, land, rolling stock, furniture and equipment, and assets under construction.

Emergency capital spare parts that are expected to be used for more than one year, are considered to be assets under construction and are depreciated only once they are put into service.

Property, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment losses, if any. Self-constructed asset costs comprise all directly attributable expenditures to bring the asset into operation including labour, materials, employee benefits, transportation, contracted services and borrowing costs. Where parts of an item in property, plant and equipment are significant and have different estimated economic useful lives, they are accounted for as separate items [major components] of property, plant and equipment. Certain assets may be acquired or constructed with financial assistance in the form of contributions from customers. Contributions from customers are treated as deferred revenue.

The cost of major inspections and maintenance is recognized in the carrying value of an asset provided that the Company will derive future economic benefits from the expenditure. The carrying amount of a replaced part is derecognized. The costs of day-to-day servicing, repairs, and maintenance, are expensed as incurred.

Depreciation is recorded on a straight-line basis over the estimated service life of each component of property, plant and equipment.

Gains and losses on disposal of retired, sold or otherwise derecognized property, plant and equipment are recognized in income and are calculated as the difference between net proceeds from disposal and the carrying amount of the asset.

The estimated useful lives, residual values and depreciation methods are reviewed at each year-end with the effect of any changes in estimate being accounted for on a prospective basis.

Estimated service lives for property, plant and equipment classes are as follows:

Land and buildings	
Land	Indefinite
Buildings and fixtures	20 to 75 years
Distribution assets	10 to 60 years
Equipment and other	
Furniture and equipment	5 to 10 years
Rolling stock	7 to 15 years

Assets under construction and land are not subject to depreciation. Borrowing costs are capitalized as a component of the cost of self-constructed property, plant and equipment assets that take a substantial period of time to get ready for their intended use. The capitalization rate is the Company's weighted average cost of borrowing.

Hydro Ottawa Limited

Notes to the Financial Statements
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3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(h) Intangible assets

Intangible assets include land rights, capital contributions, computer software and assets under development.

Intangible assets with finite lives are measured at cost less accumulated amortization and accumulated impairment losses, if any. Intangible assets are amortized on a straight-line basis over the estimated service lives of the related assets.

Intangible assets are derecognized on disposal or when no further future economic benefits are expected from their use. Gains or losses on disposal of intangible assets are recognized in income and are calculated as the difference between net proceeds from disposal and the carrying amount of the asset.

The estimated useful lives and amortization methods are reviewed at each year-end with the effect of any changes in estimate being accounted for on a prospective basis.

Estimated service lives for intangible assets with finite lives are as follows:

Land rights	50 years
Computer software	5 to 10 years
Capital contributions	45 years

Borrowing costs are capitalized as a component of cost of self-constructed intangible assets that take a substantial period of time to get ready for their intended use. The capitalization rate is the Company's weighted average cost of borrowing.

(i) Investment properties

Investment property is land and/or buildings held for purposes other than for use in the Company's operating activities. The Company holds investment property either for potential expansion of the service delivery network or as excess administrative property. Investment properties are measured at cost plus transaction costs, and have estimated service lives ranging between 25 and 50 years. Any gain or loss arising from the sale of an investment property is immediately recognized in income.

(j) Impairment of non-financial assets

At the end of each reporting period, or earlier if required, management uses its judgment to assess whether there is an indication that the carrying amount of a non-financial asset [or cash generating unit, 'CGU'] exceeds its recoverable amount. A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. This assessment involves the consideration of whether any events or changes in circumstances could have affected the recoverability of the carrying amount of a non-financial asset or CGU. Management considers various indicators including, but not limited to, adverse changes in the industry or economic conditions, changes in the degree or method of use of an asset, a lower than expected economic performance of an asset or a significant change in market returns or interest rates. If any indication exists, the Company estimates the asset's recoverable amount, which is the higher of an asset or CGU's fair value less costs of disposal and its value in use. If the carrying value of a non-financial asset exceeds its recoverable amount, the difference is immediately recognized as an impairment loss in profit or loss.

Intangible assets not yet available for use are tested for impairment [within their respective CGUs] at least annually, and whenever there is an indication that the asset may be impaired.

When determining the recoverable amount, the Company determines its value-in-use by discounting estimated future cash flows to their present value using a discount rate that reflects changes in the time value of money and the risks specific to the asset or the CGU. The discount rate estimated and used by management represents the weighted average cost of capital determined for the CGU being tested.

At the end of a reporting period, if there is any indication that an impairment loss recognized in a prior period no longer exists or has decreased, the loss is reversed up to its recoverable amount. The carrying amount following the reversal must

Hydro Ottawa Limited

Notes to the Financial Statements
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3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(j) Impairment of non-financial assets [continued]

not be higher than the carrying amount that would have prevailed [net of amortization] had the original impairment not been recognized in prior periods.

(k) Employee future benefits

i. Pension plan

The Company provides pension benefits for its employees through the Ontario Municipal Employees Retirement System ['OMERS'] Fund [the 'Fund']. OMERS is a multi-employer pension plan that provides pensions for employees of Ontario municipalities, local boards, public utilities and school boards. The Fund is a defined benefit pension plan, which is financed by equal contributions from participating employers and employees and by the investment earnings of the Fund.

Although the plan is a defined benefit plan, sufficient information is not available to the Company to account for it as such because it is not possible to attribute the fund assets and liabilities between the various employers who contribute to the Fund. As a result, the Company accounts for the plan as a defined contribution plan, and contributions payable as a result of employee service are expensed as incurred as part of operating costs. The Company shares in the actuarial risks of the other participating entities in the plan, and its future contributions may therefore be increased due to actuarial losses relating to the other participating entities. In addition, the Company's contributions could be increased if other entities withdraw from the plan.

ii. Other post-employment benefits

Employee future benefits other than pensions provided by the Company include life insurance and a retirement grant. These plans provide benefits to certain employees when they are no longer providing active service.

Employee future benefits expense is recognized in the period during which the employees render services.

Employee future benefits are recorded on an accrual basis. The accrued benefit obligation and current service costs are calculated using the projected benefit method prorated on service and based on assumptions that reflect management's best estimates. The current service cost for a period is equal to the actuarial present value of benefits attributed to employees' services rendered in the period. Actuarial gains and losses resulting from experience different from that assumed or from changes in actuarial assumptions are recognized in OCI. However, for the Company, these amounts are reclassified to a regulatory debit balance as prescribed by the OEB.

iii. Employee benefits

The Company provides short-term employee benefits, such as: salaries, employment insurance, short-term compensated absences, health and dental care. These benefits are recognized as the related service is rendered and is measured on an undiscounted basis. Short-term employee benefits are recognized as an expense unless they qualify for capitalization as part of the cost of an item of materials and supplies, property, plant and equipment, intangible assets. A liability is recognized in respect of any unpaid short-term employee benefits for services rendered in the reporting period.

The Company recognizes a liability for the expected cost of accumulated non-vested sick leave benefits at the end of the reporting period. The Company presents its non-vested sick leave obligation as a non-current liability since it does not expect to settle all of its sick leave benefits within twelve months.

Hydro Ottawa Limited

Notes to the Financial Statements
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[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(l) Customer deposits

Customer deposits are cash collections from customers to guarantee the payment of energy bills and fulfillment of construction obligations. Customer deposits from customers to guarantee the payment of energy bills includes related interest amounts owed to the customers. Deposits estimated to be refundable to customers within the next fiscal year are classified as current liabilities and included in accounts payable and accrued liabilities.

(m) Provisions and contingencies

The Company recognizes provisions when there is a present legal or constructive obligation as a result of a past event, it is probable that an outflow of economic benefits will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation. If the effect is material, provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and, where appropriate, the risks specific to the liability. Provisions are remeasured at each balance sheet date.

The evaluation of the likelihood of the contingent events requires judgment by management as to the probability of exposure to potential loss. Actual results could differ from these estimates.

A contingent asset is not recognized in the financial statements. However, a contingent asset is disclosed where an inflow of economic benefits is probable.

(n) Leases

Leases in which the Company assumes all of the risks and rewards of ownership are classified as finance leases. Upon initial recognition, the leased asset is measured at an amount equal to the lower of its fair value and the present value of the minimum lease payments. Subsequent to initial recognition, the asset is accounted for in accordance with the accounting policy applicable to the asset. Payments under finance leases are apportioned between interest expense and a reduction of the outstanding liability.

All other leases are classified as operating leases and the leased assets are not recognized on the Company's balance sheets. Payments made under operating leases are recognized in net income on a straight-line basis over the term of the lease.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2018
[in thousands of Canadian dollars]

4. NEW ACCOUNTING PRONOUNCEMENTS

A number of new standards, amendments and interpretations relevant to the Company have either been adopted for the year ended December 31, 2018, or, are not yet effective and have not been applied in preparing these financial statements.

(a) Recently adopted accounting standards

(i) Revenue from contracts with customers

On January 1, 2018, the Company adopted IFRS 15 – *Revenue from Contracts with Customers* [‘IFRS 15’] by applying the modified retrospective approach where prior periods are not restated. The Company elected a practical expedient, as allowed under IFRS 15, which permitted it to apply the new standard solely to contracts which were in-progress as of January 1, 2018, and all contracts initiated thereafter.

IFRS 15 supersedes previous revenue recognition guidance including IAS 18 – *Revenue*, IAS 11 – *Construction Contracts* and related interpretations. IFRS 15 provides a standardized five step model [identify contract, identify performance obligations, determine transaction price, allocate transaction price and recognize revenue] to recognize revenue. Depending on whether certain criteria are met revenue is recognized over time, in a manner that best reflects the Company’s performance or at a point in time, when control of the goods or services is transferred to the customer. IFRS 15 applies to nearly all contracts with customers, unless covered by another standard [i.e. leases, financial instruments, insurance contracts], or those out of scope of IFRS 15.

The adoption of IFRS 15 did not have an impact on the Company’s existing revenue recognition practices as reported in the comparative year. As a result, there have been no adjustments recognized upon the adoption of IFRS 15. The new standard did result in additional disclosures, see notes 12 and 18.

(ii) Financial instruments

On January 1, 2018, the Company adopted IFRS 9 – *Financial Instruments* [‘IFRS 9’] on a retrospective basis, which replaces International Accounting Standard 39 – *Financial Instruments: Recognition and Measurement* [‘IAS 39’]. The Company has chosen not to restate comparative information with respect to classification and measurement requirements. Accordingly, the information presented for 2017 does not reflect the requirements of IFRS 9, but rather those of IAS 39.

IFRS 9 includes revised guidance on the classification and measurement of financial assets, including basing the classification of financial assets on their contractual cash flow characteristics and the entity’s business model for managing financial assets, whereas IAS 39 based the classifications on specific definitions for each category. Moreover, IFRS 9 simplifies the former IAS 39 classifications into three main categories [amortized cost, fair value through other comprehensive income and fair value through profit or loss], and introduces a new expected credit loss model for measuring impairment of financial assets. In addition, IFRS 9 contains consequential amendments to IFRS 7 – *Financial Instruments: Disclosures* which has also been adopted by the Company.

On January 1, 2018, management assessed which business models apply to the financial assets held by the Company and has classified its financial instruments into the appropriate IFRS 9 categories. In addition, the Company revised its impairment methodology under IFRS 9 for each of its classes of financial assets. The Company’s financial instruments will continue to be subsequently measured at amortized cost [previously classified as loans and receivables for financial assets under IAS 39], and furthermore the new impairment methodology results in the same expected credit loss [allowance for doubtful accounts] as under the previous method used. The adoption of IFRS 9 by the Company did not result in any quantitative adjustments being recognized as at January 1, 2018.

The adoption of IFRS 9 has not had an effect on the Company’s accounting policies related to financial liabilities.

Hydro Ottawa Limited

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4. NEW ACCOUNTING PRONOUNCEMENTS [CONTINUED]

(b) Recently issued accounting guidance not yet adopted

(i) Leases

In January 2016, the IASB issued a new standard, IFRS 16 – *Leases* [‘IFRS 16’] which will replace IAS 17 – *Leases*. IFRS 16 eliminates the current dual model [on and off balance sheet] and aims to provide greater comparability between companies who lease assets and those who purchase assets with a single on-balance sheet approach. Under IFRS 16, all leases from the lessee’s perspective will have to be recognized on the balance sheet, with related lease liabilities, with exemptions for short-term [< 1 year] and low value leases.

The new standard becomes effective for reporting periods beginning on or after January 1, 2019. The Company plans on adopting IFRS 16 using the modified retrospective application method, where the 2018 comparatives will not be restated. In addition, the Company will apply the recognition exemptions in IFRS 16 for ‘low value’ leases and leases that end within 12 months of the date of initial application and account for them as short-term leases. The Company continues to analyze IFRS 16 and the impact on its financial statements.

5. ACCOUNTS RECEIVABLE

	2018 \$	2017 \$
Receivables from contracts with customers		
Electricity receivable	59,933	54,056
Unbilled revenue	80,180	84,963
Other receivables	15,571	35,352
Amounts due from related party [Note 25]	7,995	5,307
Less: loss allowance [Note 17(c)]	(2,368)	(2,371)
	161,311	177,307
Receivables from other sources		
Conservation and demand management	1,503	1,813
	162,814	179,120

Hydro Ottawa Limited

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[in thousands of Canadian dollars]

6. REGULATORY BALANCES

Information about the Company's regulatory balances is as follows:

	Remaining recovery/ reversal [years]	2017 \$	Balances arising in the year \$	Recovery/ reversal \$	Other movements ⁽¹⁾ \$	2018 \$
Regulatory debit balances						
RARA	1	438	196	(241)	-	393
Settlement variances	1-5	2,508	(505)	-	-	2,003
OPEB deferral account	1-5	782	-	-	(782)	-
LRAM	1-5	2,571	529	-	-	3,100
Regulatory asset for deferred income taxes	(2)	16,797	9,009	-	-	25,806
Other variances and deferred costs	1-5	2,370	995	-	-	3,365
		25,466	10,224	(241)	(782)	34,667
Regulatory credit balances						
RLRA	1	1,464	13,214	(13,056)	-	1,622
Settlement variances	1-5	20,761	(7,325)	-	-	13,436
ESM	1-5	1,385	2,002	-	-	3,387
OPEB deferral account	1-5	-	1,054	-	(782)	272
Other variance and deferral costs	1-5	899	76	-	-	975
		24,509	9,021	(13,056)	(782)	19,692

Hydro Ottawa Limited

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[in thousands of Canadian dollars]

6. REGULATORY BALANCES [CONTINUED]

	Remaining recovery/ reversal [years]	2016 \$	Balances arising in the year \$	Recovery/ reversal \$	Other movements ⁽¹⁾ \$	2017 \$
Regulatory debit balances						
RARA	1	274	(5,679)	4,868	975	438
Settlement variances	1-5	2,496	(805)	-	817	2,508
OPEB deferral account	1-5	147	635	-	-	782
LRAM	1-5	1,469	1,102	-	-	2,571
Regulatory asset for deferred income taxes	(2)	7,684	9,113	-	-	16,797
Other variances and deferred costs	1-5	1,674	682	13	1	2,370
		13,744	5,048	4,881	1,793	25,466
Regulatory credit balances						
RLRA	1	409	15,162	(15,083)	976	1,464
Settlement variances	1-5	36,137	(16,193)	-	817	20,761
ESM	1-5	-	1,385	-	-	1,385
Other variances and deferred costs	1-5	159	740	-	-	899
		36,705	1,094	(15,083)	1,793	24,509

⁽¹⁾ Other movements represent reclassifications of balances

⁽²⁾ The balance is being reversed through timing differences in the recognition of deferred income tax assets

The following regulatory balances include accrued interest which is presented in net movements in regulatory balances:

- The RARA/RLRA includes accrued interest costs of \$145 [2017 – \$129].
- Settlement variances include accrued interest costs of \$52 [2017 – \$137].
- Other variance and deferred costs include accrued interest earned of \$36 [2017 – \$37]

Details and descriptions pertaining to the regulatory debt and credit balances are disclosed in Note 3(a) of these financial statements.

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2018
[in thousands of Canadian dollars]

7. PROPERTY, PLANT AND EQUIPMENT

	Land and buildings \$	Distribution assets \$	Equipment and other \$	Assets under construction \$	Total \$
Cost					
Balance at December 31, 2016	85,056	803,917	29,286	54,037	972,296
Additions, net of transfers	1,389	97,518	9,004	15,057	122,968
Disposals	-	(2,602)	(2,862)	-	(5,464)
Balance at December 31, 2017	86,445	898,833	35,428	69,094	1,089,800
Additions, net transfers	3,628	110,378	4,997	69,940	188,943
Disposals	-	(563)	(337)	-	(900)
Balance at December 31, 2018	90,073	1,008,648	40,088	139,034	1,277,843
Accumulated depreciation					
Balance at December 31, 2016	(7,825)	(75,553)	(9,749)	-	(93,127)
Depreciation	(2,587)	(30,277)	(3,909)	-	(36,773)
Disposals	-	1,206	2,557	-	3,763
Balance at December 31, 2017	(10,412)	(104,624)	(11,101)	-	(126,137)
Depreciation	(2,527)	(33,221)	(4,282)	-	(40,030)
Disposals	-	383	200	-	583
Balance at December 31, 2018	(12,939)	(137,462)	(15,183)	-	(165,584)
Net book value					
At December 31, 2017	76,033	794,209	24,327	69,094	963,663
At December 31, 2018	77,134	871,186	24,905	139,034	1,112,259

During the year, the Company capitalized borrowing costs of \$2,423 [2017 – \$1,276] to property, plant and equipment. The average annual interest rate for 2018 was 3.4% [2017 – 3.5%].

During the year, the Company recognized a gain on disposal of property, plant and equipment of \$256 [2017 – loss on disposal of \$514].

Hydro Ottawa Limited

Notes to the Financial Statements
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8. INTANGIBLE ASSETS

	Land rights \$	Computer software \$	Capital contributions \$	Assets under development \$	Total \$
Cost					
Balance at December 31, 2016	2,283	51,958	20,089	9,908	84,238
Additions, net of transfers	11	14,077	687	1,780	16,555
Disposals	-	(1,063)	-	-	(1,063)
Balance at December 31, 2017	2,294	64,972	20,776	11,688	99,730
Additions, net transfers	(5)	1,657	2,200	(517)	3,335
Balance at December 31, 2018	2,289	66,629	22,976	11,171	103,065
Accumulated amortization					
Balance at December 31, 2016	(157)	(20,494)	(624)	-	(21,275)
Amortization	(59)	(6,657)	(455)	-	(7,171)
Disposals	-	1,063	-	-	1,063
Balance at December 31, 2017	(216)	(26,088)	(1,079)	-	(27,383)
Amortization	(59)	(8,972)	(477)	-	(9,508)
Balance at December 31, 2018	(275)	(35,060)	(1,556)	-	(36,891)
Net book value					
At December 31, 2017	2,078	38,884	19,697	11,688	72,347
At December 31, 2018	2,014	31,569	21,420	11,171	66,174

The Company is party to various Connection and Cost Recovery Agreements ['Capital contributions'] with HONI. These agreements govern the construction by HONI of new or modified transformer stations for the purpose of serving the Company's customers, including anticipated electricity load growth.

During the year, the Company capitalized borrowing costs of \$73 [2017 – \$322] to intangible assets. The average annual interest rate for 2018 was 3.4% [2017 – 3.5%].

Hydro Ottawa Limited

Notes to the Financial Statements
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9. INVESTMENT PROPERTIES

	2018 \$	2017 \$
Net book value, beginning of year	2,456	2,149
Additions	-	418
Depreciation	(118)	(111)
Net book value, end of year	2,338	2,456

The fair value of investment properties is \$5,220, which is based on the latest Municipal Property Assessment Corporation valuation dated May 17, 2018.

10. CREDIT FACILITY

The Company has access to a \$90,000 [December 31, 2017 – \$90,000] revolving demand credit facility and a \$400 [December 31, 2017 – \$600] commercial card facility available from Hydro Ottawa Holding Inc. As at December 31, 2018, the Company has drawn \$27,673 [December 31, 2017 – \$12,256] in bank indebtedness and \$47,000 [December 31, 2017 – \$nil] in bankers acceptances against this credit facility. The rate of interest is based on the rate applicable to Hydro Ottawa Holding Inc.'s outstanding bankers' acceptances drawn on that date. Otherwise, the rate of interest is based on the Bank of Canada's 'Bankers Acceptances 1 month' rate.

11. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

	2018 \$	2017 \$
Purchased power payable	74,747	79,120
Trade accounts payable and accrued liabilities	39,298	34,280
Customer deposits	20,057	15,972
Customer credit balances	10,964	11,203
Due to related parties [Note 25]	2,788	8,231
	147,854	148,806

Hydro Ottawa Limited

Notes to the Financial Statements
Year ended December 31, 2018
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12. DEFERRED REVENUE

	2018	2017
	\$	\$
Capital contributions from customers	61,145	51,015
Capital contributions from developers	54,624	44,368
	115,769	95,383

13. EMPLOYEE FUTURE BENEFITS

(a) Pension plans

The Company's participating employer contributions under OMERS for the year ended December 31, 2018 amounted to \$5,905 [2017 – \$5,689].

(b) Other employee future benefits

Employee future benefits are calculated using an annual compensation rate increase of 2.0% [2017 – 2.0%] and a discount rate of 3.9% [2017 – 3.4%] to calculate the liabilities. The valuations also include several other economic and demographic assumptions including mortality rates. The mortality assumption is based on the *Canadian Pensioners' Mortality* report published by the Canadian Institute of Actuaries in February 2014.

Information about the Company's employee future benefits other than pension plans is as follows:

	2018	2017
	\$	\$
Defined benefit obligation, beginning of year	13,334	12,501
Current service costs	338	294
Interest on accrued benefit obligation	398	482
Benefit payments	(649)	(634)
Actuarial (gain) loss	(1,054)	691
Defined benefit obligation, end of year	12,367	13,334

An actuarial extrapolation was performed as at December 31, 2018. As a result of this exercise, the Company decreased the accumulated liability by \$967 [December 31, 2017 – increased by \$833 based on an actuarial extrapolation]. The last actuarial valuation was performed December 31, 2016.

Significant changes in actuarial assumptions related to discount rates, future health and dental costs, mortality rates and retirement age may affect the valuation of the defined benefit obligation.

Hydro Ottawa Limited

Notes to the Financial Statements
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14. NOTES PAYABLE

The Company currently has the following promissory notes and grid promissory notes payable to Hydro Ottawa Holding Inc.:

	2018	2017
	\$	\$
4.97% promissory note, due December 19, 2036	50,000	50,000
4.14% for the first five years [3.99% thereafter] promissory note, issued May 14, 2013 and due May 14, 2043	107,185	107,185
2.72% for the first five years [2.61% thereafter] promissory note, issued February 9, 2015 and due February 3, 2025	138,667	138,667
3.77% for the first five years [3.64% thereafter] promissory note, issued February 9, 2015 and due February 2, 2045	121,333	121,333
2.72% for the first five years [2.61% thereafter] promissory note, issued June 25, 2015 and due June 25, 2025	15,999	15,999
3.77% for the first five years [3.64% thereafter] promissory note, issued June 25, 2015 and due June 25, 2045	14,001	14,001
3.72% grid promissory note, due on demand	60,000	60,000
4.12% grid promissory note, due on demand	60,000	60,000
4.41% grid promissory note, due on demand	30,000	-
	597,185	567,185

The grid promissory note facility bears fixed-rate interest based on the cost of long-term debt for Ontario's Regulated Utilities in accordance with the OEB's cost of capital calculations. Amounts are due on demand, and Hydro Ottawa Holding Inc. does not intend to recall any amounts of this note in 2019.

15. CAPITAL DISCLOSURES

The Company's main objectives when managing capital are to:

- Ensure continued access to funding to maintain and improve the operations and infrastructure of the Company;
- Ensure compliance with covenants related to the credit facilities and senior unsecured debentures entered into by its parent company, Hydro Ottawa Holding Inc.; and
- Align Hydro Ottawa Limited's capital structure with the debt to equity structure recommended by the OEB.

Hydro Ottawa Limited

Notes to the Financial Statements
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15. CAPITAL DISCLOSURES [CONTINUED]

The Company's capital consists of the following:

	2018 \$	2017 \$
Notes payable	597,185	567,185
Shareholder's equity	360,918	335,659
Total capital	958,103	902,844
Debt capitalization ratio	62.33 %	62.82 %

The Company is in compliance with all financial covenants and limitations associated with its credit facilities and its long-term debt.

The Company is deemed by the OEB to have a capital structure that is funded by 56% long-term debt, 4% short-term debt and 40% equity. The OEB uses this deemed structure only as a basis for setting distribution rates. As such, the Company's actual capital structure may differ from the OEB deemed structure.

The Company met its capital management objectives, which have not changed during the year.

16. SHARE CAPITAL

(a) Authorized

Unlimited number of voting first preferred shares, redeemable at one dollar per share
Unlimited number of non-voting second preferred shares, redeemable at ten dollars per share
Unlimited number of non-voting third preferred shares, redeemable at one hundred dollars per share
Unlimited number of voting fourth preferred shares [ten votes per share], redeemable at one hundred dollars per share
Unlimited number of voting Class A common shares
Unlimited number of non-voting Class B common shares
Unlimited number of non-voting Class C common shares, redeemable at the price at which such shares are issued

The above shares are without nominal or par value.

Holders of second preferred shares, fourth preferred shares and common shares are entitled to receive dividends as and when declared by the Board of Directors at their discretion.

Hydro Ottawa Limited

Notes to the Financial Statements
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16. SHARE CAPITAL [CONTINUED]

(b) Issued

	2018 \$	2017 \$
154,789,001 Class A common shares	167,081	167,081

Any invitation to the public to subscribe for shares of the Company is prohibited by shareholder resolution.

On April 19, 2018, the Board of Directors declared an \$11,900 dividend on the common shares of the Company outstanding on December 31, 2017. The dividend was paid to the sole shareholder, Hydro Ottawa Holding Inc. on April 26, 2018 [2017 – April 20, 2017, the Board of Directors declared a \$10,600 dividend which was paid on April 28, 2017 and on September 21, 2017, the Board of Directors declared a \$10,000 dividend which was paid on September 29, 2017].

17. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

(a) Fair value disclosures

The carrying values of the Company's financial instruments, except for notes payable, approximates fair value because of the short maturity and nature of the instruments. The fair value measurement of the financial instrument for which the fair value has been disclosed is included in Level 2 of the fair value hierarchy [Note 3(f)].

The Company has estimated the fair value of the notes payable as at December 31, 2018 as amounting to \$600,195 [December 31, 2017 – \$573,211]. The fair value has been determined based on discounting all future payments of interest and the principal repayment on January 1, 2019, at the estimated interest rate of 3.7% [2017 – 3.7%] that would be available to the Company on December 31, 2018.

(b) Market risk

The Company is exposed to market risk, which is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market prices. Market prices are comprised of three types of risks: interest rate risk, foreign exchange risk and commodity price risk.

(i) Interest rate risk

The Company is exposed to interest rate risk on its borrowings. The Company mitigates exposure to interest rate risk by fixing interest rates on its notes payable with its parent company. Under Hydro Ottawa Holding Inc.'s credit facilities, any advances on its operating line would expose the Company to fluctuations in short term interest rates related to prime rate loans and bankers' acceptances as all short-term financing requirements are obtained through its parent company, which passes on its borrowing costs. The interest rate risk is deemed to be low due to the immaterial cost of its short-term borrowings. For the most part, the borrowing requirements are for a very short duration as the advances serve to bridge gaps between the cash outflow related to the monthly power bill and the inflows related to the settlements with customers and, as such, there is very limited exposure to interest rate risk.

A sensitivity analysis was conducted to examine the impact of a change in the prime rate on the Company's advances from Hydro Ottawa Holding Inc. A variation of 1% [100 basis points], with all other variables held constant, would increase or decrease the annual interest expense by approximately \$208.

Hydro Ottawa Limited

Notes to the Financial Statements
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17. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(b) Market risk [continued]

(ii) Foreign exchange risk

As at December 31, 2018, the Company has limited exposure to fluctuations in foreign currency exchange rates. The Company does purchase a small proportion of goods and services that are denominated in foreign currencies, predominately the US dollar. The impact of the fluctuation of foreign currencies on the gains or losses of accounts payable denoted in foreign currencies is not material.

(iii) Commodity price risk

The Company does not have commodity price risk due to the flow-through nature of power purchases.

(c) Credit risk

Credit risk is the risk that a counterparty will default on its obligations, causing a financial loss to the Company. Concentration of credit risk associated with accounts receivable is limited due to the large number of customers the Company services. The Company has approximately 335,000 customers, the majority of which are residential. As a result, the Company did not earn a significant amount of revenue and does not have a significant receivable from any individual customer.

The Company performs ongoing credit evaluations of its customers and requires collateral to support non-residential customer accounts receivable on specific accounts to mitigate significant losses in accordance with OEB legislation. As at December 31, 2018, the Company held security deposits related to power recovery and distribution sales in the amount of \$16,009 [December 31, 2017 – \$15,121] with respect to these customers.

The Company monitors and limits its exposure to credit risk on a continuous basis.

The Company applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade and other receivables. The expected loss rates for trade receivables are based on the payment profiles of sales over a period of 12 months before December 31, 2018 or January 1, 2018 respectively and the corresponding historical credit losses experienced within this period and other information. The historical loss rates are adjusted to reflect current and forward-looking information on macroeconomic factors affecting the ability of the customers to settle the receivables.

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17. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(c) Credit risk [continued]

On that basis, the loss allowance as at December 31, 2018 and January 1, 2018 [on adoption of IFRS 9] was determined as follows for trade and other receivables.

	Gross carrying amount \$	Weighted average loss rate	Loss allowance \$	Net carrying amount \$
December 31, 2018				
Outstanding for 30 days or less	73,286	0.00 %	-	73,286
Outstanding for more than 30 days but not more than 120 days	7,585	9.70 %	736	6,849
Outstanding for more than 120 days	4,131	35.85 %	1,481	2,650
Unbilled revenue	80,180	0.19 %	151	80,029
	165,182		2,368	162,814
January 1, 2018				
Outstanding for 30 days or less	87,913	0.00 %	-	87,913
Outstanding for more than 30 days but not more than 120 days	6,016	9.52 %	573	5,443
Outstanding for more than 120 days	2,599	66.87 %	1,738	861
Unbilled revenue	84,963	0.07 %	60	84,903
	181,491		2,371	179,120

The following table reconciles the opening and closing loss allowance for trade and other receivables:

	2018 \$
Opening loss allowance at January 1, 2018 under IFRS 9	2,371
Net remeasurement of loss allowance	1,694
Write-offs	(2,023)
Recoveries of amounts previously written-off	326
Loss allowance at December 31, 2018	2,368

Hydro Ottawa Limited

Notes to the Financial Statements
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17. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(c) Credit risk [continued]

Impairment losses on trade and other receivables are presented as net impairment losses within the statement of income. When a receivable is deemed to be uncollectible, it is written off and the expected loss allowance is adjusted accordingly. Subsequent recoveries of receivables previously provisioned or written off result in a reduction of impairment losses included in operating costs in the statement of income.

As at December 31, 2018, there were no significant concentrations of credit risk with respect to any class of financial assets or counterparties and the Company's maximum exposure to credit risk is equal to the carrying value of accounts receivable less customer deposits held.

(d) Liquidity risk

Liquidity risk is the risk that the Company will not meet its financial obligations as they come due. The Company's parent, Hydro Ottawa Holding Inc., manages all the financing and investing activities for the Company. The Company has access to credit facilities with Hydro Ottawa Holding Inc. The liquidity risks associated with financial commitments at December 31, 2018 relate to grid promissory notes, promissory notes or advances issued from its parent company, Hydro Ottawa Holding Inc., and accounts payable and accrued liabilities in the amount of \$147,854 [December 31, 2017 – \$148,806] that are due within one year.

The Company has access to a \$90,000 [December 31, 2017 – \$90,000] credit facility with Hydro Ottawa Holding Inc. as well as a \$400 [December 31, 2017 – \$600] commercial card facility. As at December 31, 2018, the Company has drawn \$27,673 [December 31, 2017 – \$12,256] in bank indebtedness and \$47,000 [December 31, 2017 – \$nil] in bankers acceptances against this credit facility [Note 10]. These credit facilities are available to the Company to help meet its financial obligations as they come due.

Hydro Ottawa Limited

Notes to the Financial Statements
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18. REVENUE FROM CONTRACTS WITH CUSTOMERS AND OTHER SOURCES

The Company's revenue breakdown is as follows:

	2018	2017
	\$	\$
Revenue from contracts with customers		
Power recovery	857,383	896,528
Distribution		
Residential service ⁽¹⁾	101,632	94,757
General service ⁽²⁾	72,847	70,531
Large users ⁽³⁾	6,571	6,112
Other		
Service work related to distribution operations	6,510	4,205
Pole attachment and duct rentals	4,440	4,316
Capital contributions from customers amortized to revenue	1,555	1,135
Account-related charges	3,303	3,251
Shared service agreements and miscellaneous	4,005	3,382
	1,058,246	1,084,217
Revenue from other sources		
Other		
Investment property rentals	904	1,165
Capital contributions from developers amortized to revenue	1,395	1,127
	1,060,545	1,086,509

⁽¹⁾ Residential service means a service that is for domestic or household purposes, including single family or individually metered multifamily units and seasonal occupancy.

⁽²⁾ General service means a service supplied to premises other than those receiving Residential Service and Large Users and typically includes small businesses and bulk-metered multi-unit residential establishments. This service is provided to customers with a monthly peak demand of less than 5,000 kW averaged over a twelve-month period.

⁽³⁾ Large users means a service provided to a customer with a monthly peak demand of 5,000 kW or greater averaged over a twelve-month period.

Hydro Ottawa Limited

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19. OPERATING COSTS

	2018 \$	2017 \$
Salaries, wages and benefits	77,285	74,021
Contracted services - distribution system maintenance	10,828	10,115
Contracted services - customer owned plant	19,340	21,662
Other electricity distribution costs	8,331	7,945
Other general and administrative expenses	31,472	30,977
Capital recovery	(31,488)	(32,829)
	115,768	111,891

20. FINANCING COSTS

	2018 \$	2017 \$
Long-term interest	21,374	18,472
Short-term interest and fees	881	738
Less: capitalized borrowing costs	(2,496)	(1,598)
	19,759	17,612

21. INCOME TAXES

Income tax expense recognized in net income comprises the following:

	2018 \$	2017 \$
Current tax expense		
Current income tax expense	4,689	3,828
Deferred tax expense		
Origination and reversal of temporary differences	8,629	9,342
Income tax expense recognized in net income	13,318	13,170

Income tax expense recognized in other comprehensive income comprises the following:

	2018 \$	2017 \$
Income tax effect of actuarial gain on defined benefit obligations	380	(229)

Hydro Ottawa Limited

Notes to the Financial Statements
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21. INCOME TAXES [CONTINUED]

The provision for income taxes differs from the amount that would have been recorded using the combined Canadian federal and Ontario statutory income tax rates. A reconciliation between the statutory and effective tax rates is provided as follows:

	2018 \$	2017 \$
Federal and Ontario statutory income tax rate	26.50 %	26.50 %
Income before income taxes	50,477	49,630
Income taxes at statutory rate	13,376	13,152
Increase (decrease) in income taxes resulting from:		
Permanent differences	48	49
Other	(106)	(31)
	13,318	13,170
Effective income tax rate	26.38 %	26.54 %

The Company, as a rate-regulated enterprise, can recognize deferred income tax assets and liabilities and related regulatory balances for the amount of deferred income taxes expected to be refunded to, or recovered from, customers in future electricity rates.

Significant components of the Company's deferred income liability are as follows:

	2018 \$	2017 \$
Property, plant and equipment and intangible assets	(30,602)	(22,170)
Employee future benefits	4,459	4,807
Other temporary differences	337	566
	(25,806)	(16,797)

Movements in the deferred income tax (liability) asset during the year were as follows:

	2018 \$	2017 \$
Deferred tax, beginning of year	(16,797)	(7,684)
Recognized in net income	(8,629)	(9,342)
Recognized in OCI related to employee future benefits	(380)	229
Deferred tax, end of year	(25,806)	(16,797)

The Company's regulatory deferral account debit balance for the amounts of deferred income taxes expected to be refunded/ (collected) to/from customers in future electricity rates is \$25,806 [2017 – \$16,797].

Hydro Ottawa Limited

Notes to the Financial Statements
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22. CHANGES IN NON-CASH WORKING CAPITAL AND OTHER OPERATING BALANCES

	2018 \$	2017 \$
Accounts receivable	16,306	7,762
Prepaid expenses	(756)	455
Accounts payable and accrued liabilities	(2,971)	580
Net change in accruals related to property, plant and equipment	2,829	(6,970)
Net change in accruals related to intangible assets	58	1,073
Customer deposits in accounts receivable	(14,586)	14,586
	880	17,486

23. CONTINGENT LIABILITIES

Purchasers of electricity in Ontario including the Company, through the Independent Electricity System Operator ['IESO'], are required to provide security to mitigate the risk of their default based on their expected activity in the market. The IESO could draw on these guarantees if the Company fails to make a payment required by a default notice issued by the IESO. A prudential support obligation is calculated based upon a default protection amount and the distributor's trading limit less a reduction for the distributor's credit rating. As at December 31, 2018, the Company had drawn standby letters of credit in the amount of \$10,000 [December 31, 2017 – \$10,000] against its credit facility to cover its prudential support obligation.

The Company participates with other electrical utilities in Ontario in an agreement to exchange reciprocal contracts of indemnity through the Municipal Electrical Association Reciprocal Insurance Exchange. The Company is liable for additional assessments to the extent premiums collected and reserves established are not sufficient to cover the cost of claims and costs incurred. If any additional assessments were required in the future, their cost would be charged to income in the year during which they occur.

The Company is party to connection and cost recovery agreements with HONI as described in Note 8. To the extent that the cost of the project is not recoverable from future transformation connection revenues, the Company is obligated to pay a capital contribution equal to the difference between these revenues and the construction costs allocated to the Company.

Various lawsuits have been filed against the Company for incidents that arose in the ordinary course of business. In the opinion of management, the outcomes of the lawsuits, now pending, are neither determinable nor material. Should any loss result from the resolution of these claims, such losses would be claimed through the Company's insurance carrier, with any unrecoverable amounts charged to income in the year of resolution.

24. COMMITMENTS

The Company has \$125,698 in total open commitments for 2019 to 2025. This includes commitments relating to a call centre service agreement, construction projects, facilities, and overhead and underground services.

25. RELATED PARTY TRANSACTIONS

Transactions with related parties occur in the normal course of business, and are transacted at the amount of consideration determined and agreed to by the related parties. Trade amounts due from and to related parties are non-interest bearing, result from normal operations and are due within one year.

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25. RELATED PARTY TRANSACTIONS [CONTINUED]

(a) Transactions with ultimate shareholder and its subsidiaries

During the year, the Company earned revenue from the sale of electricity to the City of Ottawa and its subsidiaries, which is billed at prices and terms approved by the OEB, and earned other revenue totaling \$387 [2017 – \$744]. The Company also received \$3,580 [2017 – \$2,028] in contributions relating to the upgrade and/or expansion of the Company's existing electricity distribution infrastructure.

The Company incurred \$2,433 [2017 – \$2,269] in property taxes and \$2,711 [2017 – \$563] in conservation and demand management rebate costs, and purchased \$634 [2017 – \$606] in fuel, permits and other services during the year, which is included in operating costs. The Company also incurred \$269 [2017 – \$2,872] in building permit costs and development charges, which are included in property, plant and equipment.

At December 31, 2018, the Company's accounts receivable and customer deposits include \$7,473 [December 31, 2017 – \$4,716] and \$652 [December 31, 2017 – \$2,129], respectively, while the Company's accounts payable and accrued liabilities include \$54 [December 31, 2017 – \$53] due to the City of Ottawa and its subsidiaries.

(b) Transactions with parent

During the year, the Company earned revenue of \$1,242 [2017 – \$763] relating to the provision of administrative and corporate services and interest charges. The Company also received \$nil [2017 – \$2] in contributions relating to the upgrade and/or expansion of the Company's existing electricity distribution infrastructure.

The Company incurred \$3,315 [2017 – \$3,900] in operating costs related to the purchase of administrative and corporate support services that includes compensation for certain key management personnel, and \$881 [2017 – \$738] in short-term financing costs. The Company also purchased power of \$38 [2017 – \$13].

At December 31, 2018, the Company's accounts payable and accrued liabilities include \$414 [December 31, 2017 – \$1,944] due in respect of the transactions described.

The Company incurred \$21,374 [2017 – \$18,472] in financing costs during the year on its notes payable to Hydro Ottawa Holding Inc. described in Note 14 of these financial statements.

(c) Transactions with other related parties

During the year, the Company earned revenue from the sale of electricity to other related parties, which is billed at prices and terms approved by the OEB, and earned other revenue of \$3,012 [2016 – \$2,922]. The Company also received \$691 [2017 – \$1,305] in contributions relating to the upgrade and/or expansion of the Company's existing electricity distribution infrastructure. During the year, the Company purchased power of \$6,566 [2017 – \$2,161], and incurred \$362 [2017 – \$356] in operating costs and \$nil [2017 – \$43] in costs that are included in property, plant and equipment.

At December 31, 2018, the Company's accounts receivable include \$522 [December 31, 2017 – \$591] due in respect of the transactions above while accounts payable and accrued liabilities include \$2,320 [December 31, 2017 – \$6,234] due to other related parties.

26. COMPARATIVE FIGURES

In certain instances, the 2017 information presented for comparative purposes has been reclassified to conform to the financial statement presentation adopted for the current year.

RECONCILIATION OF AUDITED FINANCIAL STATEMENTS

1. INTRODUCTION

Section 2.1.9 of the *Chapter 2 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019, requires distributors to submit a “detailed reconciliation of the financial results shown in the audited financial statements with the regulatory financial results filed in the application, including a reconciliation of the fixed assets in order to, as one example, separate non-distribution businesses.”

The following pages in this Schedule provide such reconciliation for the years 2016, 2017, and 2018.

2. 2016 RECONCILIATION

Table 1 below provides a reconciliation of Hydro Ottawa's 2016 Audited Statement of Income to information for the 2016 Historical Year that is provided in this Application.

Table 1 – 2016 Statement of Income (\$'000s)

Statement of Income	Audited 2016	IFRS 14 Adjustment ¹	Unregulated Business ²	2016 Regulated Balances
REVENUE AND OTHER INCOME				
Power Recovery Revenue	\$974,207	\$(8,968)	\$0	\$965,239
Distribution Revenue	\$165,729	\$986	\$0	\$166,715
Conservation & Demand Management Income	\$19,643	\$0	\$(19,643)	\$0
Other Revenue	\$16,941	\$0	\$(156)	\$16,785
TOTAL REVENUE AND OTHER INCOME	\$1,176,520	\$(7,982)	\$(19,799)	\$1,148,739
EXPENSES				
Purchased Power	\$968,069	\$(2,830)	\$0	\$965,239
Operating Costs	\$107,205	\$(242)	\$(18,905)	\$88,058
Amortization/Depreciation	\$41,829	\$0	\$(110)	\$41,719
Financing Costs	\$16,514	\$0	\$0	\$16,514
PILS	\$11,898	\$(8,250)	\$0	\$3,648
TOTAL EXPENSES	\$1,145,515	\$(11,322)	\$(19,015)	\$1,115,178
Net Movements in Regulatory Balances, Net of Tax	\$3,340	\$(3,340)	\$0	\$0
NET INCOME	\$34,345	\$0	\$(784)	\$33,561

¹ IFRS 14 requires a one-line separate presentation of the net movement within Hydro Ottawa's regulatory deferral accounts related to income (i.e. the debit and credit balances, net of taxes) within its statement of income.

² In accordance with OEB policies, all revenue and expenses associated with conservation and demand management ("CDM") have been excluded from the costs and revenues in this Application. In addition, revenues and expenses related to other non-utility operations, such as rental of properties not in rate base and solar energy facilities (FIT and MicroFIT), have also been excluded.

Table 2 below provides a reconciliation of Capital Assets as reported in the 2016 Audited Financial Statements to information for the 2016 Historical Year that is provided in this Application.

Table 2 – Capital Assets (\$'000s)

	Audited 2016	Unregulated Business³	2016 Regulated Balances
Property, plant and equipment	\$879,169	\$(285)	\$878,884
Intangible assets	\$62,963	\$0	\$62,963
Investment properties	\$2,149	\$(2,149)	\$0
Deferred revenue	\$(77,004)	\$0	\$(77,004)
TOTAL	\$867,277	\$(2,415)	\$864,843

³ This pertains to non-utility assets.

3. 2017 RECONCILIATION

Table 3 below provides a reconciliation of Hydro Ottawa's 2017 Audited Statement of Income to information for the 2017 Historical Year that is provided in this Application.

Table 3 – 2017 Statement of Income (\$'000s)

Statement of Income	Audited 2017	IFRS 14 Adjustment ⁴	Unregulated Business ⁵	2017 Regulated Balances
REVENUE & OTHER INCOME				
Power Recovery Revenue	\$896,528	\$(20,726)	\$0	\$875,802
Distribution Revenue	\$171,400	\$(418)	\$0	\$170,982
Conservation & Demand Management Income	\$23,976	\$0	\$(23,976)	\$0
Other Revenue	\$18,581	\$0	\$(102)	\$18,479
TOTAL REVENUE & OTHER INCOME	\$1,110,485	\$(21,144)	\$(24,078)	\$1,065,263
EXPENSES				
Purchased Power	\$910,810	\$(35,008)	\$0	\$875,802
Operating Costs	\$111,891	\$(307)	\$(23,866)	\$87,718
Amortization/Depreciation	\$44,055	\$0	\$(111)	\$43,944
Financing Costs	\$17,612	\$0	\$0	\$17,612
PILS	\$13,170	\$(9,342)	\$0	\$3,828
TOTAL EXPENSES	\$1,097,538	\$(44,657)	\$(23,977)	\$1,028,904
Net Movements in Regulatory Balances, Net of Tax	\$23,513	\$(23,513)	\$0	\$0
NET INCOME	\$36,460	\$0	\$(101)	\$36,359

⁴ IFRS 14 requires a one-line separate presentation of the net movement within Hydro Ottawa's regulatory deferral accounts related to income (i.e. the debit and credit balances, net of taxes) within its statement of income.

⁵ In accordance with OEB policies, all revenue and expenses associated with CDM have been excluded from the costs and revenues in this Application. In addition, revenues and expenses related to other non-utility operations, such as rental of properties not in rate base and solar energy facilities (FIT and MicroFIT), have also been excluded.

Table 4 below provides a reconciliation of Capital Assets as reported in the 2017 Audited Financial Statements to information for the 2017 Historical Year that is provided in this Application.

Table 4 – 2017 Capital Assets (\$'000s)

	Audited 2017	Unregulated Business ⁶	2017 Regulated Balances
Property, plant and equipment	\$963,639	\$(270)	\$963,393
Intangible assets	\$72,347	\$0	\$72,347
Investment properties	\$2,456	\$(2,456)	\$0
Deferred revenue	\$(95,383)	\$0	\$(95,383)
TOTAL	\$943,083	\$(2,726)	\$940,357

⁶ This pertains to non-utility assets.

4. 2018 RECONCILIATION

Table 5 below provides a reconciliation of Hydro Ottawa's 2018 Audited Statement of Income to information for the 2018 Historical Year that is provided in this Application.

Table 5 – 2018 Statement of Income (\$'000s)

Statement of Income	Audited 2018	IFRS 14 Adjustment ⁷	Unregulated Business ⁸	2018 Regulated Balances
REVENUE & OTHER INCOME				
Power Recovery Revenue	\$857,383	\$(4,466)	\$0	\$852,917
Distribution Revenue	\$181,050	\$(834)	\$0	\$180,216
Conservation & Demand Management Income	\$24,865	\$0	\$(24,865)	\$0
Other Revenue	\$22,112	\$0	\$(439)	\$21,673
TOTAL REVENUE & OTHER INCOME	\$1,085,410	\$(5,300)	\$(25,304)	\$1,054,806
EXPENSES				
Purchased Power	\$864,442	\$(11,525)	\$0	\$852,917
Operating Costs	\$115,768	\$162	\$(21,274)	\$94,656
Amortization/Depreciation	\$49,656	\$0	\$(119)	\$49,537
Financing Costs	\$19,759	\$0	\$0	\$19,759
PILS	\$13,318	\$(8,629)	\$0	\$4,689
TOTAL EXPENSES	\$1,062,943	\$(19,992)	\$(21,393)	\$1,021,558
Net Movements in Regulatory Balances, Net of Tax	\$14,692	\$(14,692)	\$0	\$0
NET INCOME	\$37,159	\$0	\$(3,911)	\$33,248

⁷ IFRS 14 requires a one-line separate presentation of the net movement within Hydro Ottawa's regulatory deferral accounts related to income (i.e. the debit and credit balances, net of taxes) within its statement of income.

⁸ In accordance with OEB policies, all revenue and expenses associated with CDM have been excluded from the costs and revenues in this Application. In addition, revenues and expenses related to other non-utility operations, such as rental of properties not in rate base and solar energy facilities (FIT and MicroFIT), have also been excluded.

Table 6 below provides a reconciliation of Capital Assets as reported in the 2018 Audited Financial Statements to information for the 2018 Historical Year that is provided in this Application.

Table 6 – 2018 Capital Assets (\$'000s)

	Audited 2018	Unregulated Business ⁹	2018 Regulated Balances
Property, plant and equipment	\$1,112,259	\$(254)	\$1,112,005
Intangible assets	\$66,174	\$ 0	\$66,174
Investment properties	\$ 2,338	\$(2,338)	\$ 0
Deferred revenue	\$(115,769)	\$0	\$(115,769)
TOTAL	\$1,065,002	\$(2,592)	\$1,062,410

⁹ This pertains to non-utility assets.

1 **ANNUAL REPORT AND MANAGEMENT DISCUSSION AND ANALYSIS**

2

3 The parent company of Hydro Ottawa is Hydro Ottawa Holding Inc. ("the Holding Company").
4 Appended to this Schedule are copies of the following Annual Reports and Management
5 Discussion and Analysis prepared by the Holding Company:

6

- 7 • Attachment 1-3-3(A): 2016 Hydro Ottawa Holding Inc. Annual Report
8 • Attachment 1-3-3(B): 2017 Hydro Ottawa Holding Inc. Annual Report
9 • Attachment 1-3-3(C): 2018 Hydro Ottawa Holding Inc. Annual Report



**100 YEARS OF
SERVICE**

Annual Report 2016



100 YEARS OF SERVICE.

1882

Thomas Ahearn and Warren Soper launch the Ottawa Electric Company and build Canada's first hydroelectric generating station at Chaudière Falls

1885

Ottawa is the first city in the world to have all of its street lights lit with electricity

1891

Generating Station No. 2 (today owned by Energy Ottawa) is built on Victoria Island – Canada's oldest operating hydroelectric station

1905

Public power begins, as the Municipal Electric Department of the City of Ottawa is born

1916

Ottawa Hydro is founded – the Municipal Electric Department becomes the Ottawa Hydro Electric Commission (“Ottawa Hydro”), and connects to the young provincial grid

1928

Ottawa's first electric traffic light on Sparks Street becomes operational

2003

million people
affected

A massive blackout shuts down the North Eastern United States and Ontario, highlighting the need for ongoing modernization of the North American electricity grid

2001

**Generating Station No. 2
at Chaudière Falls is
refurbished and fully
automated**

2000

Hydro Ottawa is formed through amalgamation of Gloucester Hydro, Goulbourn Hydro, Kanata Hydro, Nepean Hydro and Ottawa Hydro

1998

Ice Storm – Hydro crews work around the clock to repair widespread outages caused by more than 85 mm of freezing rain, ice pellets and snow

1978

Ottawa Hydro is the first distribution utility in Ontario to install Supervisory Control and Data Acquisition (SCADA), an important first step toward the "Smart Grid"

1950

Ottawa Hydro purchases the
Ottawa Light, Heat and
Power Company and
becomes the sole distributor
of electricity in Ottawa

2004

Another step towards the Smart Grid, as Hydro Ottawa opens a new, modernized control centre with electronic tracking of power outages, field crews and assets

2005

**Generating Station No. 4
at Chaudière Falls, built in
1900, is refurbished**

2006

The first Smart Meter is installed

2007

Energy Ottawa begins operation of a landfill-gas-to-energy facility at the Trail Road landfill, turning a potent greenhouse gas (methane) into clean renewable energy

2012

Hydro Ottawa dispatches crews to Connecticut and New Jersey to help restore power to approximately half a million residents after Hurricane Sandy

2012

Hydro Ottawa purchases three hydroelectric plants and a 38.3% interest in the Ring Dam and associated water rights at Chaudière Falls from Domtar Corporation

2015

Construction begins on a new state of the art, 29 megawatt below-ground hydroelectric facility at Chaudière Falls

2016

Hydro Ottawa becomes the sole owner of all generation assets at the interprovincial Chaudière Falls site with the purchase of a 27 megawatt station from Hydro Quebec

Our Mission

To create long-term value for our shareholder, benefitting our customers and the communities we serve

Our Organizational Values

Teamwork, Integrity, Excellence and Service

Our Vision

Hydro Ottawa – a leading partner in a smart energy future

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Message from the Chair of the Board, and President and Chief Executive Officer

On behalf of the Board of Directors and management of Hydro Ottawa, it is our pleasure to provide this 2016 Annual Report.



Jim Durrell, C.M.

Chair, Board of Directors



Bryce Conrad

President and Chief Executive Officer

As the theme of this report highlights, 2016 marked 100 years that Hydro Ottawa and its predecessor utilities have been serving our community – ever since the formation of the Ottawa Hydro Electric Commission in 1916. Some elements of our business go back even further: our Generating Station No. 2 at Chaudière Falls, Canada's oldest operating generating station, was built in 1891.

It is fitting that we are reaching this milestone as Ottawa welcomes the world to the nation's capital to celebrate Canada's 150th year. We are proud to have played our part in building the vibrant and increasingly green and sustainable national capital that will be showcased during the Ottawa 2017 celebrations.

In marking our 100th year, it is not simply the company's rich heritage and deep community roots that we wish to highlight. Rather, it is the unique mix of service and innovation that has characterized our company over time, and which continues to be at its heart. Since Ahearn and Soper built Canada's first hydro plant here in 1882, the spirit of innovation has been alive and well. Ottawa would become the first community anywhere to electrify all of its streetlights in 1885, and nearly a century later, in 1978, Ottawa Hydro became the first distribution utility in Ontario to install SCADA – an early precursor of today's emerging Smart Grid.

Service also has deep roots in our company, as anyone knows who has seen the unmistakable orange suits of our crews, out working around the clock to repair outages in extreme conditions – never more memorably than during the 1998 ice storm.

As we guide the company through a transformational period in our industry, these themes of service and innovation continue to



be guiding lights. Our five-year Strategic Direction for 2016-2020 retains a focus on what has driven our success to date – putting the customer at the centre of everything we do – while setting out a new vision for the company: to be a leading partner in a smart energy future.

2016 was the first year of implementation for this refreshed corporate strategy, and we are pleased with the progress that was made. Financial results were excellent, with a consolidated net income of \$34.8 million, yielding a record dividend payment to the shareholder of \$20.6 million. Our consolidated return on equity was 8.4 percent.

Even more important than these one-year financial results were the steps taken to position the company for future success. Through a transaction that closed in December 2016, Hydro Ottawa completed the acquisition of all generating infrastructure and water rights at the inter-provincial Chaudière Falls site. Our redevelopment and expansion of two stations on the Ontario side of the river continued to track on-time and on-budget towards a 2017 in-service date, and will cap a more than five-fold expansion of our generating capacity since 2012. We continued to renew our workforce and our infrastructure, and made good progress on replacing obsolete facilities – a key efficiency and modernization initiative. And we launched new business lines

leveraging our expertise in utility services, in areas such as cable testing and power quality monitoring.

With respect to service, we achieved our best reliability performance in the last five years, with the number and duration of outages continuing to trend downward. We also lengthened service hours at our contact centre, increased customer engagement through social media, and set the stage for new digital and mobile tools to be launched in 2017, increasing customer control and convenience.

Hydro Ottawa also continued to be an engaged, responsible corporate citizen, working to reduce our environmental impact, consulting with our stakeholders, and contributing to quality of life in our community. In this, we take our lead from our employees, whose resolve to contribute and give where they live is a constant source of inspiration.

In sum, it was a year of noteworthy achievements for Hydro Ottawa in 2016, and one that fittingly capped off 100 years of service. This company and its predecessors have played a central role in Ottawa's evolution from rough-hewn lumber town to sophisticated G7 capital. We have transformed local generation assets from the power behind pulp production, to nodes within an increasingly green and diverse energy grid. We look forward to continuing to be of service as we launch into Hydro Ottawa's second century.



Jim Durrell, C.M.
Chair, Board of Directors



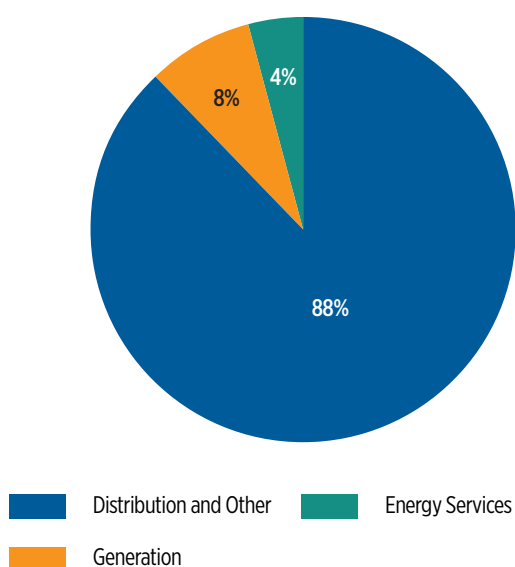
Bryce Conrad
President and Chief Executive Officer

Financial Highlights

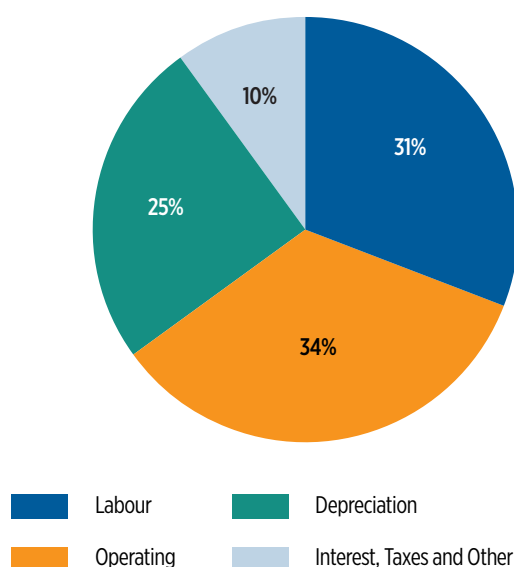
[in thousands of Canadian dollars]

	2016	2015
Operations		
Total revenue ¹	1,189,360	1,087,181
Distribution revenue ¹	166,715	159,509
Generation revenue	17,489	16,238
EBITDA ¹	103,341	96,394
Net income	34,836	32,370
Dividends	(20,600)	(19,400)
Balance Sheet		
Total assets and regulatory balances	1,630,578	1,284,363
Capital assets	1,270,135	1,075,091
Debentures	772,960	571,519
Shareholder's equity	426,775	413,397
Cash Flows		
Operating	96,317	100,557
Investing	(349,777)	(220,202)
Financing	181,696	154,515

Revenue by type ^{1,2}



Expenses by type ^{1,2}



¹ Pre-IFRS 14

² Excludes Power Recovery and Purchased Power

Progress Against Plan

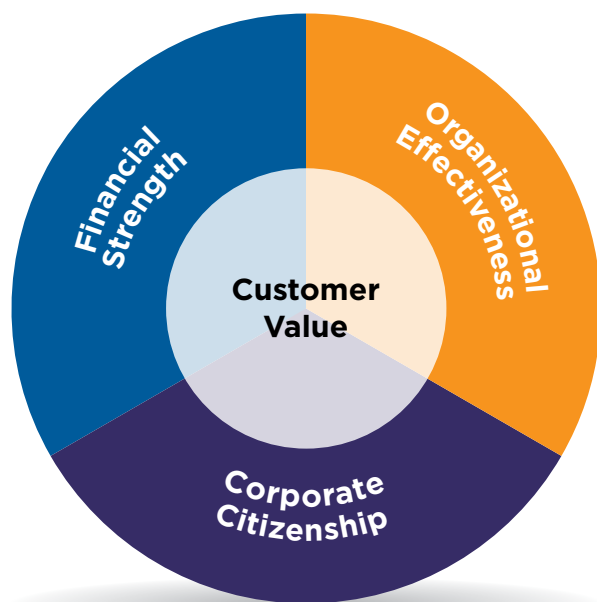
Hydro Ottawa's 2016 Annual Report is the first to report against the Company's *2016-2020 Strategic Direction*, which outlines our business strategy and financial projections for the next five years. This strategy retains the core elements of the previous strategic plan [2012-2016 Strategic Direction], while responding to an altered strategic context and reflecting important changes to the Company itself – including the scale of its renewable generation business. It also outlines a new vision for Hydro Ottawa – to be a *leading partner in a smart energy future*.

The essence of Hydro Ottawa's strategy is to put the customer at the centre of everything that we do. We believe that a sharp focus on the value we provide to our customers will generate positive

results in all areas of performance – our financial strength and business growth, our operational efficiency and effectiveness, and our contributions to the community.

Hydro Ottawa's success in the past has been achieved by focusing on four critical areas of performance – our Four Key Areas of Focus: Customer Value, Financial Strength, Organizational Effectiveness, and Corporate Citizenship. These four Key Areas of Focus and supporting strategic objectives continue to guide our activities through the current plan and form the basis of our annual reporting in the pages that follow.

As before, the area of Customer Value takes on central importance as the most important driver of our business strategy.



FOUR KEY AREAS OF FOCUS

Customer Value

Strategic Objective

We will deliver value across the entire customer experience

By providing reliable, responsive and innovative services at competitive rates

Financial Strength

Strategic Objective

We will create sustainable growth in our business and our earnings

By improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people

Organizational Effectiveness

Strategic Objective

We will achieve performance excellence

By cultivating a culture of innovation and continuous improvement

Corporate Citizenship

Strategic Objective

We will contribute to the well-being of the community

By acting at all times as a responsible and engaged corporate citizen

Financial Strength

Strategic Objective: We will create sustainable growth in our business and our earnings... by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people.

\$34.8M in net income

\$20.6M dividend to shareholder

In 2016, Hydro Ottawa continued to achieve excellent financial results, while launching new business lines and advancing key strategic projects that position the company for future growth.

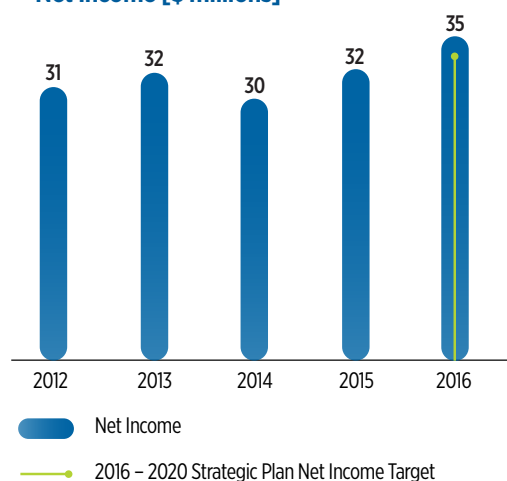
Our 2016 consolidated net income of \$34.8 million exceeds the \$34 million commitment in our 2016-2020 Strategic Direction, and is our highest to date. Notably, this was achieved while undertaking the largest capital project in the company's history – the Chaudière Falls expansion project – which will be a significant contributor to revenues in the future, but reduces revenues in the short-term while plants are shut down during construction.

With a consolidated return on equity of 8.4 percent, Hydro Ottawa continues to create value for its sole shareholder, the City of Ottawa.

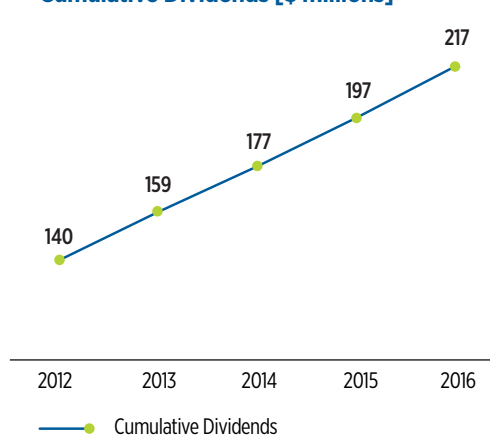
Our 2016 results yielded a dividend payment of \$20.6 million – a record annual dividend, bringing cumulative dividends to \$217 million since 2005.

In addition to these annual results, 2016 saw several important developments that position the company for future success. Hydro Ottawa acquired the 27-megawatt (MW) Centrale Hull 2 generating station from Hydro-Québec, together with the remaining one-third interest in the Ottawa River ring dam. With this acquisition, the company now owns 100 percent of the generating infrastructure and water rights at the inter-provincial Chaudière site. We also secured two 40-year power purchase agreements to sell power from the Quebec plants at Chaudière Falls into the Ontario

Net Income [\$ millions]



Cumulative Dividends [\$ millions]





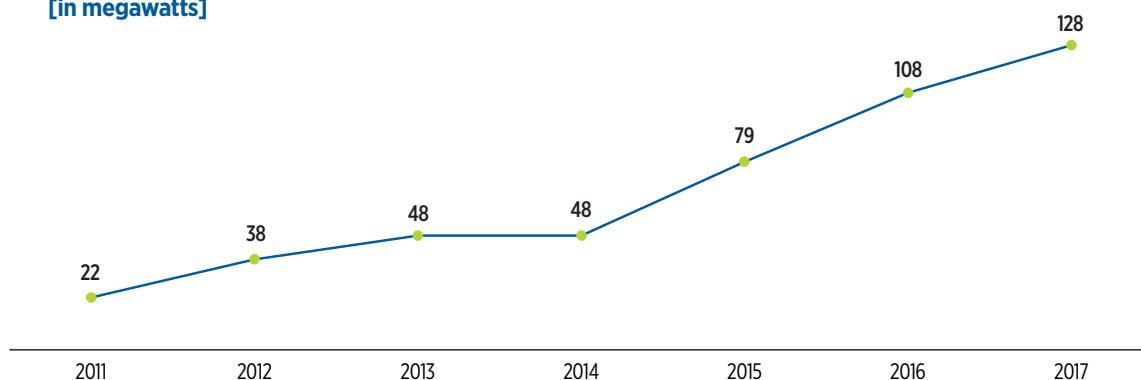
grid. This will alleviate the forecast capacity shortage in Ottawa's downtown core. Most importantly, our Chaudière Falls expansion project, involving the redevelopment and expansion of two stations on the Ontario side of the river, continued to track on-time and on-budget towards a 2017 in-service date. When finished, this project will cap a five-fold increase in Hydro Ottawa's generating capacity since 2012 – bringing the total to 128 MW – and will provide improved public access to the spectacular falls and surrounding historic site.

In keeping with our 2016-2020 Strategic Direction, Hydro Ottawa also took important steps to expand the range of energy and utility

services we provide. The City of Ottawa street light conversion project proceeded ahead of schedule, and will deliver financial benefits for both parties while reducing environmental impacts. All eight City of Ottawa solar rooftop projects were also completed.

New business lines in utility cable testing and power quality monitoring were also launched and marketed at industry events throughout 2016. Hydro Ottawa holds an exclusive license with the National Research Council for a proprietary cable testing process, and is the exclusive supplier of PQ View, a web-based platform for power quality management and analysis.

**Growth in Generation Capacity
[in megawatts]**



Customer Value

Strategic Objective: We will deliver value across the entire customer experience... by providing reliable, responsive and innovative services at competitive rates.

81% customer satisfaction rate

Highest e-billing participation in Ontario

The essence of Hydro Ottawa's business strategy is to put the customer at the centre of everything we do. In 2016, we provided highly reliable electricity service, made significant investments to maintain that standard of service, and increased our interaction and communication with customers, while keeping distribution rates as affordable as possible.

While we continue to extend the range of services we offer to customers, we know that most fundamentally they look to us for reliable electricity, where and when they need it. In 2016, we achieved our best reliability performance in the last five years, and the three-year rolling averages for both frequency and duration of outages continued to trend down.

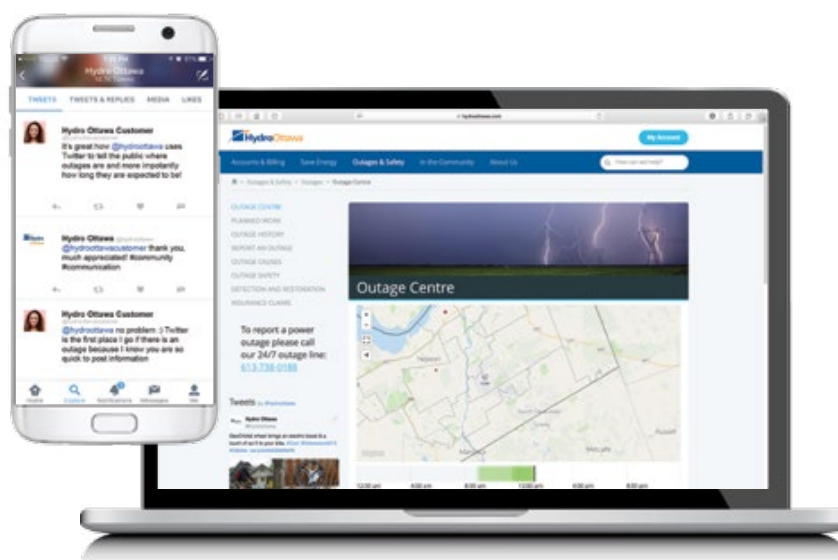
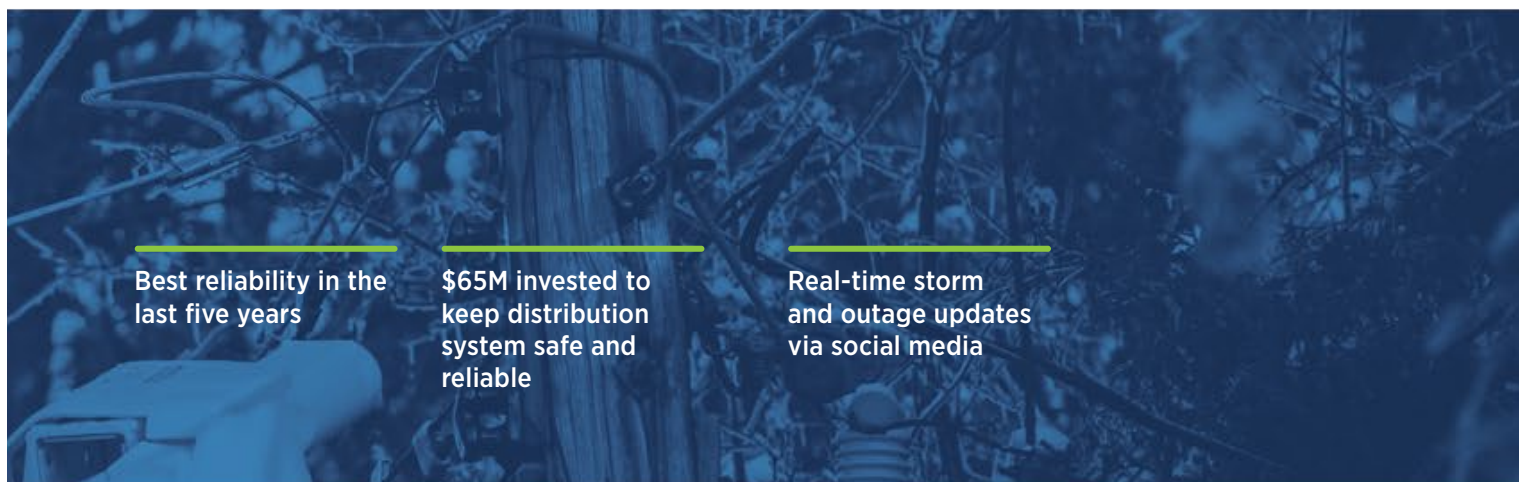
To maintain this trend, we continue to replace aging infrastructure at an accelerated pace. In line with our OEB-approved five-year plan, we invested \$65 million in 2016 to keep our system reliable, targeting aging infrastructure, localized reliability issues, and increasing station capacity. A further \$38 million was invested to expand the system to meet customer needs.

Our customer satisfaction rate was 81 percent in 2016. This is equal to the average for local electrical utilities in Ontario, but down from the 87 percent we achieved in 2015. Province-wide public debate and concern about electricity prices likely contributed to the drop.

We are working to sustain and improve customer satisfaction through our multi-year Customer Experience Strategy, and through the creation of the role of Chief Customer Officer, who will provide



company-wide leadership in this area. Service levels and hours were extended at our contact centre in 2016. We also increased our interaction and communication through social media, which has become a primary contact point for many customers, especially during storms and outages when real-time information is vital. We increased our activity and engagement levels across all major platforms, and expanded our use of video content. A mobile app is under development and scheduled for launch in 2017.



E-billing and autopay options increase customer convenience and save money – a win-win. Hydro Ottawa has the highest e-billing participation rate of any utility in Ontario, at 38 percent, resulting in annual cost savings of \$1.3 million. Our 2016 Go Paperless Campaign was our most successful ever, generating a \$102,000 donation to the CHEO Foundation for patient monitors.

We also continued to help customers manage their energy consumption and costs through conservation and demand

management (CDM) programs. Our six-year CDM plan (2015-2020) is expected to help our customers save 395 gigawatt hours of electricity. In 2016, our residential coupon program delivered 15 gigawatt-hours of savings, and we supported several major commercial projects. This includes a combined-heat-and-power project at Algonquin College that will reduce electricity consumption on the campus by about 40 percent.

Organizational Effectiveness

Strategic Objective: We will achieve performance excellence... by cultivating a culture of innovation and continuous improvement.

Safety remained our top priority

Hired 13 new apprentices

Our 2016-2020 Strategic Direction sets out an ambitious agenda for enhancing customer, shareholder and community value. Achieving these objectives will require an effective and constantly learning organization, with the right skills and organizational capacity to deliver on existing and new business lines. With this in mind, we continued to focus on three main outcomes in 2016: a safe and healthy work environment; an engaged, aligned and prepared workforce; and efficient and effective operations that enhance the customer experience.

Maintaining a healthy and safe work environment remained our top priority. Under our integrated Occupational Health, Safety and Environment [OHSE] management system, we implemented extensive education and training, field site monitoring, and internal and external program auditing with a view to continuous improvement. We provided more than 23 hours of safe work practices training per employee in 2016, with a particular focus on higher risk trades employees, who received an average of almost 35 hours of training. Our OHSE management system continued to be certified to the internationally-recognized standards of OHSAS 18001 and ISO 14001. Our generation division received the Canadian Electricity Association Vice President's Award for Safety Excellence for the second year in a row.

In 2016, we continued to implement a proactive and multi-faceted Talent Management Strategy to ensure a prepared and sustainable workforce over the next five to ten years. This includes a comprehensive succession planning process to identify and develop talent for all levels of leadership throughout the organization.

Like many other utilities, Hydro Ottawa faces challenging workforce demographics that require a concerted response. 37.5 percent of employees are eligible for retirement in the next 10 years, including





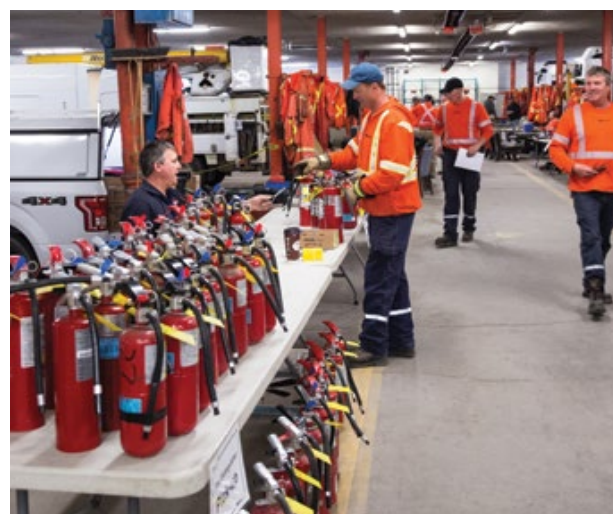
41 percent of trades and technical employees. At the same time, the company has already seen significant workforce renewal, and this process continues. Almost 20 percent of Hydro Ottawa's employees are under 30, and our in-house apprenticeship programs have produced 71 qualified journeypersons in the electrical trades since 2005. Our engineering intern program fills a similar role, enabling candidates to achieve the P.Eng. designation while developing in-house talent for mission-critical positions. In 2016, we hired 13 new apprentices and 3 new engineering interns. We also continued our partnerships with industry and educational institutions, including a renewed and expanded collaboration with Algonquin College to deliver the College's Powerline Technician programs in the eastern Ontario region for 2016-2020.

Pursuit of improved productivity remains a constant, and in 2016 we implemented a number of improvements and cost controls. These included equipment upgrades, crew location and transportation-time improvements, use of remote disconnect meters to reduce field-work, and termination of certain contractual arrangements

in favour of more cost effective alternatives. These productivity gains helped the company to contain operating, maintenance and administration (OM&A) costs to a 2 percent increase year over year.

Technology plays a key role in our efforts to enhance performance and productivity, as well as customer service. To ensure we use it effectively, the converging functions of operational and information technology have been integrated under Hydro Ottawa's Chief Information and Technology Officer. In 2016, we invested \$9.8 million in next generation technology systems to support customer service, operational efficiency, grid modernization, and cybersecurity.

We also took significant steps forward in our Facilities Renewal Plan – a key modernization and operational efficiency initiative that will see the company relocate from obsolete, end of life facilities (specifically, our main office and south and east operations centres) in 2019. The project is on track with a design-build contract now in place.



Corporate Citizenship

Strategic Objective: We will contribute to the well-being of the community... by acting at all times as a responsible and engaged corporate citizen.

Employee charitable fundraising of >\$280K

Attended more than 350 community events

In 2016, Hydro Ottawa built on its 100-year heritage as a responsible, community-focused company – one that is well-governed, open and engaged with our stakeholders, environmentally responsible, and a significant contributor to quality of life in our community.

To ensure we are visible and accessible to our stakeholders, we have stepped up our community presence in recent years. In 2016, we participated in more than 350 community events – a 34 percent increase over 2015 – and hosted our first Hydro Ottawa Community Forum. Our community activities include energy-related educational programs in schools, a Conservation Team that attends diverse community, corporate and retail events, and a wide range of other tours, presentations and open houses. We also increased our online presence and social media engagement.

We enhanced our communication with community associations and business improvement areas in 2016, launching newsletters dedicated to keeping these stakeholders up to date. Our Community Forum allowed us to consult and inform stakeholders about our CDM programs, tree trimming efforts, planned work, and low-income assistance programs.

Environmental leadership continues to be a high priority for Hydro Ottawa. In 2016, we diverted 92 percent of non-hazardous wastes (liquid and solid) away from landfill, cut our paper consumption and use of physical servers, and continued the conversion of our fleet to lower-impact vehicles. We became a charter member of carbon⁶¹³, contributing to a more sustainable National Capital Region. Through that initiative, we have baselined our greenhouse gas emissions and will target annual improvement. We have also continued to play a leading role in the City of Ottawa's Energy Evolution initiative.





Our *Brighter Tomorrows* community investment program continued to contribute to the well-being of our community in carefully chosen ways, led by our employees' resolve to "give where they live." Our annual employee charitable fundraising campaign raised \$282,000. More than \$200,000 from this campaign will be used to help build an expanded Breast Health Centre at the Ottawa Hospital – the first installment of a five-year, \$1 million commitment. Our employees also contributed to the community with their time. More than 100 employees took up the offer to spend one paid day doing volunteer work, including 41 who volunteered at Special Needs Day at the Capital Fair – a highlight of the year for many Hydro Ottawa employees.

As in past years, our *Brighter Tomorrows Fund* – a partnership with the United Way – helped frontline agencies serving the homeless in Ottawa, or those at risk of homelessness, to cut their operating costs through energy efficiency improvements. Eight agencies received \$140,000 through this Fund in 2016. We also renewed our long-standing partnership with Christie Lake Kids, supporting recreation and skills and leadership training for economically disadvantaged youth.

We were once again pleased in 2016 to have our efforts recognized with third-party awards and rankings in the areas of best employer, human resources innovation, safety and customer programs, and environmental performance.



Management's Discussion and Analysis

INTRODUCTION

The Management's Discussion and Analysis ['MD&A'] reviews Hydro Ottawa Holding Inc.'s operational performance and financial results, and should be read in conjunction with the audited consolidated financial statements and accompanying notes for the year ended December 31, 2016. On January 1, 2015, Hydro Ottawa Holding Inc. adopted International Financial Reporting Standards ['IFRS'] including early adoption of IFRS 14 Regulatory Deferral Accounts ['IFRS 14']. The accompanying consolidated financial statements are prepared in accordance with IFRS, as issued by the International Accounting Standards Board ['IASB'], and are expressed in thousands of Canadian dollars.

The MD&A contains forward-looking statements, including, but not limited to, statements as to future operating results and plans. These statements reflect management's expectations as of the date of approval of the consolidated financial statements. The impacts of risks and uncertainties may cause actual results, performance or achievements to differ materially from those projected here.

CORE BUSINESS AND STRATEGY

Company Profile

Hydro Ottawa Holding Inc. ['Hydro Ottawa', 'the Company' or 'the Corporation'] is 100 percent owned by the City of Ottawa. It is a private company, registered under the Ontario *Business Corporations Act*, and overseen by an independent Board of Directors consisting of 11 members appointed by City Council. The core businesses of the Corporation are electricity distribution, renewable energy generation and energy and utility services. Hydro Ottawa owns and operates two subsidiary companies.

Hydro Ottawa Limited, the first of these two subsidiaries, is a regulated electricity local distribution company ['LDC'] operating in the City of Ottawa and the Village of Casselman. As the third-

largest municipally-owned electrical utility in Ontario, Hydro Ottawa Limited maintains one of the safest, most reliable and cost-effective electricity distribution systems in the province, serving approximately 328,000 residential and commercial customers across 1,100 square kilometres. As a condition of its distribution licence, the Company is required to meet conservation and demand management ['CDM'] targets established by the Ontario Energy Board ['OEB']. The Company's customer base grows by an average of one percent per year.

Energy Ottawa Inc. ['Energy Ottawa'], the second of these subsidiaries, is the largest municipally-owned producer of green power in Ontario, and provides commercial energy and infrastructure management services to large energy-consuming organizations. These include turnkey energy efficiency solutions, non-destructive cable testing and smart data monitoring systems. Energy Ottawa also owns and operates six run-of-the-river hydroelectric generation plants at Chaudière Falls near Ottawa's core, along with the historic Ottawa River Ring Dam, and 10 other run-of-the-river facilities in Ontario and upstate New York. It also holds majority interests in two gas-to-energy joint ventures, which produce clean, renewable energy from landfill gas at the Trail Road and Lafèche landfill sites in Ottawa and Moose Creek, Ontario, and has 14 solar installations across the City of Ottawa. A multi-year project is under way to expand Energy Ottawa's Ontario generation facilities at Chaudière Falls. With the completion of this project, scheduled for 2017, the Company will have over 128 megawatts of installed green generation capacity – enough to power 107,000 homes.

For a complete list of entities included in Hydro Ottawa's consolidated financial results, refer to Note 1 [Description of Business and Corporate Information] in the consolidated financial statements included in this report.



Our Strategic Direction

In 2016, Hydro Ottawa issued a new strategic plan [2016-2020 Strategic Direction], outlining the Company's business strategy and financial projections for the next five years. This strategy retains the core elements of the previous strategic plan [2012-2016 Strategic Direction], while responding to an altered strategic context and reflecting important changes to the Company itself – including the scale of its renewable generation business. It also outlines a new Vision for Hydro Ottawa – to be a *leading partner in a smart energy future*.

Strategy

The essence of Hydro Ottawa's strategy is to put the customer at the centre of everything we do. Reorienting our business around the customer was the primary goal of our 2012-2016 Strategic Direction, and customer centrality continues to drive our business strategy. We believe that a sharp focus on the value we provide to our customers will generate positive results in all areas of performance – our financial strength and business growth, our operational efficiency and effectiveness, and our contributions to the well-being of our community.

A core premise of our 2016-2020 Strategic Direction is that the electricity service model is in the midst of significant transformation – taking on a more decentralized, customer-centric, technologically advanced and environmentally sustainable form. The transition to a more customer-driven and customer-centric model of electricity will present opportunities for energy providers that are able to innovate, and challenges for those that fail to adapt. Our strategy for responding to this emerging landscape involves eight core elements:

- Taking customer experience to the next level;
- Continuing to achieve strategic growth, including continued growth in our renewable energy business, evaluating opportunities to grow our electricity distribution business, and expanding the range of services we provide;
- Ensuring access to capital for growth;
- Making sure we have the right skill sets and organizational capacity to deliver on existing and new business lines;
- Continuing to enhance operational performance, including productivity and safety;
- Delivering on critical projects such as the Chaudière expansion project;
- Continuing to build public confidence and trust; and
- Being ready to embrace change and disruption in our industry.

Our aim is to be the trusted energy advisor for our customers – large and small – and our community. As the energy needs and options of our customers and our community evolve, and as signature projects and developments proceed, Hydro Ottawa will play a leading role in helping our City to transition to a smart energy future.

We will also continue to grow shareholder value, maintaining a focus on strategic business growth within our core areas of strength. Our growth agenda involves four basic components:

- **Electricity Distribution:** continuing to evaluate opportunities to increase our distribution service territory;
- **Renewable Generation:** increasing the supply of clean energy for customers and earnings for our shareholder by making smart investments in renewable generation;

- **Energy Services:** providing innovative solutions to help consumers, businesses and communities meet their energy objectives, through energy management, conservation, efficient street lighting, energy generation, energy storage, district energy, and demand response opportunities, among others; and
- **Utility Services:** leveraging our assets and expertise to help other utilities to enhance the value they provide, creating new revenue streams and economies of scale.

Taken as a whole, we believe this strategy for the Company's future presents a balanced program for solid performance, adaptation to a changing business environment, and sustainable and profitable business growth.

Mission, Vision & Guiding Principles

OUR MISSION – *To create long-term value for our shareholder, benefitting our customers and the communities we serve*

Hydro Ottawa is both a community asset and an investment for our shareholder, the City of Ottawa. As a community asset, our purpose is to provide efficient and reliable services and a first-class customer experience to our customers, and to continue to be a strong strategic partner with the City, helping to deliver on its economic development and environmental agendas. As an investment, our purpose is to provide stable, reliable and growing returns, and to increase shareholder value both in the short- and long-term.

OUR VISION – *Hydro Ottawa – a leading partner in a smart energy future*

OUR GUIDING PRINCIPLES

Hydro Ottawa is committed to creating long-term value in a manner that will withstand the test of public scrutiny and inspire confidence and trust. To that end, we strive to achieve excellent operating and financial results while abiding by professional standards of conduct. We are guided not only by legal obligations, but also by best governance and business practices, and standards established by independent agencies. These expectations provide the foundation for our commitment to all of our stakeholders, and are reflected in our organizational values, our Code of Business Conduct, and our operating policies and procedures.

OUR ORGANIZATIONAL VALUES

At Hydro Ottawa we are committed to an organizational environment that fosters and demonstrates ethical business conduct at all levels and reflects our shared values of teamwork, integrity, excellence and service. Every employee must lead by example in this endeavour.

OUR COMMITMENTS TO OUR STAKEHOLDERS

Hydro Ottawa takes into account the interests of all our stakeholders including employees, customers, suppliers, our shareholder, and the communities and environment in which we operate.

Employees

The quality of our workforce is our strength and we will strive to hire and retain the best-qualified people available and maximize their opportunities for success. We are committed to maintaining a safe, secure and healthy work environment enriched by diversity and characterized by open communication, trust, and fair treatment.

Customers

Our continued success depends on the quality of our customer interactions, and we are committed to delivering value across the entire customer experience. We are honest and fair in our relationships with our customers, and provide reliable, responsive and innovative products and services in compliance with legislated rights and standards for access, safety, health and environmental protection.

Suppliers and Contractors

We are honest and fair in our relationships with our suppliers and contractors and purchase equipment, supplies and services on the basis of merit, with a preference for local procurement. We pay suppliers and contractors in accordance with agreed terms, encourage them to adopt responsible business practices, and require them to adhere to our health, safety and environment standards when working for Hydro Ottawa.

Community and the Environment

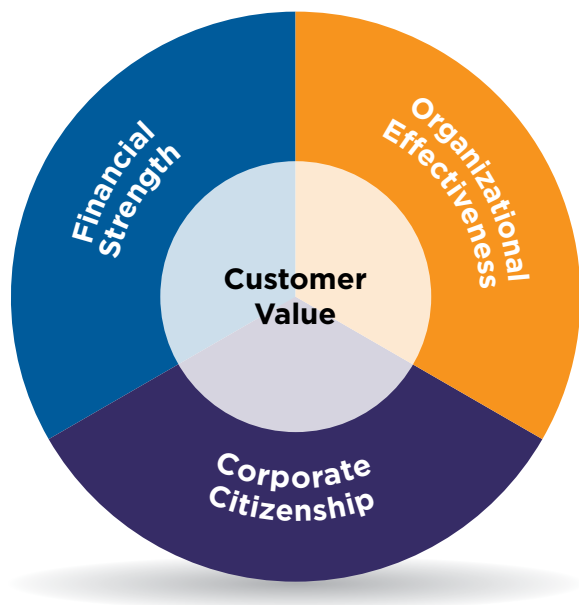
We are committed to being a responsible corporate citizen and will contribute to making the communities in which we operate better places to live and do business. We are sensitive to the community's needs, and dedicated to protecting and preserving the environment where we operate.

Shareholder and Other Suppliers of Finance

We are financially accountable to our shareholder and to the institutions that underwrite our operations, and communicate to them all matters material to our organization. We protect our shareholder's investment, and manage risks effectively. We communicate to our shareholder all matters that are material to an understanding of our corporate governance.

FOUR KEY AREAS OF FOCUS

Hydro Ottawa's success in the past has been achieved by focusing on four critical areas of performance – our four Key Areas of Focus. In each of these areas, we have set one overarching objective:



CUSTOMER VALUE: We will deliver value across the entire customer experience by providing reliable, responsive and innovative services at competitive rates;

FINANCIAL STRENGTH: We will create sustainable growth in our business and our earnings by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people;

ORGANIZATIONAL EFFECTIVENESS: We will achieve performance excellence by cultivating a culture of innovation and continuous improvement; and

CORPORATE CITIZENSHIP: We will contribute to the well-being of the community by acting at all times as a responsible and engaged corporate citizen.

These four areas of focus and strategic objectives will continue to guide our activities through the current plan. As before, the area of Customer Value takes on central importance as the most important driver of our business strategy.

Electricity Industry Overview

Within the broader electricity sector, different entities are responsible for generating electricity, transmitting it, delivering it to customers' homes and businesses, directing grid and market operations, and overseeing and regulating the system. These entities are different in the three markets where Hydro Ottawa operates: Ontario, Québec and upstate New York.

System Operators

The *Independent Electricity System Operator* ['IESO'] connects all participants in Ontario's power system – generators that produce electricity, transmitters that send it across the province, retailers that buy and sell it, industries that use it in large quantities, and local distribution companies that deliver it to homes and businesses. The IESO forecasts electricity demand throughout the province every five minutes and collects offers from generators to provide the required amount of electricity to the province's electricity market. Customers buying directly from the market can therefore see prices fluctuate based on current supply and demand, and respond accordingly. The IESO monitors the system, identifies what is required to maintain reliability in the future, and publishes its findings in regular reports. It also coordinates emergency preparedness for the province's electricity system.

The *New York Independent System Operator* ['NYISO'] is at the heart of New York's electricity system, monitoring the grid and power infrastructure, administering and monitoring the wholesale electricity markets, and planning for the state's energy future. The NYISO was created to provide fair and open access to the electrical grid. New York is divided into 11 electricity zones and, within each, the NYISO is responsible for scheduling generation and load, contracting for the services necessary to maintain grid reliability, and scheduling imports and exports. The NYISO is also responsible for publishing current demand [or load] every five minutes. Hydro Ottawa's New York State assets are located in the NYISO Zone E – Mohawk Valley.

Hydro-Québec operates the entire electricity system in Québec through various divisions; the division that performs the system operator role is Hydro-Québec TransÉnergie.

Electricity Generation

Electricity is created by generating stations — hydroelectric, nuclear, fossil-fueled, wind, biomass and biogas, and solar power – as well as small-scale ‘distributed energy’ installations [mainly renewables] at or near the end-user’s location. Some facilities operate continuously [e.g., nuclear and large hydroelectric stations], while others operate intermittently [e.g. wind power], or can start up or slow down as required to follow demand fluctuations [e.g. natural gas stations]. Hydro Ottawa, through its subsidiary, Energy Ottawa, has a fleet of hydroelectric, landfill gas-to-energy and solar generating stations, and is Ontario’s largest municipally-owned producer of green power.

Electricity Transmission

Electricity is transmitted from generating stations to local distribution companies and large industrial customers through a high-voltage network of transformer stations, transmission towers and wires. In Ontario, the transmission network is primarily operated by Hydro One, while in Québec it is operated by Hydro-Québec TransÉnergie. In New York State, the transmission system is operated by a number of private and public entities such as National Grid and the New York Power Authority, these are collectively referred to as New York Transmission Owners.

Electricity Distribution

After transmission, electricity is distributed at lower voltages to homes, businesses, hospitals, schools, factories, and farms by LDCs such as Hydro Ottawa Limited. LDCs deal directly with electricity customers, maintain their community’s system of electricity wires, and create and implement electricity conservation programs for customers. LDCs are the primary electricity billing agent collecting all electricity charges. Hydro Ottawa Limited is a municipally-owned LDC that operates in the City of Ottawa and the Village of Casselman.

While it is always an LDC that delivers electricity through its distribution lines to a home or business, electricity customers have the choice of buying their electricity from their LDC or an electricity retailer. Most Ontario customers choose to buy from their LDC. New York residents and businesses can also choose their electricity supplier while retaining access to the same delivery infrastructure.

Regulatory Framework

In Ontario, the Ministry of Energy [Ministry] sets the overall policy for the energy sector, guided by relevant laws and regulations. The Ministry oversees the IESO and the Ontario Energy Board [OEB], which regulates the energy sector as set out primarily in three statutes – the Ontario Energy Board Act, 1998 [‘OEB Act’]; the Electricity Act, 1998; and the Energy Consumer Protection Act, 2010. The OEB Act establishes the authority of the OEB to approve and fix all rates for the transmission and distribution of electricity in Ontario, and to set standards of service, conduct and reporting that must be adhered to as a condition of being licensed.

In the United States, electric utilities and independent power producers are regulated at both the federal and state levels. Under the Federal Power Act, the Federal Energy Regulatory Commission [‘FERC’], an independent agency within the U.S. Department of Energy, regulates the transmission and wholesale sale of electricity in interstate commerce. Unless otherwise exempt, any entity that owns or operates facilities used for the wholesale sale or transmission of electric energy in interstate commerce is a public utility subject to FERC’s jurisdiction. NYISO is also under the oversight of the FERC.

In Québec, the electricity sector is regulated by La Régie de l’énergie [the Régie], an independent agency. The Act Respecting the Régie de l’énergie grants the Régie de l’énergie exclusive authority to determine or modify the rates and conditions under which electricity is transmitted and distributed by Hydro-Québec.

Rates

Hydro Ottawa Limited recovers its costs from customers through electricity distribution rates. These include the costs to:

- Design, build, and maintain overhead and underground distribution lines, poles, stations and local transformers;
- Operate local distribution systems, including smart meters; and
- Provide customer service and emergency response.

Costs and rates vary from one distributor to another, depending on factors such as the age and condition of assets, geographic terrain and distance, population density and growth and the proportion of residential to commercial and industrial consumers.



Hydro Ottawa Limited's distribution charge to its customers represents less than 20 percent of the total amount the customer pays. Hydro Ottawa collects the whole amount, but keeps only this portion. The other 80 percent is passed on, without mark-up, to regulators, the provincial government, and the other companies responsible for generating and transmitting electricity.

Hydro Ottawa Limited's distribution rates are set by the OEB, based on applications submitted for rate changes. For more information on the rate-setting framework and Hydro Ottawa Limited's rates, see Note 3(e) [Significant Accounting Policies – Regulation] to the consolidated financial statements included in this report.

Energy Ottawa's hydroelectric generation rates drive its generation revenues, and are dependent on the contractual arrangement in place for each of its generating facilities. For hydroelectric facilities delivering power to Québec and Ontario, Energy Ottawa operates under fixed power purchase agreements with Hydro-Québec and the IESO respectively, whereby a "base contractual rate" is determined at the outset of each agreement. In Ontario, an indexing factor is applied on an annual basis until the completion of the contract term while for Québec facilities the rate is locked in for the first two years after which the rate will fluctuate based on applicable market rates. For hydroelectric stations located in upstate New York, Energy Ottawa's power purchase agreements [all of which are with the Niagara Mohawk Power Corporation – a subsidiary of National Grid plc] are currently market-based. As a result, the rates that drive generation revenues from these stations fluctuate depending on the economic forces that impact electricity pricing in the area.

Capability to Deliver Results

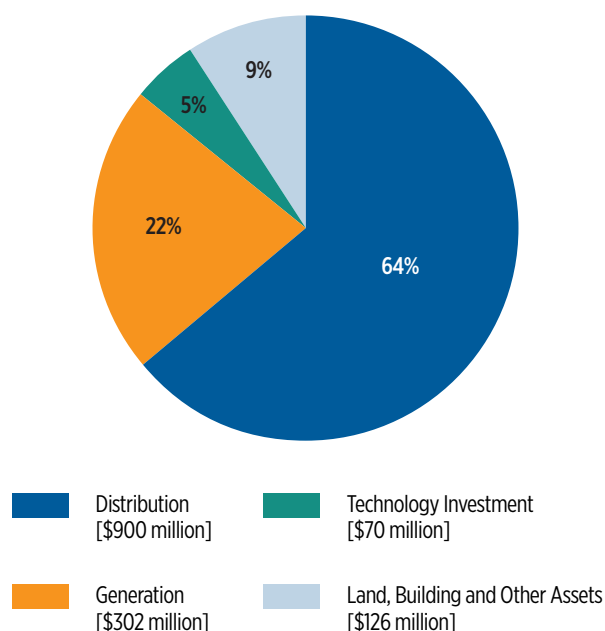
Hydro Ottawa's capability to achieve the objectives set out in its strategic direction is a function of its expertise, assets, both tangible and intangible, systems and capital resources across the following areas.

Assets

Hydro Ottawa's gross asset base is \$1.4 billion, with significant ongoing investments in distribution and generation infrastructure and technology systems. Like all utilities, Hydro Ottawa is affected by the industry-wide reality of aging infrastructure, and continues to manage this through increased infrastructure investments and a detailed Distribution System Plan to target spending where it will have the most benefit. In 2016, the Corporation invested \$65 million to maintain its distribution system and a further \$38 million to expand the system to meet customer needs [see 'Investing Activities' for more details]. These investments are having the desired impact, with electricity service reliability continuing to improve system wide. Hydro Ottawa has also recognized the need for a replacement of core work and operational centres that are at the end of their useful life. In 2016, work progressed on the Company's Facilities Renewal Project, including the contract award to the design builder. Hydro Ottawa also continues to grow its renewable generation infrastructure with \$84 million invested in 2016.

- **Electricity Distribution Assets** – For more than 100 years, Hydro Ottawa and its predecessor companies have delivered a reliable supply of electricity to homes and businesses.
 - › Service Area – 1,116 square kilometers
 - › Circuitry – 5,609 kilometers
 - › Substations – 88
 - › Transformers – 45,414
 - › Poles – 49,247
- **Renewable Generation Assets** – Largest municipally-owned producer of green power in Ontario with 128 megawatts [upon completion of Chaudière Falls expansion] of installed generation capacity, enough to power 107,000 homes.
 - › Run-of-the-River Hydroelectric Generating Stations – 16
 - › Landfill Gas-to-Energy Plants – 2
 - › Solar Installations – 14

Gross Tangible and Intangible Assets



Workforce

A highly skilled, properly trained and knowledgeable workforce, and a safe and healthy work environment are essential to Hydro Ottawa's continued success. Achieving the company's strategic objectives will require an effective and constantly learning organization, with the right skill sets to deliver on existing and new business lines.

Hydro Ottawa employed approximately 720 people at the end of 2016 across the enterprise; Hydro Ottawa Limited accounted for 89 percent of this workforce.

Like many other utilities, Hydro Ottawa faces challenging workforce demographics that require a concerted response. The Company has put in place a comprehensive and integrated talent management strategy aimed at anticipating and meeting talent needs, through planning, talent attraction and acquisition, effective deployment of resources, and performance management and development. This includes:

- Extensive in-house apprenticeship programs, and an engineering intern training and development program, to ensure the

availability of qualified journeypersons and professional engineers. Our programs continued to grow in 2016 with 13 new apprentices hired (bringing the total to 39, or 22 percent of our trades workforce). Fourteen apprentices reached journeyperson status in 2016.

- Programs for succession planning and management, as well as training and development, to ensure that there are qualified employees in the talent pipeline for key positions.
- A proactive approach to knowledge management and knowledge transfer for key positions, including an older worker and retiree engagement strategy so that work is seamlessly transitioned from our veteran workforce to the next generations.
- A Diversity Plan, which fosters an inclusive culture that leverages diversity and enhances employee engagement and innovation.
- Partnerships with industry and educational institutions to support the implementation of the talent management strategy. These include, most notably, collaborations with Algonquin College to deliver the College's Powerline Technician programs in the eastern Ontario region, and with Carleton University's Sustainable and Renewable Energy Engineering Department for the establishment of a smart grid laboratory. The latter fosters innovative research on electrical power systems and promote the training of engineers in the smart grid environment.

The Company's employee compensation programs continued to support a high-performance culture, and include market-driven and performance-based components to attract and retain key employees.

As our business is changing, the profile of our workforce is changing as well. It is increasingly diverse in age, skills, background, belief, ethnicity, sexual orientation, and in many other ways. We aim to create a thriving and respectful workplace for all.

A fundamental component of Hydro Ottawa's commitment to operating efficiently and effectively is the very high priority we place on protecting the health and safety of our employees and our community. Hydro Ottawa has established an integrated health, safety and environment management system that has achieved and maintained certification to the international standards of Occupational Health and Safety Assessment Series 18001 and International Organization for Standardization 14001 since November 2007.

Systems and Processes

Hydro Ottawa has made significant investments in technology systems to enhance the Company's effectiveness. These include customer information and billing systems, advanced metering, and information and operational technologies such as geographic information systems, system control, outage management, and mobile workforce management systems. We take seriously the security of our critical infrastructure against cyber threats is a very important priority for Hydro Ottawa, and we collaborate proactively with government, regulators and private sector partners across North America to manage this risk. Our technology decisions continue to be based on three basic considerations: enhancing service to our customers; creating efficiencies that will increase our competitiveness; and improving functionality to be more agile and resilient in the face of industry disruption.

Hydro Ottawa is also focused on maximizing the efficiency and effectiveness of our operations by optimizing productivity at every opportunity. Examples of initiatives undertaken in 2016 include:

- Introduced innovative equipment into our fleet to enable crews to work more safely and efficiently on distribution assets located in rear lots;
- Installed 2,500 remote disconnect meters eliminating the need to dispatch vehicles and helping to reduce our carbon footprint;
- Initiated online payment options for service requests;
- Completed the procurement of a new customer contact centre to increase service levels and reduce annual costs; and
- Continued implementation of a Mobile Workforce Management system [a comprehensive scheduling and dispatch tool] that improves resource productivity, reduces overtime costs, and increases the ability to meet customer service commitments.

Capital Resources

Liquidity and Capital Resources

The Corporation's primary sources of liquidity and capital resources are operating activities, banking facilities, and proceeds from bond issuances as and when required. Liquidity and capital resource requirements are primarily for: capital expenditures to maintain the Hydro Ottawa Limited electricity distribution system; investments in generation assets; cost of power; interest expense; and prudential requirements.



On July 12, 2016, the Corporation renewed its credit facility for \$341 million. The Corporation may use up to \$75 million of the facility for general operating requirements and annual capital expenditures. A further \$100 million, three-year revolving term credit line remains available for larger capital expenditures and acquisitions. To ensure appropriate liquidity, an additional \$150 million, one-year revolving term credit line was also placed to provide short-term bridge financing for large capital projects and acquisitions. In 2016, the \$150 million facility was mainly used to finance the Chaudière expansion project until long-term financing was placed.

Capital expenditure requirements in excess of the credit facility, if any, will be funded through future bond issuances. The utility sector continues to be a very attractive investment in the capital markets with strong demand across all bond tenures. This provides the Corporation access to significant market capacity to support its ongoing investment requirements. The Corporation's existing corporate bond profile is very strong with a weighted average maturity of 20 years at an average weighted cost of 3.49 percent. The Corporation demonstrated its ability to raise financing again in 2016 with the issuance of a \$204 million non-recourse project bond for the expansion at Chaudière Falls at a rate of 4.08 percent. For additional details regarding the Corporation's sources of liquidity and capital resources, see Notes 13, 16 and 17 to the consolidated financial statements.

Credit Ratings

On May 27, 2016 Dominion Bond Rating Service Inc. ['DBRS'] reaffirmed Hydro Ottawa's rating at 'A' with a stable trend during the year. On June 21, 2016, DBRS commented that the mid-year acquisition of a 27 megawatt hydroelectric generation station at Chaudière Falls, and the remaining 33 percent interest in the Ring Dam from Hydro-Québec, did not warrant any negative rating action, but noted that Hydro Ottawa's business risk profile may be negatively affected if earnings from the non-regulated segment exceeds 20 percent. On August 25, 2016, Standard & Poor's ['S&P'] lowered its rating from 'A-' to 'BBB+' with a stable outlook due to the increasing proportion of forecast cash flows coming from the non-regulated segment following the acquisition of the Hydro-Québec generation assets. S&P noted that Hydro Ottawa continues to have an excellent business risk profile due to its operation under a transparent, consistent, and predictable regulatory framework for electricity distribution, its large and diverse customer base, and the quality of its government-backed power purchase agreements for generation assets, which provide steady, predictable and stable cash flows. The majority of Hydro Ottawa's generation operations [82 percent] are supported by fixed rate long-term power purchase agreements. As demonstrated by the \$204 million project financing raised on September 7, 2016, this downgrade has not impaired the Corporation's access to capital.

Results – Progress against Plan

To ensure Hydro Ottawa makes steady progress towards achieving the corporate strategy set out in our 2016-2020 Strategic Direction, the Company has set enterprise strategic objectives in each

of its four key areas of focus, and establishes Board-approved performance goals in relation to these strategic objectives each year. The table below summarizes Hydro Ottawa's performance in relation to its goals for 2016.

KEY AREAS OF FOCUS	ENTERPRISE STRATEGIC OBJECTIVES	2016 PERFORMANCE GOALS	2016 PERFORMANCE HIGHLIGHTS
FINANCIAL STRENGTH	We will create sustainable growth in our business and our earnings <i>by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people</i>	<p>Grow revenues from new sources</p> <p>Enhance / protect revenues from existing business lines</p>	<ul style="list-style-type: none"> Achieved consolidated net income of \$34.8M, exceeding 2016-2020 Strategic Direction commitment by \$0.8M Increased our generation capacity by 27 megawatts [MW] with the acquisition of a generating station from Hydro-Québec Chaudière Falls expansion project continued on schedule and on budget <ul style="list-style-type: none"> > Largest project in the Company's history > Will bring total generation capacity to 128 MWs [500% growth since 2012] > Secured 40-year non-recourse project bond financing at 4.08% Secured two 40-year power purchase agreements [PPAs] to sell power from Chaudière Falls [Québec plants] into the Ontario grid <ul style="list-style-type: none"> > Will alleviate the forecast capacity shortage in Ottawa's downtown core 82% of our 128 MW generation capacity is contracted through long-term PPA rates All eight City of Ottawa solar rooftop projects met their IESO commercial operation dates Continued to diversify revenue streams – launched Cable Testing and Power Quality businesses
CUSTOMER VALUE	We will deliver value across the entire customer experience <i>by providing reliable, responsive and innovative services at competitive rates</i>	<p>Assist customers in managing their energy consumption and electricity costs</p> <p>Deliver on customer expectations for service quality and responsiveness</p> <p>Maintain overall distribution system reliability</p>	<ul style="list-style-type: none"> Achieved our best reliability results in the past five years, and invested \$65M to keep our distribution system safe and reliable Extended the hours and increased the service levels of our customer contact centre Ranked 18th out of 71 utilities in terms of lowest operating costs per customer 81% customer satisfaction rate – industry context continues to put pressure on customer satisfaction numbers, as public concern over electricity prices is high Highest e-billing participation in Ontario [38% of customers], saving \$1.3M per year Increased our social media presence – including real-time information during storms and outages

KEY AREAS OF FOCUS	ENTERPRISE STRATEGIC OBJECTIVES	2016 PERFORMANCE GOALS	2016 PERFORMANCE HIGHLIGHTS
ORGANIZATIONAL EFFECTIVENESS	We will achieve performance excellence <i>by cultivating a culture of innovation and continuous improvement</i>	<p>Continue to enhance operational performance and productivity</p> <p>Maintain leading health and safety record</p> <p>Enhance organizational and employee capability</p>	<ul style="list-style-type: none"> • Safety remained our top priority – provided an average of 23 hours of safe work practices training for all employees • Continued our heavy focus on productivity • Invested \$9.8M in next generation technology systems to support customer service, operational efficiency, grid modernization, and cybersecurity • Maintained certifications for our Occupational Health, Safety and Environment Management System to internationally-recognized standards • Substantial progress on Facilities Renewal Project, including selection and contracting of the design builder • Continued our workforce renewal – hired 13 new apprentices without increasing position complement, and implemented comprehensive talent management programs
CORPORATE CITIZENSHIP	We will contribute to the well-being of the community <i>by acting at all times as a responsible and engaged corporate citizen</i>	<p>Enhance our brand image in the community and the industry</p> <p>Continue to improve our environmental performance and reduce our impact on the environment</p>	<ul style="list-style-type: none"> • Provided community support through our Community Investment Program, employee volunteer efforts, and delivering provincial programs in our community • Raised over \$282,000 as part of our 2016 Employee Charitable Fundraising campaign • Increased our engagement with the community <ul style="list-style-type: none"> > Attended more than 350 community events > Launched newsletters for Community Associations and BIAs > Hosted our first Community Forum > Online engagement increased by 85%; Twitter followers rose by 18%, Facebook by 174% and LinkedIn by 30% • Became a catalyst member of carbon⁶¹³, contributing to a more sustainable National Capital Region • Diverted 92% of non-hazardous solid and liquid waste away from landfill • Received 12 awards for performance excellence, including as one of Canada's Greenest Employers [6th year] and one of the National Capital Region's Top Employers [8th year]

Financial Results

The selected consolidated financial results of the Corporation presented below should be viewed in conjunction with the audited consolidated financial statements and accompanying notes for the year ended December 31, 2016.

Consolidated Statement of Income [Summary]

As a result of the adoption of International Financial Reporting Standards ['IFRS'] in 2015 – including the early adoption of IFRS 14 – several of the Corporation's line items in its audited consolidated statement of income are subject to high volatility. Specifically, IFRS 14 requires a one-line separate presentation of the net movement within the Corporation's regulatory deferral accounts related to income [i.e. the debit and credit balances, net of taxes] within its consolidated

statement of income. This net movement of regulatory balances primarily arises when there is a timing difference between the cost of power purchased and the cost of power recovered. This difference is recorded as a settlement variance, representing future amounts to be recovered from or refunded to customers through future billing rates approved by the OEB. Consequently, the Corporation's power recovery and purchased power line items can be significantly impacted by these timing differences. For the purposes of the analysis and interpretation of financial variances presented below, management has identified and excluded impacts resulting from the adoption of IFRS 14, and used 'pre-IFRS 14' results as the basis for its discussion unless otherwise noted. Management believes this more accurately represents the true financial performance of the Corporation, given its rate-regulated environment as prescribed by the Ontario Energy Board ['OEB'].

[in thousands of Canadian dollars]

	2016	IFRS 14 Impact	2016 (Pre- IFRS 14)	2015	IFRS 14 Impact	2015 (Pre- IFRS 14)	Change (Pre- IFRS 14)
Revenue							
Power recovery	974,207	(14,021)	960,186	890,116	(22,365)	867,751	92,435
Distribution sales	165,729	986	166,715	162,037	(2,528)	159,509	7,206
Other	62,459	–	62,459	59,921	–	59,921	2,538
	1,202,395	(13,035)	1,189,360	1,112,074	(24,893)	1,087,181	102,179
Expenses							
Purchased power	966,072	(7,883)	958,189	865,178	(154)	865,024	93,165
Operating costs	128,072	(242)	127,830	126,138	(375)	125,763	2,067
	1,094,144	(8,125)	1,086,019	991,316	(529)	990,787	95,232
Earnings before Interest, Taxes, Depreciation and Amortization [EBITDA]	108,251	(4,910)	103,341	120,758	(24,364)	96,394	6,947
Depreciation and amortization	49,642	–	49,642	42,632	–	42,632	7,010
Financing costs, interest income and taxes	28,172	(8,250)	19,922	33,458	(11,557)	21,901	(1,979)
Share of profit from joint ventures	(1,059)	–	(1,059)	(509)	–	(509)	(550)
	76,755	(8,250)	68,505	75,581	(11,557)	64,024	4,481
Net income	31,496	3,340	34,836	45,177	(12,807)	32,370	2,466
Net movements in regulatory balances, net of tax	3,340	(3,340)	–	(12,807)	12,807	–	–
Net income after net movements in regulatory balances	34,836	–	34,836	32,370	–	32,370	2,466

Net Income

Net income increased by approximately \$2.5 million or 8 percent in 2016. This increase was primarily due to a \$7.2 million increase in distribution sales, a \$2.5 million increase in generation and other revenue, and a \$3.1 million decrease in income tax expense. These positive variances were partially offset by increases in operating costs and in depreciation and amortization of \$2.1 million and \$7.0 million, respectively, and by a \$0.8 million decrease in interest income.

Revenue

Revenue is earned from electricity distribution, renewable energy generation, energy management and utility services, as well as from conservation and demand management ['CDM'] programs and sundry activities. In 2016, Hydro Ottawa's total revenue amounted to approximately \$1.2 billion, an increase of 9 percent.

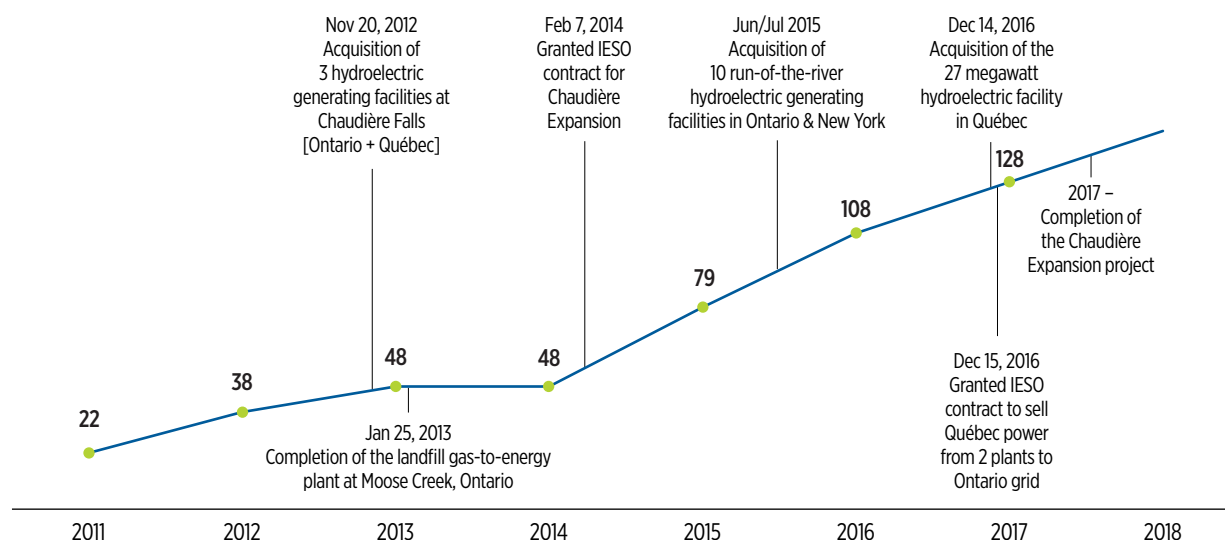
The largest component of Hydro Ottawa's total revenue is the cost of power recovered from customers through provincially-established rates. The cost of power is a flow-through amount, which poses limited risk to Hydro Ottawa's financial performance. However, variances arise between the cost of power purchased and the cost of power recovered, due to timing differences in invoicing from the Independent Electricity System Operator ['IESO'] for the former, and receipt of payment from customers for the latter. This difference is recorded as a settlement variance. Hydro Ottawa Limited's power recovery revenue increased by \$92.4 million,

mainly due to increased commodity and global adjustment rates included in purchased power costs.

Distribution sales are recorded based on OEB-approved distribution rates, set at a level intended to recover the costs incurred by Hydro Ottawa Limited in delivering electricity to customers, and they include revenue related to the collection of OEB-approved rate riders. 2016 marks the first year of rates approved under Hydro Ottawa Limited's 2016-2020 custom incentive rate-application. Distribution sales revenue increased \$7.2 million or 4 percent from 2015 largely due to this application and the associated recovery of large investments in capital infrastructure.

Energy Ottawa's generation revenues continued to grow. The Company made significant strides in the past few years to grow its generation capacity as detailed in the chart below. The most notable addition in 2016 was the purchase of a 27 megawatt hydroelectric generating station on the Québec side of Chaudière Falls along with the remaining 33 percent interest in the Ottawa River Ring Dam, giving Energy Ottawa full ownership of all hydroelectric facilities on both sides of the river at the Chaudière site as of December 14, 2016 [see Note 5 in the consolidated financial statements for more information]. Generation revenues, however, increased by a relatively modest \$1.2 million over 2015, due to the full year shutdown of two generating stations on the Ontario side of Chaudière Falls to enable completion of the expansion project.

Generation Capacity Growth [in megawatts]



The expansion is scheduled to be completed in 2017, resulting in a further increase in generation revenues in 2017, with a full-year revenue impact in 2018. In addition, Energy Ottawa had a full year's operation of the 10 run-of-the-river facilities in Ontario and upstate New York, which were acquired in 2015. The New York facilities were, however, impacted by depressed energy prices and did not yield as much revenue as expected.

Other revenues also increased by \$1.3 million as a result of the streetlight maintenance and conversion projects commencing in 2016 for the City of Ottawa, as well as new endeavors such as the cable and power quality testing business lines. This increase was achieved despite a decrease in CDM revenues which were \$5.1 million lower than in 2015. That was due in large part to the \$2.3 million cost-efficiency incentive, recognized in 2015, for achievement of the Company's performance objectives at the conclusion of its 2011-2014 CDM program.

Expenses

Purchased Power and Operating Costs

Purchased power represents the cost of electricity delivered to customers within Hydro Ottawa Limited's distribution service territory. These costs consist of the commodity, wholesale market service charges, transmission charges and the global adjustment. The cost of purchased power increased by \$93.2 million in 2016, mainly due to increased commodity and global adjustment rates. The global adjustment accounts for differences between the market price and the rates paid to regulated and contracted generators, and for the cost of CDM programs. When the spot market price of electricity is lower, the global adjustment is higher in order to cover the additional variance relative to the costs of energy contracts and other regulated generation.

Operating costs in 2016 of \$127.8 million increased by \$2.1 million due in part to the \$1.4 million in additional costs arising from a full year's operation of the 10 run-of-the-river hydroelectric facilities acquired in 2015. In addition, there were new expenses relating to the streetlight maintenance and conversion projects, offset by a reduction in CDM-related expenditures. Operating costs in 2016 also included a \$1.0 million write-off of a power purchase agreement ["PPA"] acquired in 2012. The PPA was terminated upon closing of the December 14, 2016 acquisition to make way for the eventual sale of electricity from these assets to Ontario via the new PPA with the IESO. Moreover,

included in operating costs were acquisition costs of \$1.7 million relating to the aforementioned transaction, which were lower than the \$2.7 million incurred in business acquisition costs in 2015.

Depreciation and Amortization

Depreciation and amortization on Hydro Ottawa's property, plant and equipment and intangible assets increased in 2016 by \$7.0 million primarily due to the ongoing investment in and expansion of the Corporation's electricity distribution infrastructure and of its portfolio of generation assets.

Share of Profit from Joint Ventures

Share of profit from joint ventures represents the Corporation's share of net income from the continuing operations of Moose Creek Energy LP [50.05 percent] and of PowerTrail Inc. [60 percent]. For more information regarding the Corporation's joint ventures, see Note 11 to the consolidated financial statements.

Financing Costs, Interest Income and Taxes

Financing costs increased by \$0.4 million, while interest income decreased by \$0.8 million. The variance in interest income is largely attributable to the amount of temporary investments the Corporation holds in a year. In 2015, the Corporation earned interest income on cash it held temporarily from the February 2015 issuance of two new senior unsecured debentures totaling \$375 million. Of this amount, \$200 million was used to repay a debenture that was due on February 9, 2015; and \$175 million was used to indirectly finance the mid-2015 acquisition of 10 run-of-the-river hydroelectric facilities, as well as for other ongoing infrastructure investments.

The Corporation's effective tax rate decreased from 32.3 percent in 2015 to 20.6 percent in 2016 as a result of permanent and temporary differences between the accounting treatment and tax basis of assets and liabilities that arose during the year. The \$3.1 million decrease in income tax expense is largely a result of the recognition of tax benefits arising from the loss carryforwards of Energy Ottawa's operations recognized in the current year. For more information regarding income taxes, see Note 22 to the consolidated financial statements.

Net Movement in Regulatory Balances [Net of Tax]

In accordance with IFRS 14, the Corporation has separately presented the net movement in regulatory balances in the consolidated statement of income. The changes in the regulatory

debit and credit balances for the year on the consolidated balance sheet [\$0.7 million and \$4.1 million respectively], equal the net movement in regulatory balances, net of tax on the consolidated statement of income [increase of \$3.3 million, along with \$0.1 million in comprehensive income]. The net movement in regulatory balances was primarily due to an increase in regulatory debit balances due to deferred taxes and operating costs to be recovered through future rates [\$8.3 million and \$0.2 million, respectively], and the refund of regulatory credit balances through

distribution sales rate riders of \$1.0 million; offset by an increase in settlement variance credit balances of \$6.1 million arising from timing differences between power recovery and purchased power. As Hydro Ottawa Limited passes on the benefit of deferred income taxes through annual distribution rate adjustments approved by the OEB, it records a regulatory deferral account credit [or debit] balance for the amounts of deferred taxes expected to be refunded to [or recovered from] customers in future rates.

Consolidated Balance Sheet [Summary]

[in thousands of Canadian dollars]

	2016	2015	Change
Current assets	283,446	181,376	102,070
Non-current assets	1,333,388	1,088,557	244,831
Total assets	1,616,834	1,269,933	346,901
Regulatory account balances	13,744	14,430	(686)
Total assets and regulatory account balances	1,630,578	1,284,363	346,215
Current liabilities	267,524	159,976	107,548
Non-current liabilities	899,574	670,165	229,409
Total liabilities	1,167,098	830,141	336,957
Shareholder's equity	426,775	413,397	13,378
Total liabilities and shareholder's equity	1,593,873	1,243,538	350,335
Regulatory account balances	36,705	40,825	(4,120)
Total liabilities, shareholder's equity and regulatory account balances	1,630,578	1,284,363	346,215

Assets

Total assets increased by approximately \$347 million in 2016. This increase is largely attributable to property, plant and equipment, and to intangible assets, which have collectively increased by \$195 million. This is a result of the acquisition of the 27 megawatt Centrale Hull-2 hydroelectric generating station from Hydro Québec, the ongoing construction at Chaudière Falls, and continuing investment in electrical distribution and generation infrastructure. In addition, \$124 million of the \$204 million project bond financing has been placed in "Blocked Accounts" from which withdrawals may only be made with the authorization of the Trustee. As a result,

the \$124 million in proceeds is classified as restricted cash on the balance sheet. The release of \$80 million of the funds is dependent upon monthly submissions of qualifying costs with respect to the Chaudière expansion, and is therefore classified as current. The remaining \$44 million in funds are expected to be available to the Corporation in 2018 and are therefore classified as a non-current asset. Finally, the Corporation saw an increase of \$21 million in its accounts receivable, which is largely explained by the increase in year over year revenues, including cost of power, and the fluctuation in the global adjustment amount classified as unbilled revenue.

Liabilities

Total liabilities increased by \$337 million in 2016. On September 7, 2016, the Corporation through its subsidiary Chaudière Hydro L.P. completed the offering of senior secured amortizing bonds of \$204 million to fund the expansion at Chaudière Falls. These bonds carry an interest rate of 4.08 percent and are due on March 31, 2057. At December 31, 2016, the Corporation had used \$80 million of the \$204 million total offering to directly-finance construction costs and bond-issuance costs. Moreover, the Corporation's current liabilities increased \$108 million as a result of its bank indebtedness of \$69 million and accounts payable and accrued liabilities, which increased by \$37 million due in large part to higher capital activity. The Corporation also saw a \$19 million increase in deferred revenue due to capital contributions received in 2016, net of amortization.

Regulatory Account Balances

IFRS 14 defines a regulatory account balance as the balance of any expense or (income) account that would not be recognized as an asset or liability in accordance with other IFRS standards, but that qualifies for deferral because it is included, or is expected to be included, by the regulator in establishing the rate[s] that can be charged to customers. As at December 31, 2016, Hydro Ottawa

Limited has recognized \$13.7 million in regulatory account debit balances [assets] and \$36.7 million in regulatory account credit balances [liabilities].

The \$0.7 million decrease in regulatory account debit balances is largely due to a \$3.0 million decrease in debit balances relating to the settlement of electricity and global adjustment pass-through costs, a \$4.3 million decrease in the post-employment deferral account debit balance, and a \$1.1 million decrease in other deferred debit balances. These decreases were offset by a \$7.7 million increase in the regulatory asset for deferred income taxes.

The \$4.1 million decrease in regulatory account credit balances is largely due to a \$6.0 million decrease in the stranded meter credit balances, and to the \$4.5 million disposition of the regulatory liability refund account, offset by a \$6.2 million increase in the settlement of electricity and global adjustment pass-through cost credit balances.

In December 2016, the OEB approved the disposition of certain deferral and variance accounts as at December 31, 2015 amounting to a repayment of \$22.5 million over a one-year period commencing January 1, 2017.

Consolidated Statement of Cash Flows [Summary]

[in thousands of Canadian dollars]

	2016	2015	Change
Cash (bank indebtedness), beginning of year	4,002	(30,927)	34,929
Cash provided by Operating Activities	96,317	100,557	(4,240)
Cash used in Investing Activities	(349,777)	(220,202)	(129,575)
Cash provided by Financing Activities	181,696	154,515	27,181
Foreign exchange impact on cash held in US dollars	(7)	59	(66)
Cash (bank indebtedness), end of year	(67,769)	4,002	(71,771)
Cash (bank indebtedness) consists of:			
Cash	982	4,002	(3,020)
Bank indebtedness	(68,751)	-	(68,751)
	(67,769)	4,002	(71,771)

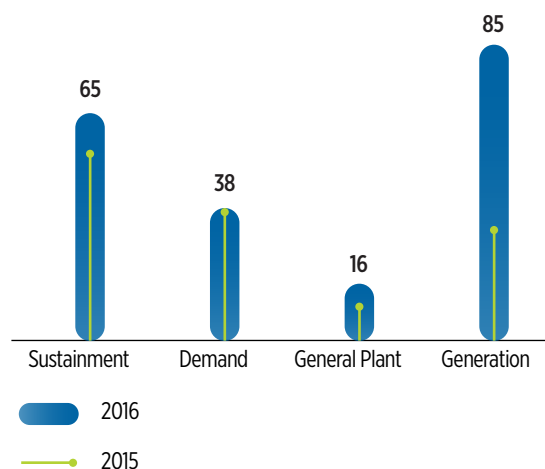
Operating Activities

Cash generated by operating activities decreased by \$4.2 million in 2016. The majority of this decrease relates to the net movement in regulatory balances, which is primarily due to changes impacting settlement variance balances, and a change in customer deposits. This decrease was partially offset by the change in working capital, namely an upswing in accounts payable and accrued liabilities.

Investing Activities

Cash used in investing activities increased by \$129.6 million in 2016. Investing activities includes the acquisition of the 27 megawatt Centrale Hull-2 hydroelectric generating station from Hydro-Québec, the ongoing construction at Chaudière Falls and our continuing investment in electrical distribution and generation infrastructure. The total investment in property, plant and equipment and intangible assets was \$203.5 million in 2016. The chart below shows Hydro Ottawa's capital investments by category for both 2016 and 2015.

Gross Capital Expenditures [in millions]



Capital investments in 2016 included \$65 million on sustainment capital to replace aging infrastructure and to modify the existing distribution system; \$38 million on demand projects, which includes

third-party-driven growth projects such as new residential or commercial installations, and municipal improvement projects including the City of Ottawa's Light Rail Transit project; \$16 million on general plant including information technology infrastructure, fleet, and other sundry items; and \$84 million in generating plants, of which 87 percent relates to the expansion at Chaudière Falls.

In 2016, 1,135 new poles, 398 overhead transformers, and 270 km of overhead cables were installed. Over 200 demand capital projects were initiated, including the addition of 2,738 new residential and 502 new commercial connections.

Cash flows from investing activities also include \$124 million in restricted cash relating to the project financing for the expansion at Chaudière Falls.

Financing Activities

Financing activities include dividends paid to the Shareholder, the City of Ottawa, as well as proceeds from the issuance of long-term debt.

Dividends were paid to the Shareholder in 2016 in accordance with the approved dividend policy. The 2016 payment totaled \$19.4 million based on 2015 results, and the 2015 payment totaled \$18.2 million based on 2014 results. Revisions to the dividend policy were approved by the City of Ottawa on June 22, 2016. The amended policy is based on the greater of 60 percent of Hydro Ottawa Limited's net income or \$20 million. This positions the Corporation to reinvest in its growth, and will help strengthen its key credit metrics.

As discussed above, the Corporation completed the offering of senior secured amortizing bonds representing a cash inflow of \$204 million in 2016. In 2015, the Corporation issued two new senior unsecured debentures totaling \$375 million, of which \$200 million was used to repay a debenture that was due, resulting in a net cash inflow of \$175 million.

Accounting Matters

Significant Accounting Estimates

The preparation of consolidated financial statements, in conformity with IFRS, requires management to make estimates and assumptions that affect the reported amounts of consolidated revenues, expenses, assets, liabilities, and the disclosure of commitments and contingencies as of the date of the consolidated financial statements.

These estimates are based on historical experience, current conditions and various other assumptions believed to be reasonable under the circumstances. Because they involve varying degrees of uncertainty, the amounts currently reported in the consolidated financial statements could prove to be inaccurate in the future.

Significant areas where estimates are made in the application of IFRS are as follows [references to associated notes in the consolidated financial statements are provided in brackets]:

- Accounts receivable [Note 2(d)(i)]
- Regulatory balances [Note 2(d)(ii)]
- Useful lives of depreciable assets [Note 2(d)(iii)]
- Impairment of non-financial assets [Note 2(d)(iv)]
- Employee future benefits [Note 2(d)(v)]
- Capital Contribution obligations [2(d)(vi)]
- Fair value of assets and liabilities acquired [Note 2(d)(vii)]
- Deferred Income taxes [Note 2(d)(viii)]

Future Accounting Changes

A number of new standards, amendments and interpretations are not yet effective for the year ended December 31, 2016 and have not been applied in preparing the consolidated financial statements. The Corporation continues to analyze these standards and has made initial determinations that the following could impact its consolidated financial statements.

- In May 2014, the IASB published a new standard, IFRS 15 Revenue from Contracts with Customers ['IFRS 15'], which replaces most of the detailed guidance on revenue recognition that currently exists under IFRS. IFRS 15 specifies how and when an entity will recognize revenue and additional disclosure requirements. In April 2016, the IASB issued amendments to IFRS 15 which clarifies how to identify a performance obligation in a contract, determine whether a company is a principal or an agent, and determine whether the revenue from granting a licence should be recognized at a point in time or over time.

In addition to the clarifications, the amendments include two additional reliefs to reduce cost and complexity for a company when it applies the new standard. IFRS 15 is effective for annual periods beginning on or after January 1, 2018.

- In July 2014, the IASB issued the final version of IFRS 9 Financial Instruments ['IFRS 9'], which replaces International Accounting Standards 39 Financial Instruments: Recognition and Measurement. IFRS 9 includes revised guidance on the classification and measurement of financial instruments and is effective for annual periods beginning on or after January 1, 2018.
- In January 2016, the IASB issued a new standard, IFRS 16 Leases. It replaces accounting requirements introduced more than 30 years ago that are no longer considered suitable and is a major revision of the way in which companies account for leases. The new standard becomes effective for reporting periods beginning on or after January 1, 2019. Early adoption is permitted if IFRS 15 is also adopted.
- On January 29, 2016, the IASB published amendments to replace International Accounting Standards 7 Statement of Cash Flows. The amendments are intended to improve information provided to users of financial statements about an entity's financing activities. They are effective for annual periods beginning on or after January 1, 2017, with earlier application being permitted.
- IFRS does not currently contain a permanent standard that specifically addresses the accounting for rate-regulated activities – IFRS 14 was a short-term measure to allow first-time adopters to continue to apply their existing generally accepted accounting principle recognition and measurement policies for regulatory balances until the IASB concludes the rate-regulated project. In the event, the rate-regulated project does not result in a standard that recognizes the financial effects of rate regulation, the Corporation will be required to derecognize some, or perhaps all, of its regulatory balances, which represent a significant proportion of the Corporation's assets and liabilities.

Risks and Uncertainties

Hydro Ottawa has adopted a systematic approach to the management of risks and uncertainties, integrating risk management into business processes and the periodic reporting of organizational performance. Capabilities and processes have been built across all business units to enable the effective identification of, and timely responses to, events likely to impede the achievement of corporate objectives.

The Corporation's Enterprise Risk Management [ERM] framework, established by the Board in 2006 and renewed annually, consolidates quarterly risk reporting to the President and Chief Executive Officer, and to the Board, highlighting potential risk factors that may have an impact upon Hydro Ottawa's near-term business objectives and strategic direction. The ERM framework supports and complements the Corporation's strategic planning and annual business planning cycles, thereby enabling continuous review of assumptions and regularly refreshed environment scans.

Hydro Ottawa monitors sources of risk that are structural to the industry and to the regulated environment. These include, but are not restricted to: the weather; the policy and regulatory environment; the state of the economy and macro-economic trends; the state of financial markets and of investment in the utilities space; government policies relating to the production and procurement of renewable and clean energy, as well as carbon emissions and conservation; the convergence of information technology and operational technology; labour force demographics, with a particular emphasis on the renewal of human resources in the trades; and the impact of fiscal policies on customers. In combination, these sources of risk will shape the evolution of the industry, which could in turn present new and emerging risks that need to be managed effectively.

Policy and Regulatory Environment

Actual performance versus forecasts in electricity distribution

Hydro Ottawa's electricity distribution business has obtained approval from the Ontario Energy Board [OEB] for a re-basing of its distribution rates for 2016-2020. As a result, the Corporation expects to be able to carry out its planned capital programs, provide safe and reliable electricity to its customers, and earn the allowed rate of return. However, results may be affected if actual loads and energy consumption vary substantially from forecast, or if actual costs of operations, maintenance, administration, capital and financing materially exceed projections included in the approved revenue requirements.

Long-term impact of Government policies and incentives for LDCs

Over the long term, the Ontario Government's policies on the production, procurement, pricing and sale of renewable energy, coupled with financial and other incentives directed at consumers as part of the Province's conservation, demand management and climate change action programs, could result in significant changes in the business environment for rate-regulated LDCs such as Hydro Ottawa Limited.

Potential adverse impacts include "grid flight". For example, as costs decline for a range of energy generation and storage technologies, such as solar photovoltaics, battery storage, fuel cells, geothermal energy systems, micro turbines, and electric vehicle-enhanced storage, LDCs may see their customers move progressively towards these cost-competitive alternatives, thereby reducing customer need for and dependence on the grid.

At this point, should trends such as grid flight materialize at a significant scale, policy and regulatory responses will be necessary to enable utilities to adapt while maintaining their century-old mandate to deliver electricity reliably, safely and at reasonable cost to their customers.

LDC Consolidation in Ontario

At a strategic level, the Corporation has identified consolidation with other municipally-owned LDCs as an opportunity to attain economies of scope and scale that would work to the benefit of the customers of all the participating utilities. However, the pursuit of this opportunity may be unviable if valuations for mergers and acquisitions remain at levels that Hydro Ottawa may consider excessive or potentially detrimental to the interests of its own Shareholder and ratepayers. The possibility of voluntary consolidation or collaboration with like-minded municipally-owned LDCs for mutual benefit exists if policy direction, regulatory guidance and tax incentives were appropriately aligned.

Market Prices for Electricity

Market prices for electricity fluctuate due to a number of factors, including: the amount of excess generating capacity relative to load in the market; the structure of the market; weather conditions that impact electrical load; growth in demand for electricity; absolute and relative prices for energy; developments in conservation and demand management and government policy direction.



A portion of the Corporation's generation revenue is directly linked to the market price for electricity in the state of New York. In the absence of a fixed rate power purchase agreement, the Corporation may explore a number of options to reduce its exposure to market fluctuations.

Major Generation Project Execution

The Corporation is actively engaged in the multi-year expansion of its power generation facilities at the Chaudière Falls on the Ottawa River, which includes the construction of large civil structures, turbine and generator installations and refurbishment of the related equipment and facilities. The successful and timely completion of this project is critical to the Corporation's long-term strategic direction, in particular its projected growth in generation revenue.

To date, this project has progressed in line with the planned scope, specifications, budget and timelines. There are nonetheless inherent risk factors in a project of this magnitude, including: construction delays; cost overruns; equipment performance not in accordance with expectations; delays in permissions and clearances from all levels of government and their agencies; and technical issues in interconnecting generation output. The Corporation has devised appropriate mechanisms to identify these risks and mitigate



their impact, including rigorous due diligence, consistent project management principles and practices, specific contingency plans, and a Board-led project governance structure.

Exchange Rate Fluctuations

The Corporation's functional currency is the Canadian dollar. A significant depreciation of the value of the US dollar relative to the Canadian dollar may adversely affect the value of the Corporation's US-based assets and the related revenues. Conversely, a significant depreciation of the Canadian dollar relative to the US dollar may affect the Corporation's capacity to finance additional growth in the US market.

Aging Distribution Infrastructure

Hydro Ottawa has developed a long-term Distribution System Plan to phase in the investments required to replace its aging distribution infrastructure, and maintain high standards of reliability and operability, while keeping pace with the growth of its service territory. Aging electricity assets pose a dual risk to LDCs. Apart from being more prone to failure [during extreme weather events, for example], they make restoration of the distribution system more complex and financially onerous.

Economy

The state of the local, national and international economies could have a significant impact on the Corporation's business performance through factors such as inflation, customer credit risk, weakening demand for electricity and/or value-added services, and availability of market capital to fund growth. The economic climate could also have an effect on the stability and performance of some of Hydro Ottawa's key business partners.

Credit Ratings and Interest Rates

The Corporation's growing portfolio of generation assets prompted one credit rating agency to downgrade its assessment to BBB+, with a stable outlook. This downgrade has not impaired the Corporation's capacity to arrange financing for its long-term capital expenditures and investments, nor has it impaired access to funding for working capital requirements.

Nearly 90 percent of the Corporation's debt is subject to a fixed rate of interest, and is accordingly insulated from the impact of upward revision of interest rates. A rise in interest rates would affect the Corporation's credit facility, though its impact is not expected to be material.

Pension Plans

The Corporation provides a defined benefit pension plan for the majority of its employees through the Ontario Municipal Employees Retirement System ['OMERS']. As OMERS is a multi-employer, contributory, defined benefit pension plan, it is not practicable to determine the Corporation's portion of pension obligations or the fair value of plan assets. Future funding shortfalls and net losses at OMERS, if any, are subject to the OMERS Sponsors Corporation Funding Management Strategy, which outlines how benefits and contributions will be modified as the OMERS Primary Plan cycles through periods of funding deficit and surplus.

Hydro Ottawa has also established a separate defined benefit pension plan and a separate defined contribution pension plan for a small number of employees, with appropriate financial and investment procedures and oversight, as required by law. Pension benefit obligations and related net pension cost can be affected by volatility in the global financial and capital markets. There is no

assurance that pension plan assets will earn the assumed long-term rates of return. Market-driven changes impacting the performance of the pension plan assets may result in material variations in actual returns on pension plan assets.

Technology Infrastructure

The Corporation's business performance is dependent upon complex information systems, covering frontline operations [e.g. geographic information system, outage management system, electricity system supervisory control and data acquisition system] as well as back office processes [e.g. customer information and billing systems, and ERP system]. The failure of one or more of these key systems, or a failure of the Corporation to either plan effectively for future technology needs or to transition effectively to new technology systems, could adversely impact the Corporation's business operations.

Many of these key systems also draw upon data and signals from several hundred thousand smart devices [chiefly, smart meters], as well as the related systems and web interfaces. The processing of data in many cases entails a number of automated interfaces, as well as multiple internal and external dependencies, including the Ontario's Smart Metering Entity. Risks arising from the reliability and performance of any single component of this integrated network, or of the system as a whole, could lead to a disruption of key business processes, such as the meter-to-cash cycle.

There is growing convergence of core operational systems with enterprise information systems, increasing automation, and extensive use of common technology in facilitating such integration and connectivity. This has the potential to heighten existing risks and to create new ones. The Corporation seeks to identify and manage such risks through rigorous technology planning, and best-in-class preventative and detective controls.

Cybersecurity

The Corporation's reliance on information systems and expanded data transmission and exchange networks, in conjunction with the growing extent of systems and data integration within the electricity sector, increases its exposure to information security threats, including cybersecurity risks. Hydro Ottawa's information systems

and information assets could be put at risk by a security breach, data corruption or system failure at a shared resource or common service provider.

Customer and Media Perceptions

Electrical utilities across Ontario are confronted with risks arising from negative customer and media perceptions, which may become even more prominent over the next two years. These relate especially to high commodity prices, which are outside of the Company's control. While Hydro Ottawa's strong reputation, together with its focus on customer value, should enable it to manage the impact of growing customer dissatisfaction with the electricity sector at large, the precise scope and nature of this risk factor cannot be foreseen.

Labour Force Demographics

Across the electricity sector, retirements are outpacing new entrants to the workforce, which could have an adverse impact on the ability of the Corporation to build a sustainable workforce and achieve its business objectives. Hydro Ottawa's investments in apprenticeships, internships, diversity, knowledge management, succession planning and retiree and older worker engagement programs are designed to manage risks relating to workforce demographics.

Weather and Hydrology

Severe weather can significantly impact financial results, in part through increased capital and maintenance costs to repair or replace damaged equipment and infrastructure. Weather fluctuations also influence distribution revenues, which tend to increase with severe weather and decrease with moderate weather.

The amount of electricity generated at the Corporation's hydroelectric facilities depends upon available water flows and weather conditions, which vary naturally from season to season and from year to year. Water flows may also be affected by natural disaster or through government controls and policies on water levels.

Outlook

Subject to the risks and uncertainties discussed above, Hydro Ottawa will continue to provide efficient, reliable and competitively priced electricity distribution services to customers, to generate green power, and to provide energy and utility services and conservation expertise while maintaining sustainable earnings.

Hydro Ottawa Limited has an approved rate structure and capital investment plan for 2016-2020. The application was made using a rate-setting model designed to account for the local distribution company's significant capital requirements. Approved rates are expected to be sufficient to provide an appropriate return, while also supporting: prioritized replacement of aging infrastructure and other investments in system reliability; major infrastructure development and growth within the service territory; and introduction of new customer services.

Hydro Ottawa customers, meanwhile, will continue to benefit from stable, moderate, and predictable rate impacts. In the interests of moderating future rate increases as fully as possible, the Company remains committed to ongoing innovation, productivity and cost containment.

Completion of the Chaudière expansion will represent a further and particularly significant milestone in the buildout of Energy Ottawa's renewable generation portfolio – bringing total capacity to 128 megawatts. Long-term revenue stability is assured by the fact that the large majority of renewable output is sold under fixed rate power purchase agreements – including three recently concluded 40-year agreements applying to portions of the generation from the interprovincial Chaudière site.

Hydro Ottawa will also pursue expansion in other non-regulated areas, including energy and utility services. Both business lines will leverage existing assets and expertise, and may include: advisory, project-management and design-build services; partnerships and licensing arrangements with third parties; commercialization of Hydro Ottawa technologies; asset-renewal arrangements with municipalities; and outsourced service provision to other utilities. This is expected to represent a third driver of financial strength in future years, supplementing the core distribution business and renewable generation.

A full-page background image with a blue tint. It shows a man in a white hard hat and a dark safety vest standing in a utility room. He has his arms crossed and is looking towards the camera. The room is filled with various pieces of electrical equipment, including large metal cabinets, pipes, and a large white cylindrical tank on the right. The walls are made of brick and have some windows. The overall scene is industrial and technical.

Hydro Ottawa Holding Inc.

Consolidated Financial Statements
December 31, 2016

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Report of Management

Management is responsible for the integrity of the financial data reported by Hydro Ottawa Holding Inc. [the 'Corporation']. Fulfilling this responsibility requires the preparation and presentation of consolidated financial statements and other data using management's best judgment and estimates, as well as International Financial Reporting Standards as issued by the International Accounting Standards Board.

Management maintains appropriate systems of internal control and corporate-wide policies and procedures, which provide reasonable assurance that the Corporation's assets are safeguarded and that financial records are relevant and reliable.

The Board of Directors, through the Audit Committee, ensures that management fulfills its responsibility for financial reporting and internal control. The Audit Committee consists of outside directors and, at regular meetings, reviews audit, internal control and financial reporting matters with management and external auditors. The Audit Committee has reviewed the consolidated financial statements and submitted its report to the Board of Directors.

On behalf of Management,



Bryce Conrad
President and Chief Executive Officer



Geoff Simpson
Chief Financial Officer



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INDEPENDENT AUDITORS' REPORT

To the Shareholder of Hydro Ottawa Holding Inc.

We have audited the accompanying consolidated financial statements of Hydro Ottawa Holding Inc., which comprise the consolidated balance sheet as at December 31, 2016, the consolidated statements of income, comprehensive income, changes in equity and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of

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accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of Hydro Ottawa Holding Inc. as at December 31, 2016, and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with International Financial Reporting Standards.

Other Matter

The consolidated financial statements of Hydro Ottawa Holding Inc. as at and for the year ended December 31, 2015 were audited by another auditor who expressed an unmodified opinion on those consolidated statements on April 21, 2016.

A handwritten signature in black ink that reads "KPMG LLP". The signature is written in a cursive, stylized font and is underlined with a single horizontal stroke.

Chartered Professional Accountants, Licensed Public Accountants

April 20, 2017

Ottawa, Canada

Hydro Ottawa Holding Inc.

Consolidated Statement of Income
Year ended December 31, 2016

	2016 \$	2015 \$
Revenue		
Power recovery	974,207	890,116
Distribution sales	165,729	162,037
Generation	17,489	16,238
Other	44,970	43,683
	1,202,395	1,112,074
Expenses		
Purchased power	966,072	865,178
Operating costs [Note 20]	128,072	126,138
Depreciation [Notes 8 and 10]	37,502	34,819
Amortization [Note 9]	12,140	7,813
	1,143,786	1,033,948
Operating income	58,609	78,126
Financing costs [Note 21]	19,398	19,042
Interest income	(267)	(1,056)
Share of profit from joint ventures [Notes 11(a) and (b)]	(1,039)	(509)
Income before income taxes	40,517	60,649
Income tax expense [Note 22]	9,041	15,472
Net income	31,476	45,177
Net movements in regulatory balances, net of tax [Note 7]	3,340	(12,807)
Net income after net movements in regulatory balances	34,816	32,370
Attributable to non-controlling interest [Note 18(c)]	(20)	-
Net income after net movements in regulatory balances attributable to equity shareholder	34,836	32,370

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Statement of Comprehensive Income

Year ended December 31, 2016

	2016 \$	2015 \$
Net income after net movements in regulatory balances attributable to equity shareholder	34,836	32,370
Other comprehensive income		
Items that may be subsequently reclassified to net income		
Exchange differences on translation of foreign operations, net of tax	(1,852)	6,905
Items that will not be subsequently reclassified to net income		
Actuarial loss on post-employment benefits, net of tax	(280)	(267)
Net movement in regulatory deferral account balances related to other comprehensive income, net of tax [Note 7]	94	-
Other comprehensive income, net of tax	(2,038)	6,638
Total comprehensive income	32,798	39,008

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Balance Sheet

As at December 31, 2016

[in thousands of Canadian dollars]

	2016 \$	2015 \$
Assets		
Current assets		
Cash	982	4,002
Accounts receivable [Note 6]	192,670	172,024
Restricted cash [Note 16]	79,975	-
Income taxes receivable	1,762	1,677
Prepaid expenses	4,431	2,941
Inventory [Note 12(c)]	1,577	-
Current portion of notes receivable from related parties [Note 12]	2,049	732
	283,446	181,376
Non-current assets		
Restricted cash [Note 16]	44,110	-
Property, plant and equipment [Note 8]	1,146,170	959,372
Intangible assets [Note 9]	121,668	113,359
Investment properties [Note 10]	2,297	2,360
Deferred income tax asset [Note 22]	5,645	2,250
Notes receivable from related parties [Note 12]	5,462	4,035
Investments in joint ventures [Note 11(a)]	7,875	6,794
Retirement benefit asset [Note 15(a)]	161	387
Total assets	1,616,834	1,269,933
Regulatory balances [Note 7]	13,744	14,430
Total assets and regulatory balances	1,630,578	1,284,363
Liabilities and shareholder's equity		
Current liabilities		
Bank indebtedness [Note 13]	68,751	-
Accounts payable and accrued liabilities [Note 14]	196,251	158,939
Income taxes payable	2,522	1,037
	267,524	159,976
Non-current liabilities		
Deferred revenue	71,208	52,676
Employee future benefits [Note 15(b)]	13,335	11,332
Customer deposits	18,402	18,206
Long-term debt [Note 16]	772,960	571,519
Deferred income tax liability [Note 22]	20,936	13,695
Other liabilities	2,733	2,737
Total liabilities	1,167,098	830,141
Shareholder's equity		
Share capital [Note 18]	228,453	228,453
Accumulated other comprehensive income	4,637	6,675
Retained earnings	193,705	178,269
Non-controlling interest [Note 18(c)]	(20)	-
Total liabilities and shareholder's equity	1,593,873	1,243,538
Regulatory balances [Note 7]	36,705	40,825
Total liabilities, shareholder's equity and regulatory balances	1,630,578	1,284,363

Contingent liabilities and commitments [Notes 24 and 25]

On behalf of the Board:



Director



Director

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Statement of Changes in Equity
Year ended December 31, 2016

	Share capital	Accumulated other comprehensive income	Non- controlling interest	Retained earnings	Total
	\$	\$	\$	\$	\$
Balance at December 31, 2014	228,453	37	-	164,099	392,589
Net income after net movements in regulatory balances	-	-	-	32,370	32,370
Other comprehensive income	-	6,638	-	-	6,638
Dividends [Note 18]	-	-	-	(18,200)	(18,200)
Balance at December 31, 2015	228,453	6,675	-	178,269	413,397
Net income (loss) after net movements in regulatory balances	-	-	(20)	34,836	34,816
Other comprehensive income	-	(2,038)	-	-	(2,038)
Dividends [Note 18]	-	-	-	(19,400)	(19,400)
Balance at December 31, 2016	228,453	4,637	(20)	193,705	426,775

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Statement of Cash Flows

Year ended December 31, 2016

	2016	2015
	\$	\$
Net inflow (outflow) of cash related to the following activities:		
Operating		
Net income	34,816	32,370
Adjustments for:		
Depreciation	37,502	34,819
Amortization	12,140	7,813
Loss on disposal of non-financial assets [Notes 8 and 9]	1,816	538
Amortization of debt-issuance costs	136	166
Share of profit from joint ventures [Notes 11(a) and (b)]	(1,039)	(509)
Amortization of deferred revenue	(1,628)	(985)
Future employee benefits	1,647	231
Financing costs, net of interest income	19,131	17,986
Income tax expense	9,041	15,472
Unrealized foreign exchange loss	75	-
Net changes in non-cash working capital and other operating balances [Note 23]	(11,393)	(29,801)
Income taxes paid, net of refunds received	(2,863)	2,863
Financing costs paid, net of interest income received	(20,689)	(19,186)
Additions to deferred revenue	20,160	20,276
Change in customer deposits	805	5,697
Net movements in regulatory balances	(3,340)	12,807
	96,317	100,557
Investing		
Acquisition of property, plant and equipment	(172,775)	(128,615)
Acquisition of intangible assets	(13,256)	(15,394)
Proceeds from disposal of property, plant and equipment	640	704
Acquisition of subsidiaries, net of cash acquired [Note 5]	(41,131)	(90,564)
Restricted cash held in-trust	(124,085)	-
Repayment of notes receivable from joint ventures	830	13,667
	(349,777)	(220,202)
Financing		
Proceeds from issuance of long-term debt, net of debt-issuance costs	201,096	372,715
Dividends paid [Note 18]	(19,400)	(18,200)
Debentures repaid [Note 16]	-	(200,000)
	181,696	154,515
Effects of exchange rate changes on cash held in U.S. dollars	(7)	59
Net change in cash	(71,771)	34,929
Cash, net of bank indebtedness, beginning of year	4,002	(30,927)
Bank indebtedness, net of cash, end of year	(67,769)	4,002

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements
Year ended December 31, 2016

1. DESCRIPTION OF BUSINESS AND CORPORATE INFORMATION

Hydro Ottawa Holding Inc. ['HOHI' or the 'Corporation'] was incorporated on October 3, 2000 pursuant to the *Business Corporations Act (Ontario)* as mandated by the Ontario government's *Electricity Act, 1998*. The Corporation is wholly-owned by the City of Ottawa. The Corporation owns 100% of Hydro Ottawa Limited, Energy Ottawa Inc. ['Energy Ottawa'] and Telecom Ottawa Holding Inc. which does not maintain active operations. The Corporation is incorporated and domiciled in Canada with the registered head office located at 3025 Albion Road North, Ottawa, Ontario, K1G 3S4.

Hydro Ottawa Limited is a regulated electricity distribution company that owns and operates electricity infrastructure in the City of Ottawa and the Village of Casselman and is responsible for the safe, reliable delivery of electricity to homes and businesses in its licensed service area. In addition to billing for distribution services, Hydro Ottawa Limited invoices customers for amounts it is required to pay to other organizations in Ontario's electricity system for providing wholesale generation and transmission services.

Energy Ottawa's principal business is the generation of renewable energy [hydroelectric, solar and landfill gas], and the provision of expert energy management and procurement services to large energy-consuming organizations. Energy Ottawa holds interests in the following entities:

- Chaudiere Hydro L.P. ['CHLP'] is a wholly-owned subsidiary formed on June 22, 2012 to acquire, own and operate hydroelectric generation plants located in Ottawa, Ontario and Gatineau, Québec at Chaudière Falls.
- Chaudiere Hydro North L.P. ['CHLP North'] is a wholly-owned subsidiary formed on December 7, 2015. On January 1, 2016, CHLP transferred, assigned and conveyed assets relating to its hydroelectric generating facilities located in Gatineau, Québec to CHLP North. As CHLP and CHLP North are wholly-owned subsidiaries combined into the Corporation's consolidated financial statements, there is no impact on the present and future consolidated financial reporting of the Corporation as a result of this conveyance.
- 2425932 Ontario Inc. is a wholly-owned subsidiary incorporated on July 9, 2014. 2425932 Ontario Inc. holds five wholly-owned subsidiaries [EO Generation GP Inc., EO Generation Limited Partnership, Gananoque Water Power Company, EONY Generation Limited ['EONY'] and EONY Generation Holding Inc.] that collectively own and operate ten run-of-the-river hydroelectric generation facilities located throughout Ontario and New York State. Energy Ottawa holds its interest in 2425932 Ontario Inc. through common shares, and special shares held by EO Holding Trust, a trust formed by the Corporation on June 17, 2015 for which the beneficiary is HOHI and/or all of its non-regulated subsidiaries [i.e. excluding Hydro Ottawa Limited].
- 9927891 Canada Inc. is a wholly-owned subsidiary incorporated on September 30, 2016 that ultimately holds Hull Energy L.P., a partnership that was formed on October 18, 2016 to acquire, own and operate a generation plant in Gatineau, Québec as described in Note 5(a) of these consolidated financial statements. Energy Ottawa holds its interest in 9927891 Canada Inc. through common shares, and special shares held by Hull Energy Holding Trust, a trust formed by the Corporation on September 30, 2016 for which the beneficiary is HOHI and its non-regulated subsidiaries [i.e. excluding Hydro Ottawa Limited] with the exception of CHLP.
- Energy Ottawa Cable Testing Services Inc. is a wholly-owned subsidiary incorporated on November 15, 2016 which offers proprietary non-destructive cable testing services on a world-wide basis through an exclusive license with National Research Council Canada ['NRC'].
- CPS Current Power Services (2016) Ltd. ['CPS'] is an 89.90% owned subsidiary incorporated on February 23, 2016 and is the exclusive supplier [reseller] of PQ View, a web-based offering for power quality database management and analysis. CPS provides installation, training and power quality analysis services on a fee-for-service basis.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements
Year ended December 31, 2016

1. DESCRIPTION OF BUSINESS AND CORPORATE INFORMATION [CONTINUED]

-
- Chaudière Water Power Inc. ['CWPI'] is a wholly-owned subsidiary incorporated on August 12, 1980 to act as an agent for the four principals of CWPI: Energy Ottawa, CHLP, CHLP North and Hull Energy L.P. with a mandate to operate the Chaudière Dam facilities on the Ottawa River. The facilities are not owned by CWPI; they are jointly owned by the principals. In accordance with the shareholders' agreement, all expenses incurred by CWPI directly related to the facilities are fully reimbursed in accordance with each principal's ownership percentage. Prior to December 14, 2016, CWPI was a joint arrangement - as Hydro-Québec was one of the four principals of CWPI until all of its shares were acquired by Hull Energy L.P. as described in Note 5(a) of these consolidated financial statements. As CWPI is a cost-recovery operation, it does not carry on external revenue-generating operations.
- Moose Creek Energy L.P. ['Moose Creek LP'] is a 50.05% owned joint arrangement formed on April 19, 2011 to construct and operate a generation plant and gas collection system at the Laflèche landfill site in Moose Creek, Ontario.
- PowerTrail Inc. ['PowerTrail'] is a 60.00% owned joint arrangement incorporated on August 10, 2005 to construct and operate a generation plant and gas collection system at the Trail Road landfill site in Ottawa, Ontario.
- SolarTrail LP is an 84.99% owned joint arrangement formed on July 31, 2015 which does not have active operations through December 31, 2016.

2. BASIS OF PRESENTATION

(a) Statement of compliance

These consolidated financial statements have been prepared by management on a going-concern basis in accordance with International Financial Reporting Standards ['IFRS'] as issued by the International Accounting Standards Board ['IASB']. In the opinion of management, all adjustments necessary for fair presentation are reflected in these consolidated financial statements. These consolidated financial statements have been approved and authorized by the Corporation's Board of Directors for issue on April 20, 2017.

(b) Basis of measurement

The Corporation's consolidated financial statements are prepared on a historical cost basis.

(c) Functional and presentation currency

These consolidated financial statements are presented in Canadian dollars, which is the Corporation's functional currency.

(d) Use of estimates

The preparation of consolidated financial statements in conformity with IFRS requires management to make estimates and assumptions that affect the reported amounts of revenue, expenses, assets, liabilities and the disclosure of contingent assets and liabilities at the date of the consolidated financial statements.

Due to the inherent uncertainty involved, actual results could differ from estimates recorded in preparing these consolidated financial statements, including changes as a result of future decisions made by the Ontario Energy Board ['OEB'] or the Ontario provincial government. Management reviews its estimates on an ongoing basis using the most current information available. These consolidated financial statements have, in management's opinion, been properly prepared using reasonable limits of materiality and within the framework of the significant accounting policies. Significant areas where estimates are made in the application of IFRS are as follows:

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements
Year ended December 31, 2016

2. BASIS OF PRESENTATION [CONTINUED]

(d) Use of estimates [continued]

(i) Accounts receivable

Accounts receivable, which includes unbilled revenue, are reported based on the amounts expected to be recovered less an estimated allowance for uncollectible amounts. Management utilizes historical loss experience in conjunction with the aging and arrears status of accounts receivable at year-end in the determination of the allowance. The measurement of unbilled revenue is based on an estimate of the amount of electricity consumed by customers between the date of the last bill and the year-end date.

(ii) Regulatory balances

The recognition and measurement of regulatory balances is subject to certain estimates and assumptions, including assumptions made in the interpretation of the OEB's regulations and decisions.

(iii) Useful lives of depreciable assets

Depreciation and amortization expenses are calculated based on estimates of the useful lives of property, plant and equipment, intangible assets and investment properties. Management estimates the useful lives of the various types of assets using assumptions and estimates of life characteristics of similar assets based on a long history of electricity distribution and generation industry experience.

(iv) Impairment of non-financial assets

Non-financial assets are reviewed by management for impairment using the future cash flows method as outlined in Note 3(o). By their nature, estimates of future cash flows, including estimates of future capital expenditures, revenue, operating expenses, discount rates and market pricing are subject to measurement uncertainty.

(v) Employee future benefits

The measurement of employee future benefits involves the use of numerous estimates and assumptions. Actuaries make assumptions for items such as discount rates, future salary increases and mortality rates in the determination of benefits expenses and defined benefit obligations.

(vi) Capital contribution obligations

The measurement of capital contribution obligations requires forecasts of future electricity usage as part of the determination of any obligation or rebate due to third parties.

(vii) Fair value of assets and liabilities acquired

The purchase of an existing business requires management to assign fair values to the assets and liabilities acquired, as well as the consideration transferred [including contingent consideration]. Fair values can be determined by applying judgment based on experience in the industry, third-party independent appraisals and by examining open market data for similar assets in the same industry.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements
Year ended December 31, 2016

2. BASIS OF PRESENTATION [CONTINUED]

(d) Use of estimates [continued]

(viii) Deferred income taxes

Tax interpretations, regulations and legislation in the various jurisdictions in which the Corporation and its subsidiaries operate are subject to change. Deferred income tax assets are assessed by management at the end of each reporting period to determine the likelihood that they will be realized from future taxable income.

(e) Key management judgments

(i) Evidence of asset impairment

At the end of each reporting period, or earlier if required, management uses its judgment to assess whether there is an indication that the carrying amount of a non-financial asset [or cash-generating unit, 'CGU'] exceeds its recoverable amount. A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. This assessment involves the consideration of whether any events or changes in circumstances could have affected the recoverability of the carrying amount of a non-financial asset or CGU. Management considers various indicators including, but not limited to, adverse changes in the industry or economic conditions, changes in the degree or method of use of an asset, a lower-than-expected economic performance of an asset or a significant change in market returns or interest rates.

Based on management's judgment, an indicator of impairment [under International Accounting Standards 36 *Impairment of Assets* ['IAS 36']] existed within EONY at December 31, 2016 pertaining to the energy market prices in New York State. However, management's discounted cash flow analysis under the value-in-use method [as prescribed by IAS 36] resulted in no impairment to be recognized in the 2016 fiscal year. Assumptions with respect to these cash flows are sensitive to the various inputs into the value-in-use calculation, and thus are subject to measurement uncertainty [Note 2(d)(iv)].

3. SIGNIFICANT ACCOUNTING POLICIES

(a) Basis of consolidation

The consolidated financial statements include the accounts of the Corporation and its subsidiaries: Hydro Ottawa Limited, Telecom Ottawa Holding Inc., and Energy Ottawa which includes the accounts of its own subsidiaries as described in Note 1 of these consolidated financial statements. Subsidiaries are entities controlled by the Corporation. The Corporation controls an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns by directing and controlling the activities of the entity. Subsidiaries are fully consolidated from the date on which the Corporation obtains control, and continue to be consolidated until the date that control ceases to exist. All intercompany balances and transactions have been eliminated in these consolidated financial statements. The financial statements of the subsidiaries are prepared for the same reporting period as the Corporation using consistent accounting policies.

Subsidiaries have non-controlling interests which are presented as part of equity.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(b) Joint arrangements

The Corporation is party to a number of joint arrangements as described in Note 1 of these consolidated financial statements whereby control is shared with third parties via a contractual agreement. All joint arrangements are either classified as joint ventures or joint operations in accordance with IFRS 11 *Joint Arrangements*. Joint ventures are accounted for using the equity method. Under this method, the Corporation's interests in joint ventures are initially recorded at cost, and subsequently adjusted to recognize the Corporation's share of post-acquisition profits or losses, movements in other comprehensive income ['OCI'] and dividends or distributions received. Joint operations are included in the Corporation's accounts by recording its contractual share of assets, liabilities, revenue, expenses and OCI.

(c) Business combinations

Business combinations are accounted for using the acquisition method. The consideration for an acquisition is measured at the aggregate of the fair values, at the date of exchange, of the assets transferred, equity instruments issued, and the liabilities incurred to former owners of the acquired business in exchange for control. Identifiable assets acquired and liabilities assumed in a business combination are measured initially at their fair values at the date of acquisition.

The Corporation evaluates the integrated set of activities [inputs, processes, outputs] associated with an acquired asset group to determine whether it meets the definition of a business as prescribed by IFRS 3 *Business Combinations*.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Corporation will report in its consolidated financial statements provisional amounts for the items for which the accounting is incomplete. Within one year, the Corporation will retrospectively adjust the provisional amounts recognized at the acquisition date to reflect new information obtained about facts and circumstances that existed as of the acquisition date and, if known, would have affected the measurement of the amounts recognized as at that date.

Transaction costs with respect to a business combination are expensed as incurred and included in general and administrative expenses as part of operating costs.

(d) Foreign currency translation

Transactions denominated in foreign currencies are translated at exchange rates in effect at the transaction date. At each reporting date, monetary assets and liabilities denominated in foreign currencies are translated into Canadian dollars at the exchange rate in effect at the end of the reporting period. Non-monetary assets and liabilities carried at historical cost are not re-translated; they remain at the exchange rate in effect at the date of the original transaction. Non-monetary assets and liabilities carried at fair value are translated at the exchange rate in effect at the date the fair value was measured. Any resulting exchange gains or losses are included in net income for the year.

The assets and liabilities of EONY are translated into Canadian dollars at the exchange rate in effect at the end of the reporting period. Revenue and expenses are translated into Canadian dollars at the average exchange rate in effect during the reporting period. Any resulting exchange gains and losses arising from the translation are included in OCI for the year.

Fair value adjustments to identifiable assets acquired and liabilities assumed through acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the rate of exchange prevailing at the end of each reporting period. Exchange differences are recognized in OCI.

(e) Regulation

Hydro Ottawa Limited is regulated by the OEB under the authority of the *Ontario Energy Board Act, 1998*. The OEB is charged with the responsibilities of approving or setting rates for the transmission and distribution of electricity, and ensuring that distribution companies fulfill obligations to connect and service customers.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(e) Regulation [continued]

For the fiscal year ended December 31, 2016, Hydro Ottawa Limited operated under an incentive rate-setting application ['Custom IR'] prescribed by the OEB. The Custom IR is one of the rate-setting options contained in the *Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* ['RRFE'] policy. The RRFE provides distributors three rate-setting methods: 4th Generation IR, Custom IR and Annual IR Index. Hydro Ottawa Limited filed a Custom IR application with the OEB on April 29, 2015 seeking approval to change the rates that Hydro Ottawa Limited charges for electricity delivery, retail services, allowances, loss factor and specific service charges for a period of five years, to be effective January 1, 2016 to December 31, 2020. This application requested a revenue requirement to recover costs, and to provide a rate of return on a deemed capital structure applied to rate base assets. The OEB issued its partial decision and rate order in December 2015 ['approved settlement'] establishing the rates for 2016 with interim rates for pole attachment charges. The OEB issued its decision and rate order on pole attachment charges in February 2016.

On August 15, 2016, Hydro Ottawa Limited filed its Custom IR update application for distribution rates and other charges, effective January 1, 2017. This application was approved in December 2016 and included adjustments to base rates, low voltage, transmission, retailer services and specific services charges. As well it includes the approval for the disposition of certain deferral and variance accounts as at December 31, 2015.

Hydro Ottawa Limited applies for distribution rates based on estimated costs. Once the rate is approved, it is not adjusted as a result of actual costs being different from those that were estimated, other than for certain prescribed costs that are eligible for deferral treatment and are either collected or refunded in future rates. The OEB has the general power to include or exclude costs and revenue in the rates of a specific period, resulting in a change in the timing of accounting recognition from that which would have applied in an unregulated company.

Hydro Ottawa Limited continues to assess the likelihood of recovery of all regulatory debit balances subject to recovery through a future rate filing. The absence of OEB approval is a consideration in this evaluation. If the requirement for a provision becomes more likely than not, Hydro Ottawa Limited will recognize the provision in operating costs for the year.

The following regulatory treatments have resulted from the adoption of IFRS 14, *Regulatory Deferral Accounts* ['IFRS 14'] which permits rate-regulated entities to use its existing rate-regulated activities practices, if and only if, in its first IFRS financial statements, it recognized regulatory deferral account balances by electing to apply the requirements of IFRS 14.

(i) Regulatory balances

Regulatory debit balances primarily represent costs that have been deferred because it is probable that they will be recovered in future rates. Similarly, regulatory credit balances can arise from differences in amounts billed to customers for electricity services and the costs that Hydro Ottawa Limited incurs to purchase these services.

Hydro Ottawa Limited accrues interest on the regulatory balances as directed by the OEB.

Regulatory balances principally comprise of the following:

- Regulatory asset/liability refund account ['RARA'/'RLRA'] consists of balances of regulatory assets or regulatory liabilities approved for disposition by the OEB through temporary additional rates referred to as rate riders.
- Settlement variances relate primarily to the charges Hydro Ottawa Limited incurred for transmission services, the commodity, wholesale market operations and the global adjustment that were not settled with customers during the year. The nature of the settlement variances is such that the balance can fluctuate between assets and liabilities over time, and they are reported at year-end dates in accordance with rules prescribed by the OEB.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(e) Regulation [continued]

(i) Regulatory balances [continued]

- Stranded meter costs represent the net book value of conventional meters removed upon the installation of smart meters.
- Other Post-employment Benefits deferral account ['OPEB deferral account'] was authorized by the OEB in 2011 to record the adjustment to employee future benefits other than pension relating to the cumulative actuarial gains or losses. This account is adjusted annually to record any changes in the cumulative actuarial gains or losses. No interest charges are recorded on this account as instructed by the OEB.

(ii) Other regulatory variances and deferred costs

Other regulatory variances and deferred costs principally comprise of the following:

- The OEB allows electricity distributors to record in a deferral account the difference between low voltage charges paid to Hydro One Networks Inc. ['HONI'] and those charged to customers.
- The OEB allows electricity distributors to record in a deferral account, the net cost of providing retailer billing services and transaction request services. As of January 1, 2016, Hydro Ottawa Limited has incorporated the net costs into its revenue requirement and will no longer record the net cost into the deferral accounts.
- The OEB approved a deferral account for distributors to record one-time administrative incremental IFRS transition costs, which were not already approved and included for recovery in distribution rates.
- In its Guidelines released June 16, 2009, the OEB created four new deferral accounts to allow distributors to begin recording expenditures for certain activities relating to the connection of renewable generation and the development of a smart grid. These deferral accounts were authorized to be used to record qualifying incremental capital investments or operating, maintenance and administrative expenses.
- In its Guidelines released December 19, 2014, the OEB advised Distributors to continue to rely on the Lost Revenue Adjustment Mechanism to track and dispose of lost revenue that results from approved Conservation and Demand Management ['CDM'] programs between 2015 and 2020, noting that the same process as described in the OEB Guidelines released April 26, 2012 regarding the 2011 to 2014 period should be followed. Hydro Ottawa Limited is to record the difference between the actual validated CDM activities and activities included in Hydro Ottawa Limited's load forecast multiplied by the appropriate variable distribution rate.
- The OEB directed distributors to record the input tax credit savings arising from the elimination of the provincial sales tax and implementation of the harmonized sales tax on July 1, 2010 in a separate account. The OEB concluded that fifty percent of the balances should be returned to the ratepayers for the period up to the rebasing date, which for Hydro Ottawa Limited was January 1, 2012.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(e) Regulation [continued]

(iii) Income taxes

Hydro Ottawa Limited is considered to be a Municipal Electric Utility ['MEU'] and is required to make payments in lieu of corporate income taxes ['PILs'] as contained in the *Electricity Act, 1998*, as all of its share capital is indirectly owned by the City of Ottawa and not more than 10% of its income is derived from activities carried on outside the municipal boundaries of the City of Ottawa [excluding generation income earned from a contract with a crown agency]. The *Electricity Act, 1998* provides that a MEU that is exempt from tax under the *Income Tax Act (Canada)* ['ITA'] and the *Taxation Act, Ontario* ['TAO'] is required to make, for each taxation year, a PILs payment to the Ontario Electricity Financial Corporation in an amount approximating the tax that it would be liable to pay under the ITA and the TAO if it were not exempt from tax.

Hydro Ottawa Limited follows the liability method for recording income taxes. Under the liability method, current income taxes payable are recorded based on taxable income. Deferred income taxes arising from temporary differences in the accounting and tax basis of assets and liabilities are provided based on substantively enacted tax rates that will be in effect when the differences are expected to reverse.

The *Accounting Procedures Handbook* issued by the OEB provides for the recovery of income taxes by Hydro Ottawa Limited through annual distribution rate adjustments as approved by the OEB. Hydro Ottawa Limited recognizes regulatory balances for the amounts of deferred income taxes expected to be refunded to or recovered from customers in future electricity rates.

(f) Revenue recognition

The Corporation recognizes revenue when it is likely that economic benefits will flow to the Corporation and where the revenue can be reliably measured. Revenue is measured at the fair value of the consideration received or receivable, excluding any discounts, rebates and sales taxes. The Corporation has determined that it acts as a principal in all of its revenue arrangements.

(i) Power recovery

Power recovery revenue represents the pass-through of the cost of power to the consumer as purchased by the Corporation and is recognized when electricity is delivered to the customer, as measured by meter readings or usage estimates. Power recovery revenue is regulated by the OEB and includes charges to customers for the electricity commodity, the transmission of electricity and the administration of the wholesale electricity system.

(ii) Distribution sales

The Corporation charges customers for the delivery of electricity, based on rates established by the OEB. The rates are intended to allow the Corporation to recover its prudently incurred costs and earn a fair return on invested capital. Distribution sales are recognized when electricity is delivered to the customer, as measured by meter readings or usage estimates.

(iii) Generation

Generation revenue is recorded on the basis of regular meter readings.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(f) Revenue recognition [continued]

(iv) Other

Other revenue consists primarily of commercial contract revenues ancillary to electricity distribution. Other revenue also includes commercial services which comprise turnkey projects, the provision of street light installation and maintenance services, energy management and data analysis, non-destructive cable testing and pole attachment revenues. Finally, other revenue also includes property rentals, amortization of capital contributions and CDM revenue.

Commercial contract revenues and certain commercial services [turnkey and street light installations] are accounted for using the percentage-of-completion method, whereby revenue and the corresponding costs are recognized proportionately with the degree of completion of the services under contract. Losses on such contracts are fully recognized when they become evident. Other commercial service revenues and property rentals are recognized as services are rendered, or on a straight-line basis over the period of the contract if the services performed consist of an indeterminate number of acts over a specified period of time.

Capital contributions received from electricity customers to construct or acquire property, plant and equipment for the purpose of connecting a customer to Hydro Ottawa's distribution network are recognized as deferred revenue and amortized into other revenue at an equivalent rate to that used for the depreciation of the related property, plant and equipment.

CDM revenue stems from the delivery of provincial government programs that promote conservation and is recognized on a cost-recovery basis. Performance incentive payments under CDM programs are recognized when there is reasonable assurance that the program conditions have been satisfied and the incentive payments will be received.

(g) Interest income and financing costs

Interest income is recognized as it accrues under the effective interest method and comprises interest earned on cash and notes receivable from joint ventures.

Financing costs are calculated using the effective interest rate method and are recognized as an expense unless they are capitalized as part of the cost of a qualifying asset.

(h) Income taxes

The Corporation, Energy Ottawa and Telecom Ottawa Holding Inc. are MEUs that account for income taxes using the liability method.

PowerTrail and CWPI are taxable under the ITA and TAO as less than 90% of each company's capital is owned by the City of Ottawa through Energy Ottawa and the Corporation. 9927891 Canada Inc., EO Cable Testing Services Inc., CPS and 2425932 Ontario Inc. [including its incorporated Canadian subsidiaries] are all taxable under the ITA and TAO, while 2425932 Ontario Inc.'s foreign subsidiaries are subject to the income tax regime in the United States [the 'Internal Revenue Service'], as more than 10% of each company's income is derived from activities carried on outside the municipal boundaries of the City of Ottawa. Corporate income taxes are accounted for using the liability method as described above.

Moose Creek LP, CHLP, EO Generation Limited Partnership, CHLP North, Hull Energy L.P. and SolarTrail LP are not taxable entities for federal and provincial income tax purposes. Taxes on the net income (loss) are borne by the individual partners through the allocation of taxable income.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(i) Restricted cash

Cash and cash equivalents [highly-liquid temporary investments with a maturity date between three months and one year] that are restricted as to withdrawal or use under the terms of certain contractual agreements are classified as restricted cash.

(j) Bank indebtedness

Bank indebtedness includes short-term advances and/or bankers' acceptances drawn on the Corporation's credit facility with a maturity date of three months or less, and outstanding cheques.

(k) Financial instruments

All financial instruments are initially recorded at fair value. When financial instruments are not measured at fair value through profit and loss ['FVTPL'], then directly attributable transaction costs are included in the initial measurement. The fair value of a financial instrument is the amount of consideration that would be agreed upon in an arm's-length transaction between willing parties. The subsequent measurement of each financial instrument depends on the classification elected by the Corporation at the time of recognition.

The Corporation classifies and measures its financial instruments as follows:

- Cash, restricted cash, accounts receivable, notes receivable from related parties are classified as loans and receivables and are measured at amortized cost using the effective interest method, less any impairment if applicable.
- Bank indebtedness, accounts payable and accrued liabilities, customer deposits, debentures and bonds payable are classified as other financial liabilities and are measured at amortized cost using the effective interest rate method.

Financial instruments which are measured at fair value are classified using a three-level hierarchy. Each level reflects the inputs used to measure the fair values of financial assets and financial liabilities, and are as follows:

- Level 1: inputs are unadjusted quoted prices of identical instruments in active markets;
- Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly; and
- Level 3: inputs for the liabilities that are not based on observable market data [unobservable inputs].

All financial assets except for those classified as FVTPL are subject to review for impairment at least at each reporting date. Financial assets are impaired only when an event has occurred after the initial recognition of the asset and that event has an impact on the estimated future cash flows of the financial asset. Impairment losses, if any, are recognized in net income. An impairment loss is reversed if the reversal can be related objectively to an event occurring after the impairment loss was recognized.

(l) Property, plant and equipment

Property, plant and equipment consist principally of land, buildings and fixtures, electricity distribution and infrastructure, furniture and equipment, rolling stock, generating equipment, reservoirs, dams and waterways and assets under construction. Property, plant and equipment acquired in a business combination are initially recorded at their acquisition date fair values.

Property, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment losses, if any. Self-constructed asset costs comprise all directly attributable expenditures to bring the asset into operation including labour, materials, employee benefits, transportation, contracted services and borrowing costs. Where parts of an item in property, plant and equipment are significant and have different estimated economic useful lives, they are accounted for

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(l) Property, plant and equipment [continued]

as separate items [major components] of property, plant and equipment. Certain assets may be acquired or constructed with financial assistance in the form of contributions from customers. Contributions from customers are treated as deferred revenue.

The cost of major inspections and maintenance is recognized in the carrying value of an asset provided that the Corporation will derive future economic benefits from the expenditure. The carrying amount of a replaced part is derecognized. The costs of day-to-day servicing, repairs, and maintenance, are expensed as incurred.

Depreciation is recorded on a straight-line basis over the estimated service life of each component of property, plant and equipment. Emergency capital spare parts that are expected to be used for more than one year are considered to be assets under construction and are depreciated only once they are put into service.

Gains and losses on disposal of retired, sold or otherwise derecognized property, plant and equipment are recognized in income and are calculated as the difference between net proceeds from disposal and the carrying amount of the asset.

The estimated useful lives, residual values and depreciation methods are reviewed at each year-end with the effect of any changes in estimate being accounted for on a prospective basis.

Estimated service lives for property, plant and equipment classes are as follows:

Land and buildings	
Land	Indefinite
Buildings and fixtures	20 to 100 years
Electricity distribution infrastructure	10 to 60 years
Generation and other	
Generating equipment	3 to 50 years
Reservoirs, dams and waterways	75 to 125 years
Furniture and equipment	5 to 10 years
Rolling stock	7 to 15 years

Assets under construction and land are not subject to depreciation. Borrowing costs are capitalized as a component of the cost of self-constructed property, plant and equipment assets that take a substantial period of time to get ready for their intended use. The capitalization rate is the Corporation's weighted average cost of borrowing.

(m) Intangible assets

Intangible assets include land and water rights, computer software, capital contributions, power purchase agreements, deferred contract costs and assets under development. Water rights represents the inherent value of the right to draw water from government-owned rivers and lakes for purposes of generating electricity.

Intangible assets with finite lives are measured at cost less accumulated amortization and accumulated impairment losses, if any. Intangible assets are amortized on a straight-line basis over the estimated service lives of the related assets while those with indefinite lives are not amortized. Intangible assets acquired in a business combination are initially recorded at their acquisition-date fair values.

Intangible assets are derecognized on disposal or when no further future economic benefits are expected from their use. Gains or losses on disposal of intangible assets are recognized in income and are calculated as the difference between net proceeds from disposal and the carrying amount of the asset.

The estimated useful lives and amortization methods are reviewed at each year-end with the effect of any changes in estimate being accounted for on a prospective basis.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(m) Intangible assets [continued]

Estimated service lives for intangible assets with finite lives are as follows:

Land rights	50 years
Water rights with a definite useful life	7 to 100 years
Computer software	5 to 10 years
Capital contributions and other agreements	
Capital contributions	45 years
Power purchase agreements	15 years
Deferred contract costs	15 years

Water rights relating to certain hydroelectric power stations are amortized on a straight-line basis over the related contract term, including one renewal period when applicable. Contract terms associated with the water rights for the Corporation's other hydroelectric stations do not carry a specific expiration date and thus are not amortized, but are tested for impairment annually or as soon as there is evidence of impairment.

Borrowing costs are capitalized as a component of cost of self-constructed intangible assets that take a substantial period of time to get ready for their intended use. The capitalization rate is the Corporation's weighted average cost of borrowing.

(n) Investment properties

Investment property is land and/or buildings held for purposes other than for use in the Corporation's operating activities. The Corporation holds investment properties either for potential expansion of the service delivery network or as excess administrative property. Investment properties are measured at cost plus transaction costs, and have estimated service lives ranging between 25 and 50 years. Any gain or loss arising from the sale of an investment property is immediately recognized in income. Rental income from investment property, net of the related operating expenses, are presented as part of other revenue.

(o) Impairment of non-financial assets

At the end of each reporting period, or earlier if required, the Corporation assesses whether there is an indication that a non-financial asset [or CGU] may be impaired. The Corporation's cash inflows are monitored separately by generating station, resulting in the Corporation having several CGUs. If any indication exists, the Corporation estimates the asset's recoverable amount, which is the higher of an asset or CGU's fair value less costs of disposal and its value in use. If the carrying value of a non-financial asset exceeds its recoverable amount, the difference is immediately recognized as an impairment loss in profit or loss.

Intangible assets with indefinite useful lives [i.e. certain water rights] are tested for impairment [within their respective CGUs] at least annually, and whenever there is an indication that the asset may be impaired. When determining the recoverable amount for these intangible assets, the Corporation determines:

- Its value in use by discounting estimated future cash flows to their present value using a discount rate that reflects changes in the time value of money and the risks specific to the asset or the CGU.
- Its fair value less costs of disposal by considering whether there is a current market price for the asset. Otherwise, the Corporation uses an income approach, which is based on the present value of future cash flows generated by an asset or a CGU. The discounted cash flow method consists of projecting cash flows and converting them into present values by applying discount rates. The discount rate estimated and used by management represents the weighted average cost of capital determined for a group of CGUs. The growth rate is determined based on past experience, economic trends as well as market and industry trends.

At the end of a reporting period, if there is any indication that an impairment loss recognized in a prior period no longer

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements
Year ended December 31, 2016
[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(o) Impairment of non-financial assets [continued]

exists or has decreased, the loss is reversed up to its recoverable amount. The carrying amount following the reversal must not be higher than the carrying amount that would have prevailed [net of amortization] had the original impairment not been recognized in prior periods.

Compensation for the impairment of non-financial assets, such as insurance recoveries, is included in determining profit or loss when it becomes receivable and is not offset against the cost of restoring, purchasing or constructing replacement assets.

(p) Employee future benefits

(i) Pension plans

The Corporation provides pension benefits for its employees through the Ontario Municipal Employees Retirement System ['OMERS'] Fund [the 'Fund']. OMERS is a multi-employer pension plan that provides pensions for employees of Ontario municipalities, local boards, public utilities and school boards. The Fund is a defined benefit pension plan, which is financed by equal contributions from participating employers and employees and by the investment earnings of the Fund.

Although the plan is a defined benefit plan, sufficient information is not available to the Corporation to account for it as such because it is not possible to attribute the fund assets and liabilities between the various employers who contribute to the Fund. As a result, the Corporation accounts for the plan as a defined contribution plan, and contributions payable as a result of employee service are expensed as incurred as part of operating costs. The Corporation shares in the actuarial risks of the other participating entities in the plan, and its future contributions may therefore be increased due to actuarial losses relating to the other participating entities. In addition, the Corporation's contributions could be increased if other entities withdraw from the plan.

CHLP is the sponsoring employer of the Pension Plan for Employees of Chaudiere Hydro L.P. and Participating Employers ['Chaudiere Hydro Pension Plan' or 'CHPP']. The CHPP is accounted for as follows:

- CHPP assets are held by an insurance corporation and are measured at fair value, which are determined as follows: bond, equity and other investment funds are valued using the unit values supplied by the fund manager, which reflects the fund's proportionate share of underlying net assets at fair values determined using closing quotations from Canadian investment dealers, and short-term investments are valued at cost, including accrued interest, which due to their short-term maturity approximates fair value.
- Defined benefit obligations of the CHPP are determined based on the expected future benefit payments discounting using market interest rates on high-quality debt instruments that match the timing and amount of expected benefit payments.
- The cost of pension earned by employees is actuarially determined using the projected benefit method prorated on services, and management's best estimate of salary escalation, retirement ages and life expectancy.
- The defined benefit expense is presented in employee benefits in net income on the consolidated statement of income and includes, as applicable, the estimated cost of employee benefits for the current year service, interest cost, interest income on CHPP's assets, plan amendments, curtailments, other administration costs of the pension plans and any gain or loss on settlement. Current service cost, interest income on CHPP's assets and interest costs are computed by applying the discount rate used to measure

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(p) Employee future benefits [continued]

(i) Pension plans [continued]

the plan obligation at the beginning of the annual period.

- Remeasurements arising on CHPP's assets and defined benefit obligation are presented in OCI on the consolidated statement of comprehensive income and arise from actuarial gains and losses on defined benefit obligations, the difference between the actual return [net of costs of managing CHPP's assets] and interest income on plan assets, if applicable. CHPP's significant assumptions are assessed and revised, as appropriate.
- Past service costs are included in the cost of the CHPP for the year when they arise.

The fair value of the CHPP assets is offset against the defined benefit obligation. The net amount is recognized as a retirement benefit asset or retirement benefit liability.

(ii) Other post-employment benefits

Employee future benefits other than pensions provided by the Corporation include life insurance, a retirement grant and other benefits. These plans provide benefits to certain employees when they are no longer providing active service.

Employee future benefits expense is recognized in the period during which the employees render services.

Employee future benefits are recorded on an accrual basis. The defined benefit obligation and current service costs are calculated using the projected benefit method prorated on service and based on assumptions that reflect management's best estimates. The current service cost for a period is equal to the actuarial present value of benefits attributed to employees' services rendered in the period. Actuarial gains and losses resulting from experience different from that assumed or from changes in actuarial assumptions are recognized in OCI. However, for Hydro Ottawa Limited, these amounts are reclassified to a regulatory debit balance as permitted by the OEB.

(iii) Employee benefits

The Corporation provides short-term employee benefits such as salaries, employment insurance, short-term compensated absences and health and dental care. These benefits are recognized as the related service is rendered and is measured on an undiscounted basis. Short-term employee benefits are recognized as an expense unless they qualify for capitalization as part of the cost of an item of property, plant and equipment or intangible assets. A liability is recognized in respect of any unpaid short-term employee benefits for services rendered in the reporting period.

The Corporation recognizes a liability for the expected cost of accumulated non-vested sick leave benefits at the end of the reporting period. The Corporation elected to present its non-vested sick leave obligation as a non-current liability since it does not expect to settle all of its sick leave benefits within twelve months from the balance sheet date.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(q) Customer deposits

Customer deposits are cash collections from non-residential customers to guarantee the payment of future energy bills and fulfillment of construction obligations. Deposits estimated to be refundable to such customers within the next fiscal year are classified as current liabilities and included in accounts payable and accrued liabilities.

(r) Capital contribution obligations

The Corporation is party to various Connection and Cost Recovery Agreements ['CCRAs'] with HONI. These agreements govern the construction by HONI of new or modified transformer stations for the purpose of serving the Corporation's customers, including anticipated electricity load growth.

All terms and conditions of CCRAs follow the *Transmission System Code* [the 'Code'] issued by the OEB. The amount of the initial capital contribution required is based on the prescribed economic evaluation procedure set out in the Code. This initial capital contribution is reduced by any commitment of connection revenue [the 'guaranteed revenue'] earned by HONI from the Corporation over the period of the respective CCRA. Guaranteed revenue is calculated based on forecasted load ['initial load'] multiplied by HONI's approved rate at the time of entering into these agreements.

Each of the Corporation's CCRAs has a term of 25 years. These agreements require periodic reviews whereby a comparison of actual to forecasted load is conducted, and a true-up calculation performed. When a true-up calculation shows the Corporation's actual load for the past period and updated load forecast for the future period are lower than the initial load, the Corporation is obligated to make up this shortfall. When the Corporation's actual load and updated load forecast is higher than the initial load, the Corporation is entitled to a rebate. True-up calculations are made in years 5 and 10; and in year 15 if the difference between the actual incremental load and initial load at the end of year 10 are greater than 20%.

(s) Provisions and contingencies

The Corporation recognizes provisions when there is a present legal or constructive obligation as a result of a past event, it is probable that an outflow of economic benefits will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation. If the effect is material, provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and, where appropriate, the risks specific to the liability.

The evaluation of the likelihood of the contingent events requires judgment by management as to the probability of exposure to potential loss. Actual results could differ from these estimates.

A contingent asset is not recognized in the financial statements. However, a contingent asset is disclosed where an inflow of economic benefits is probable.

(t) Deferred revenue

In certain situations, financial assistance in the form of contributions is required from customers to finance additions to property, plant and equipment. This occurs when the estimated revenue resulting from the addition to property, plant and equipment is less than the cost of providing the service or where special equipment is needed to supply the customers' specific requirements. Since the contributions will provide customers with ongoing access to the supply of electricity, these contributions are classified as deferred revenue, and recognized as other revenue at an equivalent rate to that used for the depreciation of the related property, plant and equipment.

(u) Debt-issuance costs

The Corporation incurs debt-issuance costs that are external, direct and incremental in nature arising from its debenture and bond offerings. Debt-issuance costs associated with its debenture and bond offerings are netted against the proceeds of the debt and amortized using the effective yield method.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(v) Leases

Leases in which the Corporation assumes all of the risks and rewards of ownership are classified as finance leases. Upon initial recognition, the leased asset is measured at an amount equal to the lower of its fair value and the present value of the minimum lease payments. Subsequent to initial recognition, the asset is accounted for in accordance with the accounting policy applicable to the asset. Payments under finance leases are apportioned between interest expense and a reduction of the outstanding liability.

All other leases are classified as operating leases and the leased assets are not recognized on the Corporation's consolidated balance sheets. Payments made under operating leases are recognized in net income on a straight-line basis over the term of the lease.

Upon evaluation, all of the Corporation's leases are classified as operating leases.

(w) Inventory

Inventory consists of work-in-process and finished goods used in the installation and maintenance of street lights as part of the Corporation's contract and commercial services. Inventory is measured at the lower of weighted average variable costs and net realizable value. The cost of inventory is based on the first-in, first-out cost formula based on standard costs. Net realizable value is the estimated selling price in the ordinary course of business less any applicable selling expenses.

4. FUTURE CHANGES IN ACCOUNTING POLICIES

A number of new standards, amendments and interpretations are not yet effective for the year ended December 31, 2016 and have not been applied in preparing these consolidated financial statements. The Corporation continues to analyze these standards and has initially determined that the following could have an impact on its consolidated financial statements.

In May 2014, the IASB published a new standard, IFRS 15 *Revenue from Contracts with Customers* ['IFRS 15'], which replaces most of the detailed guidance on revenue recognition that currently exists under IFRS. IFRS 15 specifies how and when an entity will recognize revenue and additional disclosure requirements. In April 2016, the IASB issued amendments to IFRS 15 which clarify how to identify a performance obligation in a contract, determine whether a company is a principal or an agent, and determine whether the revenue from granting a license should be recognized at a point in time or over time. In addition to the clarifications, the amendments include two additional reliefs to reduce cost and complexity for a company when it applies the new standard. IFRS 15 is effective for annual periods beginning on or after January 1, 2018.

In July 2014, the IASB issued the final version of IFRS 9 *Financial Instruments* ['IFRS 9'], which replaces IAS 39 *Financial Instruments: Recognition and Measurement*. IFRS 9 includes revised guidance on the classification and measurement of financial instruments and is effective for annual periods beginning on or after January 1, 2018.

In January 2016, the IASB issued a new standard, IFRS 16 *Leases* ['IFRS 16']. It replaces accounting requirements introduced more than 30 years ago that are no longer considered suitable and is a major revision of the way in which companies account for leases. The new standard becomes effective for reporting periods beginning on or after January 1, 2019. Early adoption is permitted if IFRS 15 is also adopted.

On January 29, 2016, the IASB published amendments to IAS 7 *Statement of Cash Flows* ['IAS 7']. The amendments are intended to clarify IAS 7 to improve information provided to users of financial statements about an entity's financing activities. They are effective for annual periods beginning on or after 1 January 2017, with earlier application being permitted.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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[in thousands of Canadian dollars]

5. BUSINESS COMBINATIONS

(a) Acquisition of the Centrale Hull-2 generation facility from Hydro-Québec

On December 14, 2016, the Corporation, through Hull Energy L.P., entered into an Agreement of Purchase and Sale ['APS'] with Gatineau Power Company [a subsidiary of Hydro-Québec], to acquire its 27 megawatt Centrale Hull-2 hydroelectric generating station [the 'HQ assets'] and its 33.33% interest in CWPI for a cash purchase price of \$50,000, inclusive of contingent consideration estimated at the date of acquisition to be \$10,000. Also on December 14, 2016, the Corporation entered into two agreements incidental to the APS: [1] a 25-year fixed-price, indexed power purchase agreement with Hydro-Québec to sell them electricity from the HQ assets at a market base-rate and [2] a 100-year-less-a-day lease with Gatineau Power Company for the land and associated water rights pertaining to the Québec side of the Ottawa River at Chaudière Falls. The acquisition of HQ assets was determined to be a business combination for accounting purposes.

The following table summarizes the fair values of the assets acquired and liabilities assumed as part of the transaction with Gatineau Power Company.

	Acquisition date fair value \$
Non-current assets	
Generation and other	
Reservoirs, dams and waterways	17,944
Generating equipment	12,025
Land and buildings	10,031
Water rights	10,000
Retirement benefit asset	90
Non-current liabilities	
Employee future benefits	(36)
Accounts payable and accrued liabilities	(54)
Total net assets acquired	50,000

The fair value of the property, plant and equipment acquired was based on the direct method-replacement cost approach. As such, the asset values were estimated as if they were to be reconstructed on an undeveloped site. These estimates were developed through discussions with third-party engineers, market research and comparisons with similar equipment and facility replacement cost data based on capacity. Moreover, since the assets have been in use over varying periods of time, allowances have been made for physical, functional, and economic factors affecting utility and value as they might apply. The fair value of the water rights was based on the present value of the net cash flow benefits derived from the water rights ownership. As a result, the fair value measurement for the acquired HQ assets are classified within Level 3 of the fair value hierarchy.

Amounts with respect to the retirement benefit asset, employee future benefits and accounts payable and accrued liabilities relate to the Corporation's acquired 33.33% interest in CWPI. The \$10,000 earn out is included in accounts payable and accrued liabilities as at December 31, 2016 and was settled subsequent to year-end.

The Corporation incurred transaction costs [primarily legal and consulting] totaling \$1,754 with respect to the acquisition. As management is not privy to the applicable financial information, it is impracticable to determine the amount of revenue or income (loss) the HQ assets would have produced had the acquisition occurred on January 1, 2016.

Hydro Ottawa Holding Inc.

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Year ended December 31, 2016

[in thousands of Canadian dollars]

5. BUSINESS COMBINATIONS [CONTINUED]

(b) Acquisition of generation facilities from Fortis Inc.

On March 23, 2015, the Corporation, through 2425932 Ontario Inc., entered into a Share and Unit Purchase Agreement ['SPA'] with Fortis Inc. to acquire 100% of four entities that collectively own and operate 10 run-of-the-river hydroelectric generation facilities in New York State [i.e. EONY] and Ontario ['EOGen'] for a cash purchase price of \$77,038 [\$62,500 USD] and \$16,000 respectively. The Corporation completed its acquisition of EONY on June 22, 2015 and EOGen on July 17, 2015 with respective closing adjustments of \$820 [\$666 USD] and \$1,261, bringing the final cash purchase prices to \$77,858 [\$63,166 USD] and \$17,261. The four stations in New York State have a combined operating capacity of 22.6 megawatts, while the six stations in Ontario have a combined operating capacity of 8.3 megawatts.

The following table summarizes the fair values of the assets acquired and liabilities assumed as part of the transaction with Fortis Inc. in Canadian dollars. The Corporation undertook a market approach, using discounted cash flows to estimate the fair value of the water rights and power purchase agreements acquired. As a result, the fair value measurement for such assets is classified within Level 3 of the fair value hierarchy. Expected future cash flows were based on estimates of future production, commodity prices and applicable contractual rates.

	Acquisition date fair value \$
Current assets	
Cash	2,268
Accounts receivable	1,756
Prepaid expenses	228
Current liabilities	
Accounts payable and accrued liabilities	(490)
Non-current assets	
Generation and other	
Generating equipment	25,667
Reservoirs, dams and waterways	16,745
Furniture and equipment	107
Rolling stock	111
Land and buildings	18,373
Power purchase agreement	1,276
Computer software	445
Water rights	30,690
Investment property	150
Deferred income tax assets	2,079
Non-current liabilities	
Deferred income tax liabilities	(4,286)
Total net assets acquired	95,119

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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5. BUSINESS COMBINATIONS [CONTINUED]

(b) Acquisition of generation facilities from Fortis Inc. [continued]

The breakdown of cash paid to Fortis Inc. for acquisition is as follows:

	2015 \$
Total net assets acquired	95,119
Less: cash acquired	(2,268)
Less: closing adjustments in accounts payable and accrued liabilities	(2,081)
Less: acquired liabilities funded by Fortis Inc.	(206)
Total cash paid for net assets acquired	90,564

The amounts relating to accounts receivable, prepaid expenses and accounts payable and accrued liabilities have been removed from their respective operating line items in the consolidated statements of cash flows as they did not arise in the ordinary course of business.

The Corporation incurred transaction costs [primarily legal and consulting fees] relating to the acquisition of \$2,733. Had the acquisition occurred on January 1, 2015, management estimates generation revenue and net income would have been \$18,138 and \$31,874 respectively for the 2015 fiscal year.

By settling the acquisition-related receivables and payables outstanding at December 31, 2015, the Corporation's investing activities include \$1,131 of cash outflows in the current year.

6. ACCOUNTS RECEIVABLE

	2016 \$	2015 \$
Electricity receivables	70,370	59,198
Unbilled revenue	103,253	88,036
Trade and other receivables	11,579	21,071
Less: allowance for doubtful accounts [Note 19(c)]	(1,782)	(1,927)
	183,420	166,378
Amounts due from related parties [Note 26]	9,250	5,646
	192,670	172,024
Aging:		
Outstanding for 30 days or less	80,893	74,986
Outstanding for more than 30 days but not more than 120 days	8,018	8,242
Outstanding for more than 120 days	2,288	2,687
Unbilled revenue	103,253	88,036
Less: allowance for doubtful accounts	(1,782)	(1,927)
	192,670	172,024

Hydro Ottawa Holding Inc.

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7. REGULATORY BALANCES

Information about the Corporation's regulatory balances is as follows:

	Remaining recovery/ reversal [years]	2015 \$	Balances arising in the year \$	Recovery/ reversal \$	Other movements ⁽¹⁾ \$	2016 \$
Regulatory debit balances						
RARA	1	205	68	1	-	274
Settlement variances	1 - 5	5,502	(3,006)	-	-	2,496
OPEB deferral account	1 - 5	4,432	(4,285)	-	-	147
Regulatory asset for deferred income taxes	(2)	-	7,684	-	-	7,684
Other variances and deferred costs	1 - 5	4,291	(1,148)	-	-	3,143
		14,430	(687)	1	-	13,744
Regulatory credit balances						
RLRA	1	3,266	1,618	(4,475)	-	409
Settlement variances	1 - 5	29,919	6,218	-	-	36,137
Stranded meters	1	5,974	(5,974)	-	-	-
Regulatory liability for deferred income taxes	(2)	513	(513)	-	-	-
Other variances and deferred costs	1 - 5	1,153	(994)	-	-	159
		40,825	355	(4,475)	-	36,705

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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[in thousands of Canadian dollars]

7. REGULATORY BALANCES [CONTINUED]

	Remaining recovery/ reversal [years]	2014 \$	Balances arising in the year \$	Recovery/ reversal \$	Other movements ⁽¹⁾ \$	2015 \$
Regulatory debit balances						
RARA	1	209	(4)	-	-	205
Settlement variances	1 - 5	12,223	(6,721)	-	-	5,502
OPEB deferral account	1 - 5	4,432	-	-	-	4,432
Other variances and deferred costs	1 - 5	3,759	563	(31)	-	4,291
		20,623	(6,162)	(31)	-	14,430
Regulatory credit balances						
RLRA	1	3,143	232	(109)	-	3,266
Settlement variances	1 - 5	14,414	15,505	-	-	29,919
Stranded meters	1	2,987	2,987	-	-	5,974
Regulatory liability for deferred income taxes	(2)	12,070	(11,557)	-	-	513
Other variances and deferred costs	1 - 5	1,597	(444)	-	-	1,153
		34,211	6,723	(109)	-	40,825

⁽¹⁾ Other movements represent reclassifications of balances.

⁽²⁾ The balance is being reversed through timing differences in the recognition of deferred income tax assets.

In December 2016, the OEB approved the disposition of certain deferral and variance accounts as at December 31, 2015 amounting to a credit of \$22,471 over a one-year period commencing January 1, 2017.

The following regulatory balances include accrued interest:

- The RARA/RLRA includes accrued interest costs of \$27 [2015 – \$46].
- Settlement variances include accrued interest costs of \$268 [2015 – \$97].
- Other variance and deferred costs include accrued interest earned of \$15 [2015 – \$12].

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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[in thousands of Canadian dollars]

8. PROPERTY, PLANT AND EQUIPMENT

	Land and buildings \$	Distribution \$	Generation and other \$	Assets under construction \$	Total \$
Cost					
Balance as at December 31, 2014	93,735	597,370	71,046	64,375	826,526
Additions, net of transfers	1,657	118,715	4,985	13,229	138,586
Acquired via business combination [Note 5(b)]	18,373	-	42,630	-	61,003
Disposals	-	(1,321)	(17)	-	(1,338)
Exchange differences	2,031	-	4,104	1	6,136
Balance as at December 31, 2015	115,796	714,764	122,748	77,605	1,030,913
Additions, net of transfers	855	90,696	10,340	85,461	187,352
Acquired via business combination [Note 5(a)]	10,031	-	29,969	-	40,000
Disposals	(2)	(1,544)	(153)	-	(1,699)
Exchange differences	(553)	-	(1,145)	7	(1,691)
Balance as at December 31, 2016	126,127	803,916	161,759	163,073	1,254,875
Accumulated depreciation					
Balance as at December 31, 2014	(3,034)	(22,326)	(11,534)	-	(36,894)
Depreciation	(2,951)	(26,154)	(5,602)	-	(34,707)
Disposals	-	92	3	-	95
Exchange differences	(11)	-	(24)	-	(35)
Balance as at December 31, 2015	(5,996)	(48,388)	(17,157)	-	(71,541)
Depreciation	(3,406)	(27,340)	(6,647)	-	(37,393)
Disposals	1	178	46	-	225
Exchange differences	(14)	-	18	-	4
Balance as at December 31, 2016	(9,415)	(75,550)	(23,740)	-	(108,705)
Net book value					
As at December 31, 2015	109,800	666,376	105,591	77,605	959,372
As at December 31, 2016	116,712	728,366	138,019	163,073	1,146,170

During the year, the Corporation capitalized borrowing costs of \$4,055 [2015 – \$1,199] to property, plant and equipment. The average annual interest rate for 2016 was 3.7% [2015 – 4.1%]. During the year, the Corporation incurred a loss on disposal of property, plant and equipment of \$833 [2015 – \$538].

In February 2014, the Corporation's subsidiary CHLP negotiated a forty-year Hydroelectric Standard Offer Program – Municipal Stream Contract [‘40-year HESOP Contract’] with the IESO – resulting in the Corporation's commitment of significantly expanding its generation facilities on the Ontario side of Chaudière Falls by 20 megawatts [the ‘Chaudière Expansion’]. Since 2015, the Corporation has been fully engaged in this multi-year expansion project. As a result, a significant amount of assets under construction comprise large civil structures, water-to-wire connections, engineering and project management services relating to the Chaudière Expansion, which is anticipated to be completed and commercially operational in 2017.

Hydro Ottawa Holding Inc.

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[in thousands of Canadian dollars]

9. INTANGIBLE ASSETS

	Land rights and water rights \$	Computer software \$	Capital contributions and other agreements \$	Assets under development \$	Total \$
Cost					
Balance as at December 31, 2014	18,731	39,972	5,618	28,376	92,697
Additions (net of transfers)	20	9,883	14,133	(24,324)	(288)
Acquired via business combination [Note 5(b)]	30,690	445	1,276	-	32,411
Exchange differences	2,923	45	-	-	2,968
Balance as at December 31, 2015	52,364	50,345	21,027	4,052	127,788
Additions	473	2,118	3,811	5,857	12,259
Acquired via business combination [Note 5(a)]	10,000	-	-	-	10,000
Exchange differences	(798)	(12)	-	-	(810)
Disposals	-	-	(2,610)	-	(2,610)
Balance as at December 31, 2016	62,039	52,451	22,228	9,909	146,627
Accumulated amortization					
Balance as at December 31, 2014	(49)	(5,651)	(916)	-	(6,616)
Amortization	(49)	(7,131)	(633)	-	(7,813)
Balance as at December 31, 2015	(98)	(12,782)	(1,549)	-	(14,429)
Amortization	(3,314)	(7,871)	(955)	-	(12,140)
Exchange differences	(20)	3	-	-	(17)
Disposals	-	-	1,627	-	1,627
Balance as at December 31, 2016	(3,432)	(20,650)	(877)	-	(24,959)
Net book value					
As at December 31, 2015	52,266	37,563	19,478	4,052	113,359
As at December 31, 2016	58,607	31,801	21,351	9,909	121,668

During the year, the Corporation capitalized borrowing costs of \$81 [2015 – \$515] to intangible assets. The average annual interest rate for 2016 was 3.7% [2015 – 4.1%]. During the year, the Corporation incurred a loss on intangible assets of \$983 [2015 – \$nil].

A significant portion of the Corporation's water rights with indefinite lives [68% or \$16,941] stems from a historical 1889 lease agreement with Public Works and Government Services Canada [the 'Chaudière water rights']. This contract provides rights to waters on the Ottawa River at Chaudière Falls for two of the Corporation's CGUs and effectively renews every 21 years into perpetuity. As a result of the deemed indefinite life, the Corporation does not amortize these water rights.

Hydro Ottawa Holding Inc.

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9. INTANGIBLE ASSETS [CONTINUED]

The Corporation's annual impairment test of all of its water rights with indefinite lives resulted in no impairment for the 2016 fiscal year [2015 - \$nil]. For the testing of its Chaudière water rights, the Corporation used a fair value less costs of disposal calculation ['FVLCD'] based on discounted future cash inflows to be earned under the Corporation's future contracts [ex. the 40-year HESOP Contract] and cash outflows based on management's industry experience and data from third party consultants. The key assumption in the FVLCD calculation was a weighted average cost of capital ['WACC'] of 4.6%. A 10 percent increase or decrease in the WACC, while holding all other assumptions constant, would not impact management's conclusion with respect to its water rights not being impaired at December 31, 2016 or 2015.

10. INVESTMENT PROPERTIES

	2016 \$	2015 \$
Net book value, beginning of year	2,360	2,216
Additions	46	106
Acquired via business combination	-	150
Depreciation	(109)	(112)
Net book value, end of year	2,297	2,360

The fair value of investment properties is \$4,865, which is based on the latest Municipal Property Assessment Corporation valuation dated May 12, 2016.

11. INVESTMENTS IN JOINT ARRANGEMENTS

(a) Investments in joint ventures

	2016 \$	2015 \$
Moose Creek LP [50.05%]		
Investment in joint venture, beginning of year	3,488	3,370
Share of profit	567	118
Investment in joint venture, end of year	4,055	3,488
PowerTrail [60%]		
Investment in joint venture, beginning of year	3,306	2,914
Share of profit, net of tax	451	372
Other adjusting items related to profit	21	20
Additional contributions	42	-
Investment in joint venture, end of year	3,820	3,306
Total investments in joint ventures	7,875	6,794

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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11. INVESTMENTS IN JOINT ARRANGEMENTS [CONTINUED]

(b) Summary balance sheets and statements of income of joint ventures

	2016 \$	2015 \$
Moose Creek LP [50.05%]		
Current assets	1,276	1,249
Non-current assets	12,882	13,223
Total assets	14,158	14,472
Current liabilities	1,585	1,552
Non-current liabilities	4,229	5,710
Total liabilities	5,814	7,262
Revenue	3,679	2,895
Net income	1,134	235
PowerTrail [60%]		
Current assets	915	1,103
Non-current assets	10,761	9,877
Total assets	11,676	10,980
Current liabilities	938	1,194
Non-current liabilities	3,949	3,819
Total liabilities	4,887	5,013
Revenue	3,568	3,787
Net income	752	618

(c) Joint operations

The Corporation's investment in CWPI was considered to be a joint operation until December 14, 2016, at which point it became a subsidiary of the Corporation after the acquisition of the remaining 33.3% share from Hydro-Québec as disclosed in Note 5(a). The Corporation has recognized \$10 in net income and a loss of \$56 in OCI with respect to this joint operation through the 348-day period ended December 14, 2016 [December 31, 2015 – 66.7% recognition of contractual share of assets, liabilities and expenses in the accounts of the Corporation, including in \$10 in net income, a loss of \$29 in OCI].

(d) Credit facilities

PowerTrail has a credit facility of \$200 [2015 – \$200] to provide standby letters of credit to the IESO. The facility contains customary covenants and events of default, including a covenant to maintain a tangible net worth of \$1,000. As at December 31, 2016, PowerTrail had drawn an amount of \$133 [December 31, 2015 – \$133] in standby letters of credit against this facility.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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[in thousands of Canadian dollars]

12. NOTES RECEIVABLE FROM RELATED PARTIES

	2016 \$	2015 \$
Moose Creek LP promissory note, 6.0%, due January 1, 2025	2,710	3,121
PowerTrail promissory notes, non-interest bearing	1,179	1,646
City of Ottawa note, 3.0%	3,622	-
	7,511	4,767
Less: current portion	(2,049)	(732)
	5,462	4,035

(a) Moose Creek LP

On December 31, 2014, the Corporation advanced a 10-year unsecured promissory note to Moose Creek LP in the amount of \$3,307 with an interest rate of 6.0% as Moose Creek LP adjusted its capital structure. Blended repayments on the notes receivable are \$442 per year, with the principal portion projected as follows: 2017 – \$291, 2018 – \$322, 2019 – \$342, 2020 – \$363, 2021 and thereafter – \$1,092. For 2017, Moose Creek LP has committed to making an additional principal repayment of \$300 in addition to the regular quarterly blended repayments noted above, bringing the total current portion with respect to this loan to \$591.

(b) PowerTrail

Pursuant to the Shareholder Agreement dated November 3, 2005, any loans from the Corporation [via Energy Ottawa] to PowerTrail are made on a pro rata basis, based upon its share of contributions of capital in the Corporation [60%]. To fund the construction of its gas generation plant at the Trail Road landfill site, between 2005 and 2007, the Corporation provided unsecured, non-interest bearing grid promissory notes totaling \$4,860. Repayments on the grid promissory notes are made when possible as agreed to by the shareholders, however they are not due on demand. The initial fair value of each advance was calculated using discount rates ranging between 7.6% and 8.0%.

Future cash principal repayments on the notes receivable are estimated to be as follows: 2017 – \$nil, 2018 – \$nil, 2019 – \$600, 2020 – \$600 and 2021 – \$300 while the total future imputed interest offsetting the principal balances outstanding at December 31, 2016 is \$321.

(c) City of Ottawa

In February 2016, the Corporation entered into two contracts with the City of Ottawa [the 'City']. Over a span of an estimated six years, the Corporation is engaged to convert 58,000 legacy street lights to LED [S/L conversion contract] and to provide maintenance services to all legacy and converted LED street lights [S/L maintenance contract].

While payment terms on its S/L maintenance contract are under the Corporation's usual credit terms, the Corporation and the City have negotiated a 3% interest bearing note, calculated on a quarterly basis with open repayment terms, for the S/L conversion contract. Under such terms, the City is to pay the Corporation on a quarterly basis an amount calculated based on the City's electricity, maintenance and capital expenditure savings resulting from the LED street light conversions. Of the total \$3,622 outstanding at December 31, 2016, \$1,831 represents accrued work performed to be billed in early 2017. The Corporation estimates that \$1,458 will be repaid in 2017.

The Corporation carries inventory of \$1,577 relating to City of Ottawa street light conversion and maintenance endeavors at December 31, 2016.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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13. CREDIT FACILITY

During the year, the Corporation renewed its credit facility in the amount of \$340,750 and US\$200 [2015 – \$340,750 and US\$200]. The facility is structured into five types of credit availability and continues to consist of a \$75,000 [2015 – \$75,000] revolving operating line and a \$100,000 [2015 – \$100,000] revolving line to fund capital expenditures and growth opportunities, both of which mature on August 1, 2019. The facility also has a \$15,000 [2015 – \$15,000] line to fund letters of credit and other guarantees, a \$150,000 [2015 – \$150,000] 364-day revolving operating term line which may be used to assist with refinancing debt and support day to day operations, and a \$750 and US\$200 [2015 – \$750 and US\$200] commercial card facility – all of which mature on August 1, 2017. The revolving operating lines can be used by way of direct advances, bankers' acceptances and/or by way of letters of credit and other guarantees. This credit facility contains customary covenants and events of default including a covenant to maintain the consolidated tangible net worth in excess of \$175,000 at all times. It also requires the debt to capitalization ratio to be at or below 75% on a consolidated basis.

As at December 31, 2016, the Corporation has drawn \$1,100 in direct advances against the revolving operating line of credit [2015 – \$nil] and \$76,000 in bankers' acceptances against the \$150,000 revolving operating term line [2015 – \$nil]. The Corporation has also drawn \$24,451 [2015 – \$11,698] against its facilities in standby letters of credit.

As at December 31, 2016, CHLP has a standby letter of credit to the Receiver General of Canada on behalf of Fisheries and Oceans Canada in the amount of \$538 [December 31, 2015 – \$538], expiring on October 23, 2017 in connection with the Chaudière Expansion. CHLP also has two standby letters of credit to the IESO in the amount of \$587 and \$294 [December 31, 2015 – \$587 and \$294] expiring on February 23, 2018 and October 20, 2017 respectively in connection with the 40-year HESOP contract. Finally, CHLP has a standby letter of credit to BNY Trust Company of Canada in the amount of \$12,900 [December 31, 2015 – \$nil], expiring on July 7, 2017 in connection with the Trust Indenture dated September 7, 2016 as described in Note 16(b).

As at December 31, 2016, CWPI has an operating revolving line of credit totalling \$500 for general business purposes. The line of credit bears annual interest at the prime rate and is secured by acceptable letters of comfort signed by each of the four shareholders. As at December 31, 2016 CWPI had drawn \$76 against this operating line of credit [December 31, 2015 – \$nil].

14. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

	2016 \$	2015 \$
Purchased power payable	92,874	72,685
Trade accounts payable and accrued liabilities	71,398	61,506
Customer deposits	14,452	13,843
Customer credit balances	7,391	8,277
Acquisition-related payables	10,000	2,400
Due to related parties [Note 26]	136	228
	196,251	158,939

Hydro Ottawa Holding Inc.

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[in thousands of Canadian dollars]

15. EMPLOYEE FUTURE BENEFITS

(a) Pension plans

The Corporation contributes to two defined benefit plans covering substantially all of its employees.

The Corporation's participating employer contributions under OMERS for the year ended December 31, 2016 amounted to \$6,218 [2015 – \$6,163].

The Corporation provides retirement benefits to certain employees through the Chaudiere Hydro Pension Plan. As at December 31, 2016, CWPI and Chaudiere Hydro North L.P. are the only two entities with employees who are part of the Chaudiere Hydro Pension Plan.

(i) Defined benefit obligation

	2016 \$	2015 \$
Balance, beginning of year	4,502	3,933
Current service cost	159	122
Interest cost	183	157
Benefits paid	(91)	(9)
Employee contributions	58	90
Actuarial loss	182	209
Acquired via business combination [Note 5(a)]	760	-
Balance, end of year	5,753	4,502

(ii) Plan assets

	2016 \$	2015 \$
Fair value, beginning of year	4,889	4,630
Interest credit	179	188
Employer contributions	147	170
Benefits paid	(91)	(9)
Non-investment expenses	(10)	(33)
Employee contributions	60	90
Actuarial loss	(110)	(147)
Acquired via business combination [Note 5(a)]	850	-
Fair value, end of year	5,914	4,889

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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15. EMPLOYEE FUTURE BENEFITS [CONTINUED]

(a) Pension plans [continued]

(iii) Funded status

	2016 \$	2015 \$
Retirement benefit asset, beginning of year	387	697
Change in retirement benefit asset	(316)	(310)
Acquired via business combination [Note 5(a)]	90	-
Retirement benefit asset, end of year	161	387

The assets of the Chaudiere Hydro Pension Plan are held and managed by an independent custodian and accounted for separately in the Corporation's pension funds. The asset allocation structure is subject to diversification requirements and constraints which reduce risk by limiting exposure to individual equity investments, credit rating categories and foreign currency exposures. Based on the fair value of assets held as at December 31, 2016, the Chaudiere Hydro Pension Plan's assets were comprised of 89.3% [2015 – 89.5%] fixed income Canadian bonds, 7.1% [2015 – 6.8%] Canadian and international equities and 3.6% [2015 – 3.7%] in alternative investments. The Chaudiere Hydro Pension Plan's investments are primarily held and managed in pooled funds, and thus do not have a quoted market price in an active market.

Employee future benefits under the Chaudiere Hydro Pension Plan are calculated using an annual compensation rate of 2.0% [2015 – 2.0%], an inflation rate of 2.0% [2015 – 2.0%] and a discount rate of 3.9% [2015 – 4.0%]. The valuations also include several other economic and demographic assumptions including mortality rates, which are based on the Canadian Pensioners' Mortality report published by the Canadian Institute of Actuaries in February 2014.

An actuarial extrapolation was performed as at December 31, 2016. As a result of this exercise, the Corporation decreased the retirement benefit by \$316 [December 31, 2015 – decreased by \$310]. The last actuarial valuation was performed at December 31, 2014.

No valuation allowance has been recorded by the Corporation as at December 31, 2016 and December 31, 2015 with respect to the retirement benefit asset.

Significant actuarial assumptions for defined benefit obligation measurement purposes are discount rate and salary scale. The following sensitivities are based on reasonably possible changes of the assumptions, in isolation of one another, occurring at the end of the reporting period. A 1.0% decrease in discount rate would increase the defined benefit obligation by \$1,140 or 22.8% [2015 – \$970 or 21.5%], while a 1.0% increase in salary scale would increase the defined benefit obligation by \$162 or 3.2% [2015 – \$126 or 2.8%].

(b) Other post-employment benefits

The Corporation provides life, health and dental benefits to certain employees. Employee future benefits are calculated using an annual compensation rate increase of 2.0% [2015 – 3.1%] and a discount rate of 3.9% [2015 – 3.6%]. Cost trends for health are estimated to increase at a declining rate from 7.5% to 5.0% and dental benefits are estimated to increase by 5.0% per annum. The valuations also include several other economic and demographic assumptions including mortality rates, which are based on the Canadian Pensioners' Mortality report published by the Canadian Institute of Actuaries in February 2014.

Hydro Ottawa Holding Inc.

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Year ended December 31, 2016

[in thousands of Canadian dollars]

15. EMPLOYEE FUTURE BENEFITS [CONTINUED]

(b) Other post-employment benefits [continued]

Information about the Corporation's other post-employment benefits is as follows:

	2016 \$	2015 \$
Defined benefit obligation, beginning of year	11,332	11,046
Current service costs	380	247
Past service costs	1,778	-
Interest on defined benefit obligation	521	437
Benefits paid	(607)	(407)
Actuarial (gain) loss	(105)	9
Acquired via business combination [Note 5(a)]	36	-
Defined benefit obligation, end of year	13,335	11,332

An actuarial valuation was performed as at December 31, 2016. As a result of this exercise, the Corporation increased the defined benefit obligation by \$2,003 [December 31, 2015 – increased by \$285 based on an actuarial extrapolation].

Significant changes in actuarial assumptions related to discount rates, future health and dental costs, mortality rates and retirement age may affect the valuation of the defined benefit obligation.

16. LONG-TERM DEBT

	2016 \$	2015 \$
Senior unsecured debentures		
Series 2006-1, 4.97%, due December 19, 2036	50,000	50,000
Series 2013-1, 3.99%, due May 14, 2043	150,000	150,000
Series 2015-1, 2.61%, due February 3, 2025	200,000	200,000
Series 2015-2, 3.64%, due February 2, 2045	175,000	175,000
Senior secured amortizing bond		
Series 2016-1, 4.08%, due March 31, 2057	203,802	-
	778,802	575,000
Less: unamortized debt-issuance costs	(5,842)	(3,481)
	772,960	571,519

Hydro Ottawa Holding Inc.

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[in thousands of Canadian dollars]

16. LONG-TERM DEBT [CONTINUED]

(a) Senior unsecured debentures

On February 2, 2015, the Corporation successfully completed a dual-tranche bond offering of senior unsecured debentures consisting of Series 2015-1, \$200,000 at 2.61% due February 3, 2025 and Series 2015-2, \$175,000 at 3.64% due February 2, 2045. The Corporation used \$200,000 of the \$375,000 total offering to repay Series 2005-1, which became due on February 9, 2015. Each debenture contains customary covenants and events of default, including a covenant to ensure that the aggregate principal amount of the consolidated funded obligations does not exceed 75% of the total consolidated capitalization. Interest payments on the senior unsecured debentures are payable semi-annually in arrears in equal installments, and will be \$20,067 per year over the next five years.

(b) Senior amortizing bonds

On September 7, 2016, the Corporation through its subsidiary CHLP, completed the offering of senior secured amortizing bonds [the 'bonds', Series 2016-1] of \$203,802 to fund the Chaudière Expansion. The bonds carry an interest rate of 4.08% and are due on March 31, 2057 [the 'maturity date']. At December 31, 2016, the Corporation has used \$79,717 of the \$203,802 total offering to directly finance construction costs [\$76,827] and bond-issuance costs [\$2,890] including sales taxes where applicable. Of the \$124,085 remaining to be released to the Corporation, \$79,975 is dependent upon additional monthly submissions of qualifying costs with respect to the Chaudière Expansion and is classified as current on the balance sheet [expected completion 2017]. The release of \$44,110 in funds currently held in a distributions account as required by the Trust Indenture are expected to be available to the Corporation in 2018 and is therefore classified as non-current. Debt-issuance costs incurred during the year consist of legal, broker and consulting fees incurred to obtain the bonds.

The bonds are secured by a first-charge interest on the assets pertaining to the Chaudière Expansion. In accordance with the Trust Indenture, the Corporation must maintain, in a reserve account, an amount equal to the next six months of interest and principal upon substantial completion of the project [achieves functional completion in accordance with the construction contract, commercial operation confirmed in accordance with the HESOP agreement, and obtain the substantial completion confirmation certificate]. Moreover, the Corporation must maintain, in a major maintenance account, a 3-year look-forward reserve that covers 100%, 67% and 33% of the projected major maintenance expenses in the coming three years respectively.

Equal semi-annual payments of interest-only on the bonds will be due and payable on March 31 and September 30 in each year, commencing on March 31, 2017 until and including March 31, 2022. Thereafter, semi-annual blended payments of principal and interest will be due and payable on March 31 and September 30 in each year commencing on September 30, 2022 until and including the maturity date. In addition to the repayments above, a balloon payment of \$30,570 [15% of the principal] will be due and payable on the maturity date.

Total interest payments on the bonds are expected to be \$8,839 in 2017 and \$8,315 per year from 2018 through 2021.

17. CAPITAL DISCLOSURES

The Corporation's main objectives when managing capital are to:

- Ensure continued access to funding to maintain and improve the operations and infrastructure of the Corporation;
- Ensure compliance with covenants related to the credit facilities and its long-term debt; and
- Align Hydro Ottawa Limited's capital structure with the debt to equity structure recommended by the OEB.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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[in thousands of Canadian dollars]

17. CAPITAL DISCLOSURES [CONTINUED]

The Corporation's capital consists of the following:

	2016 \$	2015 \$
Bank indebtedness	68,751	-
Long-term debt	772,960	571,519
Total debt	841,711	571,519
Shareholder's equity	426,775	413,397
Total capital	1,268,486	984,916
Debt capitalization ratio	66.34 %	58.03 %

The Corporation is in compliance with all financial covenants and limitations associated with its credit facilities and its long-term debt.

Hydro Ottawa Limited is deemed by the OEB to have a capital structure that is funded by 56% long-term debt, 4% short-term debt and 40% equity. The OEB uses this deemed structure only as a basis for setting distribution rates. As such, the Corporation's actual capital structure may differ from the OEB deemed structure.

The Corporation met its capital management objectives, which have not changed during the year.

18. SHARE CAPITAL

(a) Authorized

Unlimited number of voting first preferred shares, redeemable at one dollar per share
 Unlimited number of non-voting second preferred shares, redeemable at ten dollars per share
 Unlimited number of non-voting third preferred shares, redeemable at one hundred dollars per share
 Unlimited number of voting fourth preferred shares [ten votes per share], redeemable at one hundred dollars per share
 Unlimited number of voting Class A common shares
 Unlimited number of non-voting Class B common shares
 Unlimited number of non-voting Class C common shares, redeemable at the price at which such shares are issued

The above shares are without nominal or par value.

Holders of second preferred shares, fourth preferred shares and common shares are entitled to receive dividends as and when declared by the Board of Directors at their discretion.

(b) Issued

	2016 \$	2015 \$
214,901,003 Class A common shares	228,453	228,453

Hydro Ottawa Holding Inc.

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18. SHARE CAPITAL [CONTINUED]

(b) Issued [continued]

Any invitation to the public to subscribe for shares of the Corporation is prohibited by shareholder resolution.

Shareholder's resolution directs the Corporation to target dividends at the greater of 60% of its subsidiary, Hydro Ottawa Limited's net income or \$20,000 [2015 - greater of 60% of the Corporation's annual consolidated net income or \$14,000], provided that the Corporation is in compliance with the *Business Corporations Act (Ontario)* and relevant OEB Guidelines, is not in breach of any covenants on its senior unsecured debentures or credit facility obligations, and does not negatively impact its credit rating as a result of the dividend payment.

On April 21, 2016, the Board of Directors declared a \$19,400 dividend to the City of Ottawa, which was paid on April 29, 2016 [2015 – on April 23, the Board of Directors declared a \$18,200 dividend to the City of Ottawa, which was paid on April 30, 2015].

(c) Non-controlling interest

Non-controlling interest represents a 10.1% share in CPS Current Power Services (2016) Ltd. held by a third party.

19. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

(a) Fair value disclosures

The carrying values of the Corporation's financial instruments, except for the senior unsecured debentures and the long-term notes receivable from joint ventures, approximate fair value because of the short maturity and nature of the instruments.

The Corporation has estimated the fair value of the long-term portion of notes receivable from joint ventures as at December 31, 2016 as amounting to \$3,878 [December 31, 2015 – \$4,891]. The fair value has been determined by discounting all estimated future repayments of principal and imputed interest required to fully repay the loan at the estimated interest rate of 5.7% [December 31, 2015 – 5.5%] that would be available to PowerTrail and Moose Creek LP on December 31, 2016.

The Corporation has estimated the fair value of the senior unsecured debentures as at December 31, 2016 as amounting to \$585,083 [December 31, 2015 – \$600,398]. The fair value has been determined based on discounting all future repayments of principal and interest between February 3, 2025 and March 31, 2057 at the estimated interest rate of 3.7% [December 31, 2015 – 3.5%] that would be available to the Corporation on December 31, 2016.

The Corporation has estimated the fair value of its senior secured amortizing bonds as at December 31, 2016 as amounting to \$203,802. The fair value has been determined by discounting all estimated future repayments of principal and interest required to fully repay the loan at the estimated interest rate of 4.0% that would be available to the Corporation at December 31, 2016.

(b) Market risk

The Corporation is exposed to market risk, which is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market prices. Market prices are comprised of three types of risks: interest rate risk, foreign exchange risk and commodity price risk.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

19. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(b) Market risk [continued]

(i) Interest rate risk

The Corporation is exposed to interest rate risk on its borrowings. The Corporation mitigates exposure to interest rate risk by issuing long-term fixed interest rate debt. Under the Corporation's credit facility, any advances on its credit lines expose it to fluctuations in short-term interest rates related to prime rate loans and bankers' acceptances. Given the fact that the borrowing requirements on the credit lines are typically for a short duration [i.e., to bridge gaps between the cash outflows related to Hydro Ottawa Limited's monthly power bill and the inflows related to settlements with customers, or the cash outflows related to significant capital acquisitions and the inflows related to the issuance of additional long-term fixed rate debt], there is limited exposure to interest rate risk.

(ii) Foreign exchange risk

The Corporation's earnings from, and net investment in, its foreign operating subsidiary, EONY, are exposed to fluctuations in the U.S. dollar to Canadian dollar exchange rate. Also, the Corporation purchases a small proportion of goods and services that are denominated in foreign currencies, predominately the U.S. dollar. The Corporation monitors its exposure to foreign currency fluctuations on a regular basis, and has not used derivative instruments to hedge against these exposures to date. On an annual basis, it is estimated that a 5% increase or decrease in the U.S. dollar relative to the Canadian dollar exchange rate of U.S. \$1 = CDN \$0.75 as at December 31, 2016 would increase or decrease the equity of the Corporation by approximately \$3,034.

(iii) Commodity price risk

The Corporation, through its U.S. subsidiary EONY, is exposed to commodity price risk associated with green energy produced and sold in the U.S. wholesale market. The Corporation has not used derivative instruments to hedge against this exposure to date. As all green energy produced and sold in Canada is at rates specified by their respective power purchase agreements, the remainder of the Corporation's generation revenue is not exposed to significant commodity price risk. A 10% increase or decrease in the price of electricity in the U.S. through December 31, 2016 would have increased or decreased net income by \$181.

(c) Credit risk

Credit risk is the risk that a counterpart will default on its obligations, causing a financial loss to the Corporation. Concentration of credit risk associated with accounts receivable is limited due to the large number of customers the Corporation services. Hydro Ottawa Limited has approximately 328,000 customers, the majority of which are residential. As a result, the Corporation did not earn a significant amount of revenue and does not have a significant receivable from any individual customer.

Hydro Ottawa Limited performs ongoing credit evaluations of its customers and requires collateral to support non-residential customer accounts receivable on specific accounts to mitigate significant losses in accordance with OEB legislation. As at December 31, 2016, the Corporation held security deposits related to power recovery and distribution sales in the amount of \$14,600 [December 31, 2015 – \$13,724] with respect to these customers.

Energy Ottawa and its subsidiaries limit credit risk by dealing with customers that are considered to be of high credit quality. These customers include government agencies, utilities, municipalities, universities, school boards, hospitals, and customers with investment grade credit ratings.

The Corporation monitors and limits its exposure to credit risk on a continuous basis.

The carrying amount of accounts receivable is reduced by an allowance for doubtful accounts based on the credit risk applicable to particular customers, historical, and other information. The Corporation records an allowance for doubtful accounts when the recoverability of an amount becomes doubtful. When the receivable amount is deemed to be uncollectible, it is written off and the allowance for doubtful accounts is adjusted accordingly. Subsequent recoveries of receivables previously provisioned or written off result in a reduction of operating costs in the consolidated statements of

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

19. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(c) Credit risk [continued]

income. As at December 31, 2016, the allowance for doubtful accounts was \$1,782 [December 31, 2015 – \$1,927].

For details of accounts receivable and the aging of the accounts, refer to Note 6.

As at December 31, 2016, there were no significant concentrations of credit risk with respect to any class of financial assets or counterpart and approximately 12% [December 31, 2015 – 12%] of the Corporation's accounts receivable [excluding unbilled revenue] were aged more than 30 days. The Corporation's maximum exposure to credit risk is equal to the carrying value of accounts receivable less customer deposits held.

(d) Liquidity risk

Liquidity risk is the risk that the Corporation will not meet its financial obligations as they come due. The Corporation regularly monitors and manages its liquidity risk to ensure access to sufficient funds to meet operational and capital investment requirements. The Corporation achieves this objective by ensuring that sufficient facilities, as described in Note 13, are maintained to meet obligations as they come due while minimizing standby fees and interest.

Liquidity risks associated with financial commitments are as follows:

	2016		
	Due within one year \$	Due between one and five years \$	Due after five years \$
Accounts payable and accrued liabilities	187,892	-	-
Senior unsecured debentures			
Series 2006-1, 4.968%, due December 19, 2036	-	-	50,000
Series 2013-1, 3.991%, due May 14, 2043	-	-	150,000
Series 2015-1, 2.614% due February 3, 2025	-	-	200,000
Series 2015-2, 3.639%, due on February 2, 2045	-	-	175,000
Senior secured amortizing bond			
Series 2016-1, 4.080%, due March 31, 2057	-	-	203,802
Interest to be paid on long-term debt	28,906	111,076	530,772
	216,798	111,076	1,309,574

Accounts payable and accrued liabilities in the above table exclude \$8,359 of accrued interest which is included in interest payments on long-term debt.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements
Year ended December 31, 2016
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20. OPERATING COSTS

	2016 \$	2015 \$
Salaries and benefits	84,545	78,479
Operating and maintenance	11,196	8,415
Outside services	32,356	35,354
General and administrative	32,033	33,747
Less: capitalized salaries and benefits	(32,058)	(29,857)
	128,072	126,138

21. FINANCING COSTS

	2016 \$	2015 \$
Interest on debentures	22,537	20,193
Short-term interest and fees	997	564
Less: capitalized borrowing costs	(4,136)	(1,715)
	19,398	19,042

22. INCOME TAXES

Income tax expense recognized in net income comprises the following:

	2016 \$	2015 \$
Current tax expense		
Current income tax expense	4,457	1,640
Deferred tax expense		
Origination and reversal of temporary differences	4,584	13,832
Income tax expense recognized in net income	9,041	15,472

Income tax (recovery) expense recognized in OCI comprises the following:

	2016 \$	2015 \$
Income tax effect on exchange differences on translation of foreign subsidiary	(552)	2,480

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Year ended December 31, 2016
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22. INCOME TAXES [CONTINUED]

The provision for income taxes differs from the amount that would have been recorded using the combined Canadian federal and Ontario statutory income tax rates. A reconciliation between the statutory and effective tax rates is provided as follows:

	2016 \$	2015 \$
Federal and Ontario statutory income tax rate	26.50 %	26.50 %
Income attributable to equity shareholder before income taxes	43,877	47,842
Income taxes at statutory rate	11,627	12,678
Increase (decrease) in income taxes resulting from:		
Permanent differences	49	(10)
Impact on foreign exchange translation on subsidiary	(180)	589
Acquisition-related costs capitalized for tax purposes	-	898
Foreign tax rate differential	(762)	(515)
Unrecognized tax benefit	(1,255)	1,899
Tax impact on joint venture	(275)	(135)
Adjustment	265	-
Other	(428)	68
	9,041	15,472
Effective income tax rate	20.61 %	32.34 %

The Corporation, as a rate-regulated enterprise, is required to recognize deferred income tax assets and liabilities and related regulatory deferral account credit and debit balances for the amount of deferred income taxes expected to be refunded to, or recovered from, customers in future electricity rates.

Significant components of the Corporation's net deferred income tax asset are as follows:

	2016 \$	2015 \$
Property, plant and equipment and intangible assets	1,106	(4,435)
Employee future benefits	-	3,919
Non-capital loss carryforwards	4,492	-
Other temporary differences	47	2,766
	5,645	2,250

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2016

[in thousands of Canadian dollars]

22. INCOME TAXES [CONTINUED]

Significant components of the Corporation's net deferred income tax liability are as follows:

	2016 \$	2015 \$
Property, plant and equipment and intangible assets	(24,244)	(10,266)
Tax recognized in OCI related to foreign subsidiary translation	(1,821)	(2,480)
Exchange differences and other	(448)	(949)
Non-capital loss carryforwards	268	-
Employee future benefits	4,648	-
Other	661	-
	(20,936)	(13,695)

Movements in the net deferred tax asset balances during the year were as follows:

	2016 \$	2015 \$
Deferred tax asset, beginning of year	2,250	12,118
Acquired via business combination [Note 5(b)]	-	2,079
Recognized in net income	3,395	(12,171)
Foreign exchange differences	-	224
Deferred tax asset, end of year	5,645	2,250

Movements in the net deferred tax liability balances during the year were as follows:

	2016 \$	2015 \$
Deferred tax liability, beginning of year	(13,695)	(5,359)
Acquired via business combination [Note 5(b)]	-	(4,286)
Recognized in net income	(7,793)	(1,570)
Recognized in OCI	552	(2,480)
Deferred tax liability, end of year	(20,936)	(13,695)

The Corporation's regulatory deferral account credit balance for the amounts of deferred income taxes expected to be collected/refunded to customers in future electricity rates is \$7,694 [2015 – \$513].

As at December 31, 2016, the Corporation had capital losses of \$750 [December 31, 2015 – \$700] which have not been recognized in the consolidated financial statements.

As at December 31, 2016, Hydro Ottawa Limited and PowerTrail had corporate minimum tax credit carryforwards of \$470 and \$97

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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22. INCOME TAXES [CONTINUED]

respectively [December 31, 2015 – \$1,454 and \$161 respectively], which expire between 2032 and 2035.

As at December 31, 2016, PowerTrail had non-capital tax loss carryforwards of \$nil [December 31, 2015 – \$89] which expire in 2030.

Deferred tax assets are recognized to the extent that it is probable that taxable profit will be available against which the deductible temporary differences and the carry-forward of unused tax assets and unused tax losses can be utilized.

A deferred tax liability for all taxable temporary differences associated with investments in subsidiaries and investments in joint ventures has not been recognized as the Corporation is able to control the timing of the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future.

23. CHANGES IN NON-CASH WORKING CAPITAL AND OTHER OPERATING BALANCES

	2016 \$	2015 \$
Accounts receivable	(20,430)	(17,924)
Prepaid expenses	(1,498)	(1,700)
Other	(4)	(15)
Change in note receivable from parent	(3,622)	-
Accounts payable and accrued liabilities	35,726	(14,691)
Inventory	(1,577)	-
Net change in accruals related to property, plant and equipment	(11,416)	(10,025)
Net change in accruals related to intangible assets	297	15,685
Net change in accruals related to business combinations	(8,869)	(1,131)
	(11,393)	(29,801)

24. CONTINGENT LIABILITIES

Purchasers of electricity in Ontario including Hydro Ottawa Limited, through the IESO, are required to provide security to mitigate the risk of their default based on their expected activity in the market. The IESO could draw on these guarantees if the Corporation fails to make a payment required by a default notice issued by the IESO. A prudential support obligation is calculated based upon a default protection amount and the distributor's trading limit less a reduction for the distributor's credit rating. As at December 31, 2016, the Corporation had drawn standby letters of credit in the amount of \$10,000 [December 31, 2015 – \$10,000] against its credit facility to cover its prudential support obligation.

The Corporation participates with other electrical utilities in Ontario in an agreement to exchange reciprocal contracts of indemnity through the Municipal Electrical Association Reciprocal Insurance Exchange. The Corporation is liable for additional assessments to the extent premiums collected and reserves established are not sufficient to cover the cost of claims and costs incurred. If any additional assessments were required in the future, their cost would be charged to income in the year during which they occur.

In December 2012, the Corporation was charged with five offenses under Ontario's *Occupational Health and Safety Act* in respect of an incident occurring on March 22, 2012, which resulted in the fatality of an employee of a third-party sub-contractor. In July 2015, the Corporation was found guilty on three of the five offenses. On March 29, 2016, the Justice of the Peace imposed a fine

Hydro Ottawa Holding Inc.

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24. CONTINGENT LIABILITIES [CONTINUED]

of \$225 plus a 25% Victim Fine Surcharge totalling \$281 as required by the *Provincial Offences Act*. The Corporation is appealing this decision, however no court date has been set. The Corporation has recorded a provision for the full amount of the imposed fine in these consolidated financial statements.

Various lawsuits have been filed against the Corporation for incidents that arose in the ordinary course of business. In the opinion of management, the outcomes of the lawsuits, now pending, are neither determinable nor material. Should any loss result from the resolution of these claims, such losses would be claimed through the Corporation's insurance carrier, with any unrecoverable amounts charged to income in the year of resolution.

25. COMMITMENTS

Hydro Ottawa Limited has \$158,398 in total open commitments for 2017 to 2023. This includes commitments relating to a customer information system services agreement, construction projects, spare parts and standby equipment and overhead and underground services.

As at December 31, 2016, Energy Ottawa has committed \$37,198 in funds with respect to the Chaudière Expansion.

Energy Ottawa maintains leases with various entities for the rights to certain lands, waterways, buildings and other generating assets at its generating stations in Ontario, Québec and New York. These leases are in place through various dates, ranging between August 19, 2019 and December 13, 2117. Certain leases have annual payments which have a fixed and contingent portion, the latter of which is based on either annual gross revenues or power generation levels. During the 2016 fiscal year, the Corporation expensed lease payments of \$292 [2015 – \$251], which included \$112 [2015 – \$119] of contingent lease payments. The Corporation's future minimum lease payments will be: 2017 – \$176, 2018 to 2021 – \$740 and \$5,595 thereafter.

26. RELATED PARTY TRANSACTIONS

Transactions with related parties occur in the normal course of business, and are transacted at the amount of consideration determined and agreed to by the related parties. Trade amounts due from and to related parties are non-interest bearing, result from normal operations and are due within one year.

(a) Transactions with shareholder

During the year, the Corporation earned revenue from the sale of electricity to the City of Ottawa and its subsidiaries, which is billed at prices and terms approved by the OEB. In addition, the Corporation earned commercial contract and service revenues totaling \$1,322 [2015 – \$878] via Hydro Ottawa Limited and \$8,882 [2015 – \$3,657] via Energy Ottawa, from the City of Ottawa and its subsidiaries. During the year, the Corporation also received \$4,484 [2015 – \$1,635] in contributions relating to the upgrade and/or expansion of Hydro Ottawa Limited's existing electricity distribution infrastructure.

The Corporation incurred \$2,263 [2015 – \$2,165] in property tax expenses and \$481 [2015 – \$484] in fuel, permits and other services during the year to the City of Ottawa, which is included in operating costs.

As at December 31, 2016, the Corporation's accounts receivable include \$9,203 [December 31, 2015 – \$5,595] due in respect of the transactions above while the Corporation's accounts payable and accrued liabilities include \$136 [December 31, 2015 – \$131] due to the City of Ottawa and its subsidiaries. The Corporation's note receivable from the City of Ottawa is disclosed in Note 12 of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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26. RELATED PARTY TRANSACTIONS [CONTINUED]

(b) Transactions with joint arrangements

(i) Moose Creek LP

During the year, the Corporation earned interest income in the amount of \$182 [2015 – \$195] on its note receivable from Moose Creek LP, as well as \$21 [2015 – \$20] in other revenue for the provision of administrative services. As at December 31, 2016, the Corporation's accounts receivable include \$45 [December 31, 2015 – \$49] due in respect of the transactions described.

The Corporation's note receivable from Moose Creek LP is disclosed in Note 12 of these consolidated financial statements.

(ii) PowerTrail

During the year, the Corporation earned imputed interest income in the amount of \$104 [2015 – \$213] on its note receivable from PowerTrail, as well as \$24 [2015 – \$23] in other revenue for the provision of administrative services. As at December 31, 2016, the Corporation's accounts receivable include \$2 [December 31, 2015 – \$2] due in respect of the transactions described.

The Corporation's note receivable from PowerTrail is disclosed in Note 12 of these consolidated financial statements.

(iii) CWPI

Prior to the consolidation of CWPI as of December 14, 2016, the Corporation incurred \$971 [2015 – \$1,054] of operating expenses with CWPI in relation to the management and operation of the Chaudière Dam at Chaudière Falls, and earned \$78 [2015 – \$75] in other revenue for the provision of administrative services. The Corporation also capitalized \$329 [2015 – \$292] of generating assets. At December 31, 2016, all intercompany balances with CWPI have been eliminated. At December 31, 2015, the Corporation's accounts payable and accrued liabilities included \$97 due in respect of the transactions described.

(c) Compensation of key management personnel

	2016 \$	2015 \$
Salaries, director fees and other short-term benefits	1,349	1,430
Employee future benefits	12	12
Other long-term benefits	159	171
	1,520	1,613

27. COMPARATIVE FIGURES

In certain instances, the 2015 information presented for comparative purposes has been reclassified to conform to the consolidated financial statement presentation adopted for the current year.



Statement of Executive Compensation

The Governance and Management Resources Committee of the Board, is responsible for developing and recommending the approval of the compensation framework for the Corporation and each of its subsidiaries.

In developing the compensation framework, the Governance and Management Resources Committee is guided by two principles: the need to provide a total compensation package that will attract and retain qualified and experienced executives, and linking compensation to performance.

Executive compensation is reviewed by the Governance and Management Resources Committee and approved by the Board of Directors. In making its recommendations to the Board, the Committee examines the responsibilities and performance of individual executives, and considers the recommendations of the President and Chief Executive Officer.

In an effort to attract and retain qualified and experienced executives, the Corporation aims to offer a total compensation package that is competitive with other organizations of a similar size and scope. Executive compensation is reviewed on an annual basis and compared to market data, with the assistance of independent consultants, on an ad hoc basis to ensure competitiveness. In line with best practices for the sector, as identified by the Ontario Minister of Energy's Agency Review Panel in 2007, Hydro Ottawa applies a 50/50 weighting of market data from public and private comparators. The industry component of the market comparator group has a strong sector affiliation [e.g., Transportation and Utilities sector], and is assessed by revenue levels to ensure comparability.

Total cash compensation for Executives consists of two components*: base salary and an at risk performance incentive.

Total cash compensation is benchmarked to companies of comparable size and scope in both the Ontario and national markets, with the target for total cash compensation set at the 50th percentile, or midpoint, of the market.

The at risk performance incentive component is paid on an annual basis, and is expressed as a percentage of base salary. It is designed to retain and motivate executives, to reward them for their performance during the preceding year, and to ensure alignment with shareholder objectives. Payments are based on the achievement of corporate and division objectives, both financial and non-financial, which are established each year by the Board of Directors. Non-financial targets are designed to achieve continuous improvement in relation to a number of strategic objectives including, but not limited to, customer service, operational and organizational efficiency and effectiveness, and service reliability.

Executives participate in a benefits program, which includes extended health care, dental care, basic and optional life insurance, and short-term and long-term disability insurance. This same program is available to all management group employees of the Corporation.

Executives also participate in the OMERS pension plan. This plan is a multi-employer, contributory, defined benefit pension plan established by the Province for employees of municipalities, local boards and school boards in Ontario. Pension benefits are determined by a formula based on the highest consecutive five-year average of contributory earnings and years of service. Pension benefits are indexed to increases in the Consumer Price Index subject to an annual maximum of 6 percent. Both participating employers and participating employees are required to make equal contributions to the plan based on the participating employees' contributory earnings. Earnings for pension purposes are capped based on recent plan changes.

* The total cash compensation for the President and Chief Executive Officer consists of a base salary only.

COMPENSATION OF OFFICERS AND BOARD MEMBERS

Officers

NAME AND PRINCIPAL POSITION ¹	YEAR	BASE SALARY (\$) ²	AT RISK PERFORMANCE INCENTIVE (\$) ³	OTHER COMPENSATION (\$) ⁴
Bryce Conrad	2016	375,711	N/A	22,398
President and Chief Executive Officer	2015	384,163	N/A	15,178
	2014	363,468	N/A	13,458
Geoff Simpson	2016	180,783	67,711	8,479
Chief Financial Officer	2015	184,850	57,254	8,471
	2014	174,968	42,884 ⁵	8,526
Lance Jefferies	2016	159,830	34,798 ⁶	8,401
Chief Electricity Distribution Officer				
Gregory Clarke	2016	183,525	66,484	8,798
Chief Electricity Generation Officer	2015	187,654	57,055	8,482
	2014	177,622	53,586	8,556

1 Officers whose earnings are reported are those who occupied the position at December 31, 2016.

2 The pay cycle for 2015 resulted in 27 pay periods versus the standard 26 in other years. Amounts shown in this column have been rounded to the nearest dollar.

3 Amounts shown in this column reflect the at risk performance incentive for the executive in respect of the achievement of the performance objectives for the previous financial year, paid in the reporting year. These amounts have been rounded to the nearest dollar.

4 Amounts in this column include Board approved discretionary payments such as payments of earned and unused vacation credits, car allowance, computer allowance and employer's share of basic life insurance premiums. These amounts have been rounded to the nearest dollar.

5 Given that Mr. Simpson assumed the position on August 6, 2013, the at risk performance incentive for 2013, paid in 2014, is based on both his previous position with the Corporation and the position of Chief Financial Officer.

6 Given that Mr. Jefferies assumed the position on January 1, 2016, the at risk performance incentive for 2015, paid in 2016, is based on his previous position with the Corporation.

Board Members

The remuneration of the members of the Boards of Directors of Hydro Ottawa Holding Inc. (HOHI) and Hydro Ottawa Limited (HOL) is as determined by the City of Ottawa and the HOHI Board respectively. In addition to reimbursement for reasonable out-of-pocket expenses incurred while performing their duties, directors receive an annual stipend and meeting fees for service:

- The Board Chair receives an annual stipend of \$40,000;
- All other Board members receive an annual stipend of \$7,000;
- The Board Chair receives \$600 for each Board or committee meeting chaired or attended;

- Committee Chairs receive \$800 for each meeting of the committee chaired; and

- All other Board members receive \$600 for each Board or committee meeting attended.

Only one annual stipend is paid where an individual is a director of both the HOHI and HOL Boards of Directors. Members of the Council of the City of Ottawa, as well as the President and Chief Executive Officer and the one member of management on the HOL Board, receive no remuneration in their capacity as directors of the boards.

Corporate Governance

Hydro Ottawa is committed to establishing and maintaining leading governance practices for a company of its size and mandate. Because governance standards and best practices are always evolving, the company seeks to continuously improve its governance practices.

Hydro Ottawa Holding Inc. is a private, for-profit company, incorporated under the *Business Corporations Act* [Ontario]. At the same time, the company is wholly owned by the City of Ottawa and fulfills a public mandate, and is therefore mindful of its responsibility to be accountable both to its shareholder and the public. The company's governance practices are guided not simply by legal obligations, but by best business practices and standards established by independent agencies.

While Hydro Ottawa is not a reporting issuer under the Securities Act and is therefore not subject to governance standards that apply to publicly-traded companies, the company is guided by these standards and seeks to meet or exceed them. In addition, Hydro Ottawa regularly compares its governance practices to those of private and public sector organizations, and to standards set by agencies such as the Canadian Securities Administrators and the Ontario Securities Commission.

GOVERNANCE STRUCTURE

Accountability for the effective oversight of the Corporation and its wholly-owned subsidiaries (Hydro Ottawa Limited and Energy Ottawa Inc.) rests with an eleven-member Board of Directors, which provides direction to the Corporation on behalf of the shareholder, the City of Ottawa. The Board provides leadership within a framework of effective controls that enables risks to be assessed and managed, and is responsible for supervising the management of the business and affairs of the Corporation and its wholly-owned subsidiaries. In carrying out its oversight function, the Board of Directors is guided by a Shareholder Declaration issued by Ottawa City Council and revised from time to time. The Corporation's Code of Business Conduct, its Director Conflict of Interest and Conduct Guidelines and a Related Party Transaction Disclosure Policy and Process also govern the actions of the Board.

In 2006, a separate Board of Directors was established to oversee the operations of Hydro Ottawa Limited, in accordance with the Affiliate Relationships Code for Electricity Distributors and Transmitters issued by the Ontario Energy Board. The powers and functions of that Board are set out in a Shareholder Declaration issued by the Hydro Ottawa Holding Inc. Board of Directors. On a day-to-day basis, the Corporation is led by an Executive Management Team, comprising the Corporation's President and Chief Executive Officer, the Chief Financial Officer and the senior executives of the subsidiaries and critical functional areas. This team oversees the alignment of business practices and strategies with the goals of the Corporation, and drives performance by managing risks and opportunities. The Executive Management Team is accountable to the Corporation's Board of Directors through the President and Chief Executive Officer.

KEY GOVERNANCE PROCESSES AND CONTROLS

Hydro Ottawa has established a number of leading governance processes and controls to assist the Board and executive management in carrying out their oversight functions.

Risk Management: An extensive, corporate-wide risk management system has been established to track indicative and predictive measures of risk. Risk assessments are included with regular reporting to the Board on all areas of the Corporation's operations.

Internal Audit: Hydro Ottawa conducts a rigorous internal audit program to verify controls and maximize business efficiency and effectiveness. A number of business processes and functions are audited annually based on an audit plan approved by the Board. The use of experienced auditors both internal and external to the Corporation ensures rigour and objectivity.

Business Continuity Plans: Plans are in place to ensure the continuance of critical operations in the event of a major emergency such as a pandemic, and to return the Corporation to normal operations as quickly as possible after such an event. They include detailed strategies for the re-assignment of resources to critical processes, and redundant supply arrangements with critical external suppliers.

APPOINTMENTS TO THE BOARD OF DIRECTORS

The governance structure for the Corporation [Hydro Ottawa Holding Inc.] and its wholly-owned subsidiaries [Hydro Ottawa Limited and Energy Ottawa Inc.] includes two boards of directors – the Hydro Ottawa Holding Inc. Board and the Hydro Ottawa Limited Board.

In accordance with the terms of the Shareholder Declaration, the City of Ottawa appoints all Directors to the Boards except the President and Chief Executive Officer, and the one member of management on the Hydro Ottawa Limited Board. In doing so, the City considers candidates recommended by the Nominating Committee of the Board of Hydro Ottawa Holding Inc., but is not obliged to select these candidates. The Nominating Committee is assisted by outside consultants in its search for candidates for appointment to the Boards.

As set out in the Shareholder Declaration, all candidates for appointment to the Boards must meet certain requirements, including demonstrated integrity and high ethical standards, relevant career experience and expertise, and an understanding of the role of Hydro Ottawa both as a service to local ratepayers and an asset of taxpayers.

In addition, the nomination and selection process is designed to maintain a Board that includes the following overarching competencies among one or more directors: strong business background including competitive business experience and strategic planning; a strong financial background including financial accreditation and public or private market financing experience; industry sector experience in the areas of business of the subsidiary companies; board experience; and merger and acquisition experience.

COMMITTEES

The following committees were created to help the Boards of Directors carry out their duties. The committees meet regularly and provide feedback on their discussions to their respective Boards.

Hydro Ottawa Holding Inc.

Audit: The Audit Committee reviews financial statements, accounting practices and policies, auditing processes and the results of internal and external audits and related matters. It also oversees financial risk management and assesses internal controls.

Governance and Management Resources: The Governance and Management Resources Committee reviews the Corporation's governance structures and practices to ensure that the Board of Directors can fulfill its mandate. It reviews management resources and compensation practices to ensure systems are in place to attract, retain and motivate qualified management employees. It also reviews and assesses the performance of the President and Chief Executive Officer, oversees the Board Assessment process, and monitors compliance with codes of conduct.

Investment Review: The Investment Review Committee, created by the Board of Directors effective April 2010, is responsible for assisting management and the Board of Directors in the review and pursuit of business development, acquisition and investment opportunities. In carrying out these functions, the Committee focuses on the consistency of opportunities with strategic plans and investment guidelines, the maximization of shareholder value and the management of risk.

Nominating: The Nominating Committee, with the assistance of outside consultants, identifies and evaluates potential candidates for appointment as Directors. The Nominating Committee makes recommendations to the shareholder [represented by Ottawa City Council] for the appointment of directors.

Strategic Initiatives Oversight: The Strategic Initiatives Oversight Committee, created by the Board of Directors effective November 2013, is responsible for assisting the Board of Directors in guiding management and providing support and focus for large-scale capital project efforts as identified by the Board from time to time.

BOARD AND COMMITTEE MEETING ATTENDANCE

The following tables illustrate the attendance of members at meetings of the Boards of Directors and their committees.

HYDRO OTTAWA HOLDING INC.

DIRECTOR	BOARD MEETINGS	COMMITTEE MEETINGS
Jim Durrell, C.M. [Chair]	6/6	19/19
Bryce Conrad [President and CEO]	6/6	N/A
Dale Craig	6/6	9/9
Jan Harder	5/6	4/5
Andrea Johnson	5/6	8/8
Kalai Kalaichelvan	5/6	9/9
J. Douglas McLarty	6/6	10/10
Philip Murray	6/6	8/9
Lori O'Neill	6/6	9/9
Zaina Sovani	5/6	8/9
Marianne Wilkinson	5/6	5/6

HYDRO OTTAWA LIMITED

DIRECTOR	BOARD MEETINGS	COMMITTEE MEETINGS
Jim Durrell, C.M. [Chair]	4/4	N/A
Bryce Conrad [President and CEO]	4/4	N/A
Lance Jefferies	4/4	N/A

Members of the Boards of Directors

HYDRO OTTAWA HOLDING INC.



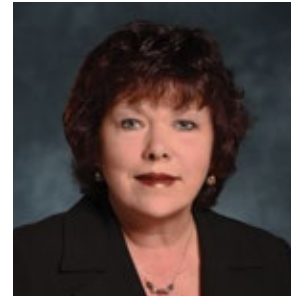
Jim Durrell, C.M. [Chair]



Bryce Conrad



Dale Craig



Councillor Jan Harder



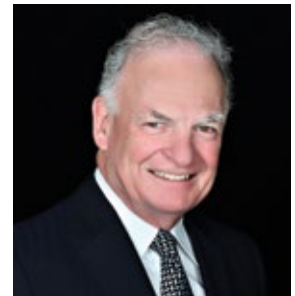
Andrea Johnson



Kalai Kalaichelvan



J. Douglas McLarty



Philip Murray



Lori O'Neill



Zaina Sovani



Councillor Marianne Wilkinson

HYDRO OTTAWA LIMITED



Jim Durrell, C.M. [Chair]



Bryce Conrad



Lance Jefferies







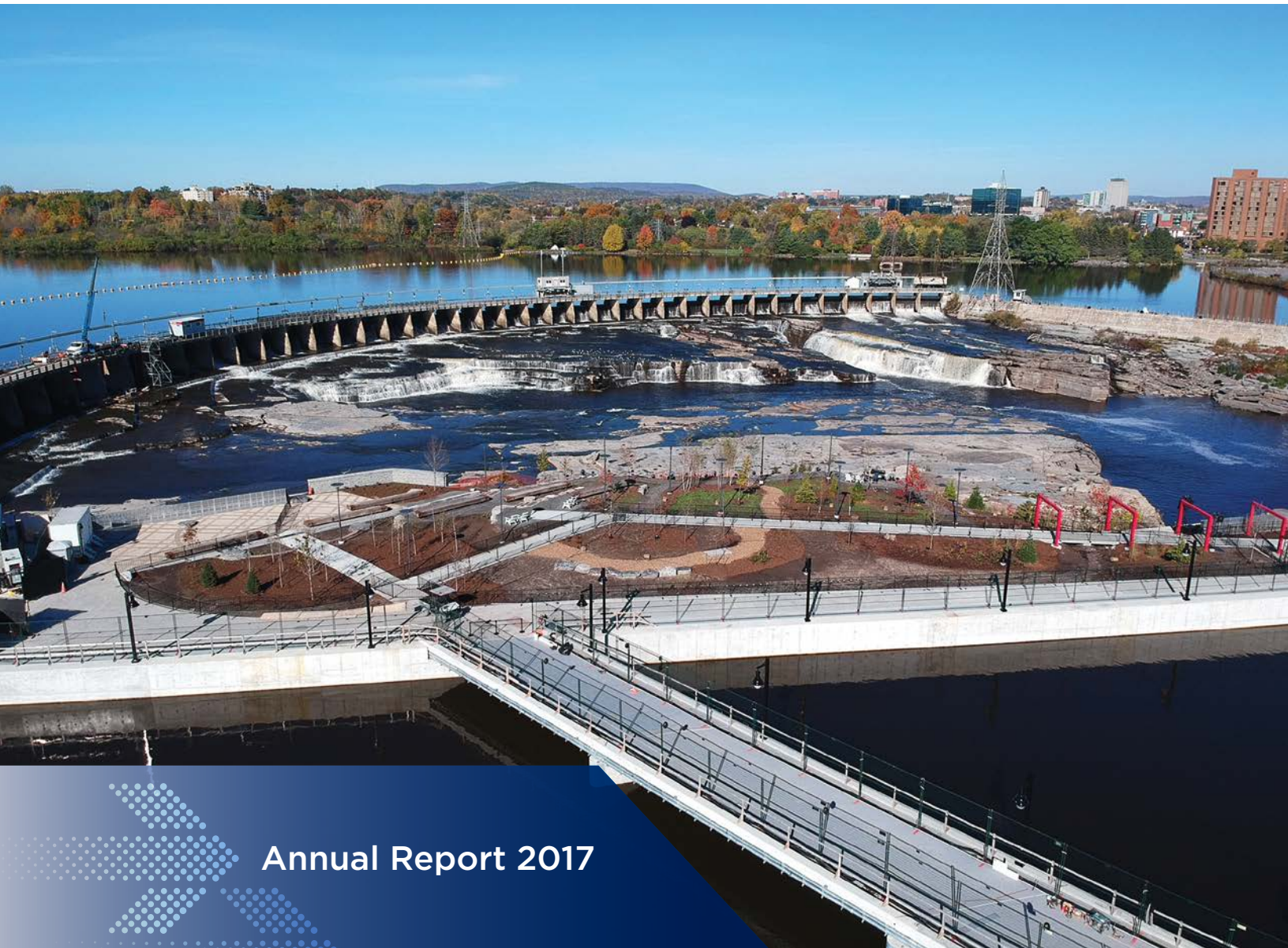
Hydro Ottawa wishes to thank all the employees whose photos appear in this Annual Report.

La version française du présent rapport annuel est affichée sur le site hydroottawa.com.

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Annual Report 2017

Our Mission

To create long-term value for our shareholder, benefitting our customers and the communities we serve

Our Organizational Values

Teamwork, Integrity, Excellence and Service

Our Vision

Hydro Ottawa – a leading partner in a smart energy future

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Message from the Chair of the Board and the President and Chief Executive Officer



Jim Durrell, C.M., ICD.D

Chair, Board of Directors



Bryce Conrad

President and Chief
Executive Officer

On behalf of the Board of Directors of Hydro Ottawa Holding Inc., our management and employees, we're pleased to provide this 2017 Annual Report – our second report on progress towards the vision and commitments laid out in our 2016–2020 Strategic Direction. We set and achieved highly ambitious goals during the year, and faced some significant challenges due to severe weather events. We're proud that Hydro Ottawa's approximately 700 employees once again rose to the occasion.

The completion of the Chaudière Expansion project, the largest capital project in Hydro Ottawa's history, was an important milestone. While transformative for this historic part of our community, ending more than a century when the beauty of the falls was hidden from view, it has increased our green power generation capacity to 128 megawatts – by far the most

of any municipal utility in Ontario. When at full production, the new facility will generate enough clean, renewable energy to power 20,000 homes, and will reduce greenhouse gas emissions by 115,000 metric tons of carbon dioxide per year. In total, we will produce enough renewable energy to power 107,000 homes – equivalent to more than a third of Hydro Ottawa's residential customers.

While rushing waters contribute to our revenues, they can also create serious operational challenges, as we were reminded in 2017. The spring thaw brought massive flooding that affected a number of Ottawa residents and damaged some of our hydro-electric facilities at Chaudière Falls and elsewhere. While the impact on electricity service to our customers was thankfully minimal, the effects on our generating stations were substantial. However, through quick action and around-the-clock efforts, our employees mounted a remarkably successful effort to protect our assets and operations, bringing most stations back online within a week. Two stations required extensive repairs and only returned to normal operation in October and November.

Notwithstanding unforeseen events such as the flooding, financial results remained strong. Both consolidated net income and the dividend paid to our shareholder, the City of Ottawa, increased from what were already record levels in 2016, hitting \$36 million and \$21.9 million respectively in 2017. Our consolidated return on equity remained at 8.4 percent. As projects such as the streetlight conversion demonstrate, our contribution to the City is also multifaceted. Not only a source of important dividend revenues, Hydro Ottawa is also a trusted business partner when energy efficiency expertise is needed.



We measure all of our activities and outcomes against the customer value they provide, and we know that reliability of power is a foundational customer expectation. Although we saw significant storm and other weather events in 2017, we focused on quick power restoration and kept customer impacts to a minimum. As a result, Hydro Ottawa's service reliability remained among the best in Ontario, with 0.8 average customer outages per year. While outages rose slightly in 2017 due to severe weather, the five-year trend is extremely positive, with the frequency of outages down by 41 percent and the duration of outages down by 27 percent compared to 2013. We continue to invest in the reliability of our system in order to see this positive trend continue.

Throughout our restoration efforts, and all other facets of our operations, we maintained a sharp focus on both public and employee safety – our number one priority.

We also continued to be mindful of our commitment to enhance service while containing costs. To this end, through contract negotiations we were able to strengthen our customer engagement and service offerings without adding costs. This included expanded service hours, enhanced self-service options, and the launch of a new mobile app that increases customer convenience and control. It allows customers to view and manage their energy consumption and receive real-time outage information on the go.

As part of our commitment to act at all times as a responsible and engaged corporate citizen, in 2017 we continued to support a number of community events, including those held in celebration of the 150th anniversary of Confederation. This included the Miwàte Illumination of the Chaudière Falls, one of the Ottawa area's most spectacular natural features. Our employee driven charitable campaign also raised over \$370,000 with funds directed to support both the Breast Health Centre at The Ottawa Hospital and United Way's Mental Health Programs in Ottawa.

We also once again stepped up for neighbours who were impacted by even more severe weather conditions than our own, this time helping with power restoration in Georgia in the wake of two hurricanes.

We are proud of the company's achievements in 2017, a year in which we responded well to immediate operational challenges, and strengthened Hydro Ottawa's long-term revenue and financial position. This is a testament to the hard work and dedication of our employees – the cornerstone of our success. We ended the year on track to achieve the outcomes set out in our five-year Strategic Direction, and confident in the value we are providing to our customers, shareholder and community.

A handwritten signature in black ink, appearing to read "J. Durrell".

Jim Durrell, C.M., ICD.D
Chair, Board of Directors

A handwritten signature in black ink, appearing to read "B. Conrad".

Bryce Conrad
President and Chief Executive Officer

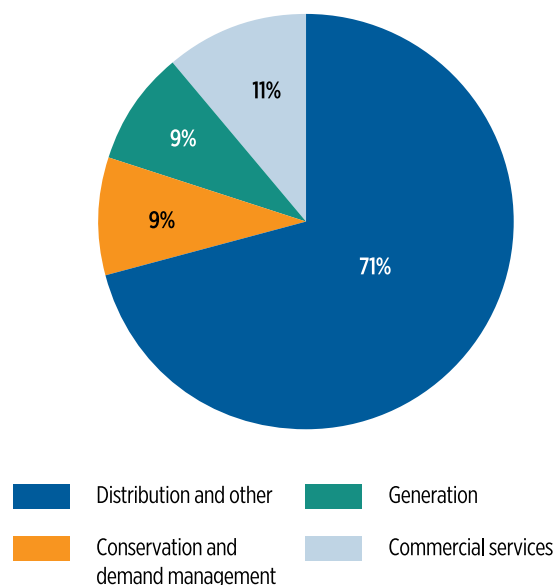
Financial Highlights

[in thousands of Canadian dollars]

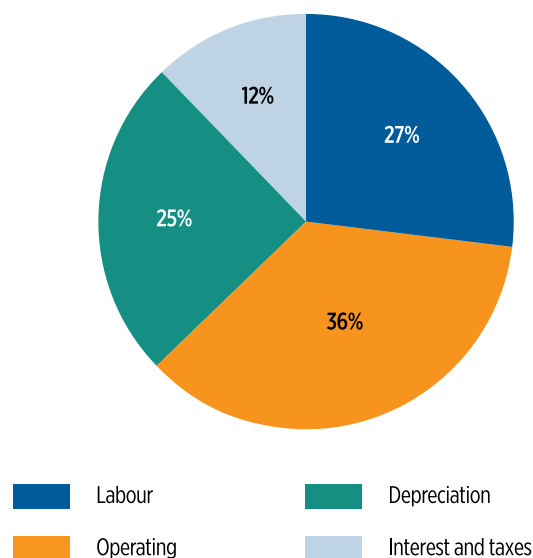
	2017	2016
Operations		
Total revenue ¹	\$ 1,140,187	\$ 1,189,360
Distribution revenue ¹	\$ 170,982	\$ 166,715
Generation revenue	\$ 22,898	\$ 17,489
Commercial services revenue	\$ 26,960	\$ 18,294
Conservation and demand management income	\$ 23,976	\$ 19,643
EBITDA ¹	\$ 118,271	\$ 104,400
Net income	\$ 35,975	\$ 34,836
Dividends	\$ (21,900)	\$ (20,600)
Balance Sheet		
Total assets and regulatory balances	\$ 1,719,697	\$ 1,630,578
Capital assets	\$ 1,391,356	\$ 1,267,838
Debentures	\$ 773,168	\$ 772,960
Shareholder's equity	\$ 438,141	\$ 426,775
Cash Flows		
Operating	\$ 91,962	\$ 96,317
Investing	\$ (148,074)	\$ (349,777)
Financing	\$ (20,600)	\$ 181,686

¹ Pre-IFRS 14 amounts and EBITDA are non-GAAP financial measures

Revenue by Type^{1,2}



Expenses by Type^{1,2}



¹ Pre-IFRS 14

² Excludes Power Recovery and Purchased Power

Progress Against Plan

Hydro Ottawa's 2017 Annual Report is the second to report against the Company's 2016–2020 *Strategic Direction* that outlines our business strategy and financial projections for this five year period. This strategy retains the core elements of the previous strategic plan [2012–2016 Strategic Direction], while responding to an altered strategic context and reflecting important changes to the Company itself – including the scale of its renewable generation business. It also outlines a new vision for Hydro Ottawa – to be a *leading partner in a smart energy future*.

The essence of Hydro Ottawa's strategy is to put the customer at the centre of everything that we do. We believe that a sharp

focus on the value we provide to our customers will generate positive results in all areas of performance – our financial strength and business growth, our operational efficiency and effectiveness, and our contributions to the community.

Hydro Ottawa's success in the past has been achieved by focusing on four critical areas of performance – our Four Key Areas of Focus: Customer Value, Financial Strength, Organizational Effectiveness, and Corporate Citizenship. These four Key Areas of Focus and supporting strategic objectives continue to guide our activities through the current plan and form the basis of our annual reporting in the pages that follow.

As before, the area of Customer Value takes on central importance as the most important driver of our business strategy.

FOUR KEY AREAS OF FOCUS

Customer Value

STRATEGIC OBJECTIVE

- We will deliver value across the entire customer experience
- By providing reliable, responsive and innovative services at competitive rates

Financial Strength

STRATEGIC OBJECTIVE

- We will create sustainable growth in our business and our earnings
- By improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people

Organizational Effectiveness

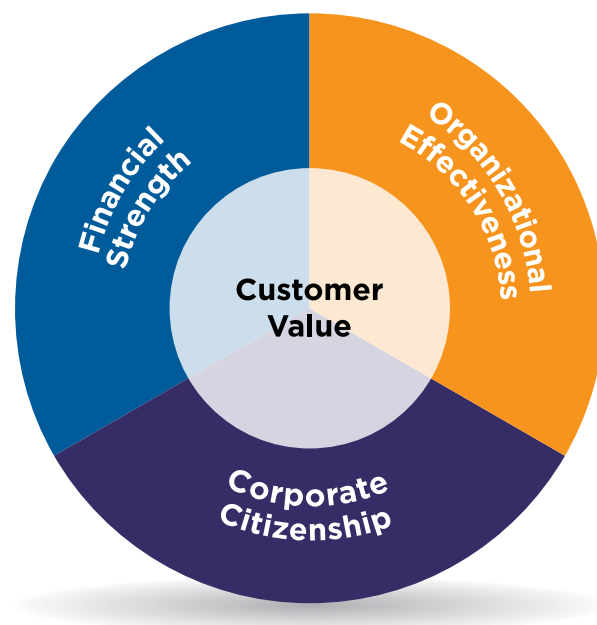
STRATEGIC OBJECTIVE

- We will achieve performance excellence
- By cultivating a culture of innovation and continuous improvement

Corporate Citizenship

STRATEGIC OBJECTIVE

- We will contribute to the well-being of the community
- By acting at all times as a responsible and engaged corporate citizen



Customer Value

Strategic Objective: We will deliver value across the entire customer experience... by providing reliable, responsive and innovative services at competitive rates.

90% customer satisfaction rate

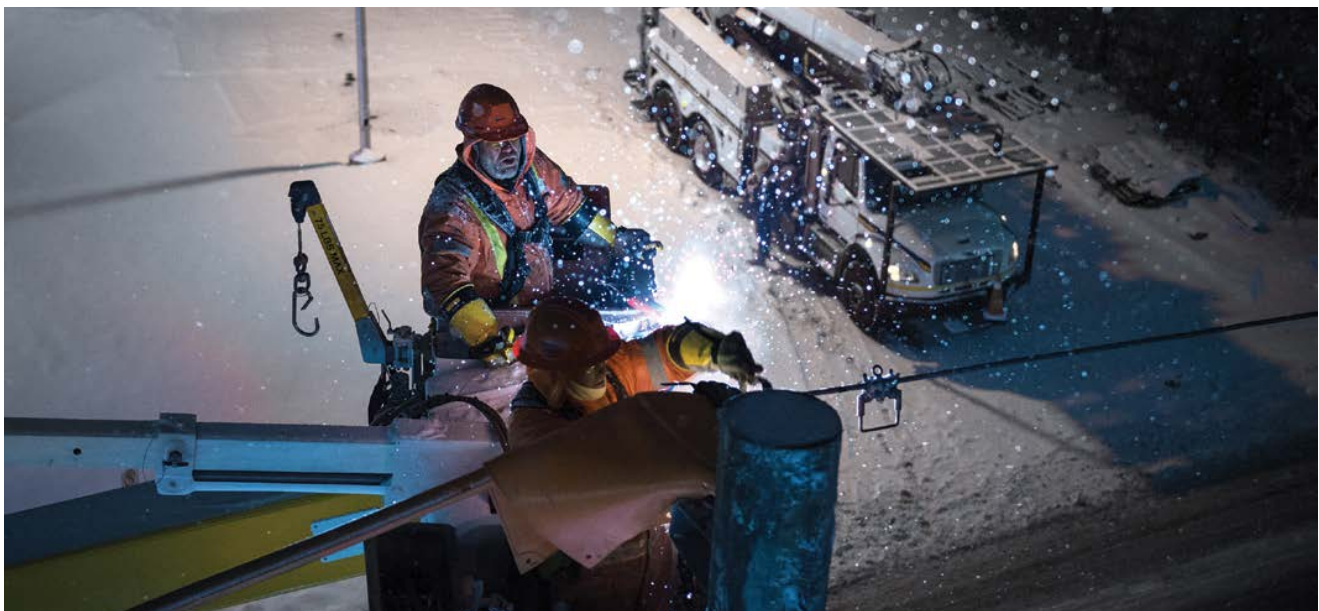
Launched Hydro Ottawa mobile app

The essence of Hydro Ottawa's business strategy is to put the customer at the centre of everything we do. In 2017, we provided highly reliable electricity service, made significant investments to maintain that standard of service, and enhanced our interaction and communication with customers, while also keeping distribution rates as affordable as possible. In fact, Hydro Ottawa Limited kept operating costs¹ on par with 2016, through operational savings and productivity improvements, despite inflationary and labour increases.

While we continued to extend the range of services we offer customers, most fundamentally they want electricity to be there when they need it. In 2017, our reliability performance dipped slightly from the previous year, due in part to high winds and

multiple major weather events. Outage frequency rose slightly (by 0.1 outages per year for an average customer), as did average outage duration (by 11 minutes). Still, Hydro Ottawa's service reliability remained among the best in Ontario, with 0.8 average customer outages per year. We have improved our performance in this area significantly over the past 5 years, with the frequency of outages down by 41 percent and the duration of outages down by 27 percent compared to 2013. We continue to invest in the reliability of our system in order to see this positive trend continue.

Like most utilities in Ontario, Hydro Ottawa needs to replace aging distribution system equipment at an accelerated pace. To further improve reliability, we continued to replace infrastructure consistent with our OEB-approved five-year plan.



¹ Operating costs exclude conservation and demand management

**Maintained
strong electricity
service reliability**

**\$68.2M invested to
keep distribution
system safe and
reliable**

**Expanded
customer service
hours and levels**

We invested \$68.2 million in 2017, targeting older infrastructure, localized reliability issues, and station capacity limitations. A further \$30.9 million was invested to expand the system to meet growing customer needs.

Our customer satisfaction rate was 90 percent in 2017, up from 81 percent in 2016 and five percentage points higher than the average for local electrical utilities in Ontario. In addition to our own initiatives to improve customer service, we believe the province-wide electricity cost reductions implemented through the Ontario Fair Hydro Plan (OFHP) were likely a significant driver of the increased satisfaction rate.

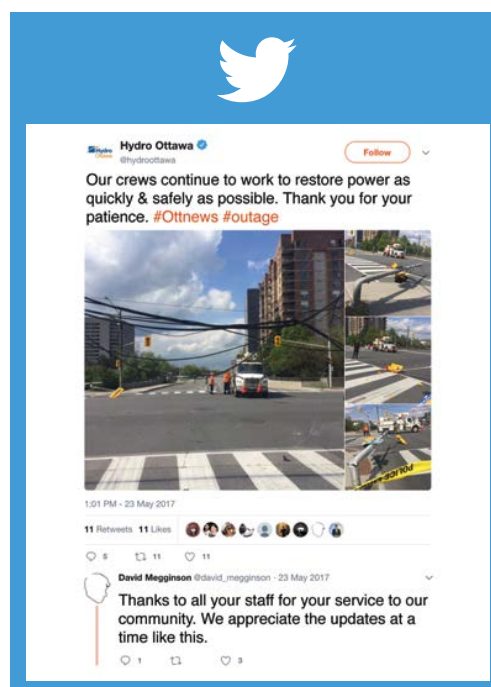
We continued to reach notable customer-service milestones in 2017. This included launching an industry-leading mobile app that allows customers to view and manage their energy consumption, access their billing details, and receive real-time outage information and alerts.

We also increased service levels and extended contact centre hours in 2017, and now offer live support in 120 different languages. Our self-serve phone features were enhanced with voice recognition technology, and our web/mobile self-serve options can now be linked to social media accounts for speed and simplicity of access. These service improvements were all provided at a reduced cost through a contract with a new service provider. Communication and interaction through social media also remained a priority, and we used more video and drone footage to provide frontline and behind-the-scenes insights and information. Social media has become a primary contact point for many customers, especially during storms and outages when real-time information is vital.

We maintained the highest e-billing participation rate of any utility in Ontario, increasing customer convenience while decreasing costs. Now at 40 percent, e-billing participation

saves \$1.4 million annually. Our 2017 “go paperless” e-billing incentive campaign generated an \$88,465 donation to the CHEO Foundation, enabling the purchase of a new portable echocardiography machine for the smallest patients in the neonatal intensive care unit.

We also continued to help customers manage their energy consumption and costs through conservation and demand management (CDM) programs. At the mid-point of our current six-year CDM plan (2015–2020) we are tracking well towards an overall goal of saving 395 gigawatt hours of electricity. Among our major initiatives are six institutional Combined Heat and Power projects, with one at the Royal Ottawa Hospital now fully operational.



Financial Strength

Strategic Objective: We will create sustainable growth in our business and our earnings... by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people.

\$36.0M in net income

\$21.9M dividend to shareholder

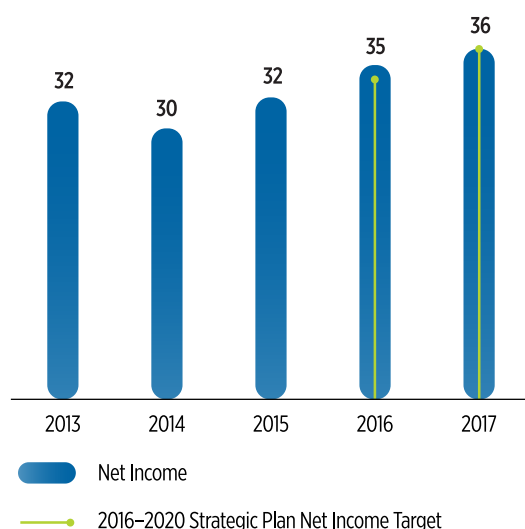
In 2017, Hydro Ottawa continued to achieve excellent financial results, while successfully completing the Chaudière Falls expansion – the company's largest-ever capital project – overcoming severe weather and unplanned events, and continuing to develop new business lines.

Our consolidated net income rose by \$1.2 million to \$36 million. This record amount achieved the projection in our 2016–2020 Strategic Direction, despite the financial impact of unforeseeable events such as severe spring flooding. The Chaudière Falls expansion was completed on time and on budget and, once at full production it will generate enough clean, renewable energy to power 20,000 homes.

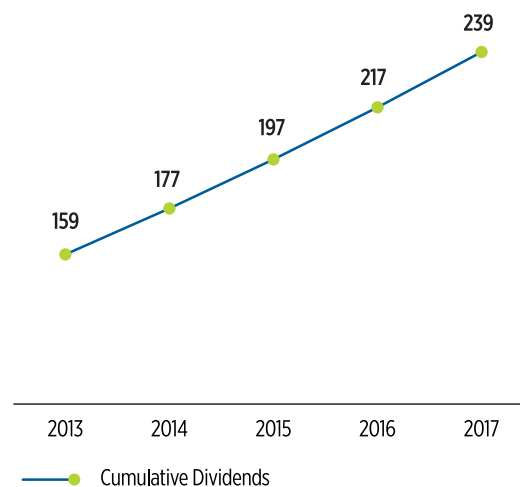
With a consolidated return on equity of 8.4 percent – consistent with 2016 – Hydro Ottawa continued to create value for its sole shareholder, the City of Ottawa. Our 2017 performance generated a dividend payment of \$21.9 million, surpassing the floor of \$20 million, and bringing cumulative dividends paid to \$239 million since 2005.

While our regulated local distribution company continued to be the largest contributor to our net income, revenue growth under the current regulatory model is expected to be modest. This, coupled with investments needed to successfully manage the challenges of aging infrastructure and grid modernization, requires a focus on cost containment and productivity. In 2017, we were able to keep our operating cost¹ on par with 2016, despite inflationary and labour pressures.

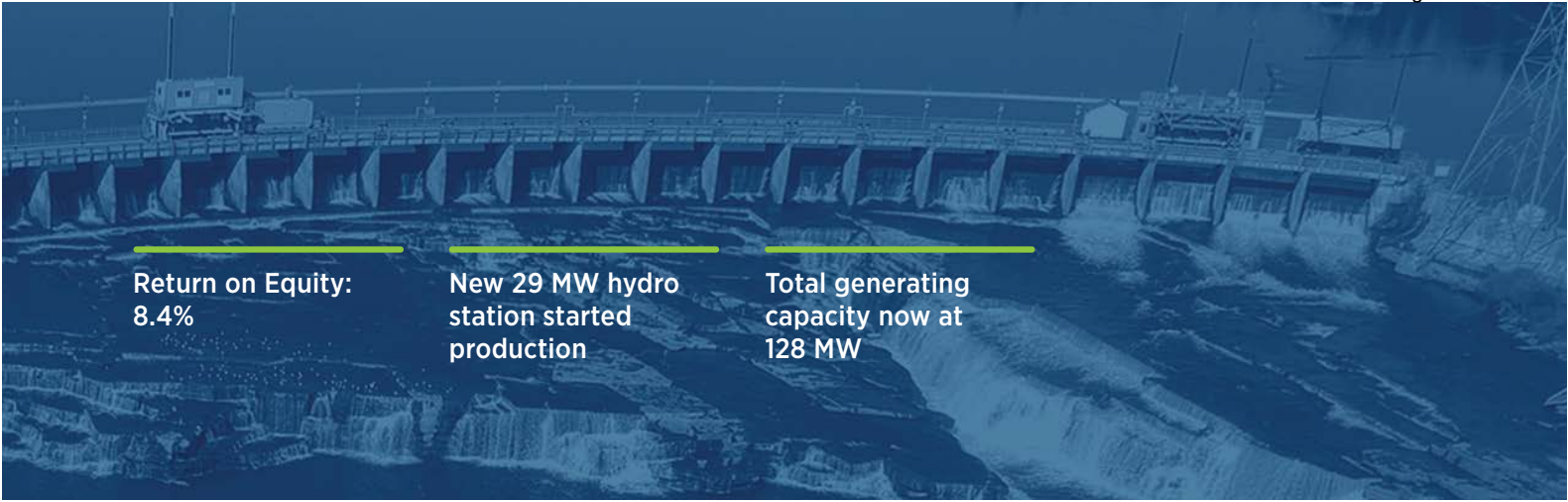
Net Income [\$ millions]



Cumulative Dividends [\$ millions]



¹ Operating costs exclude conservation and demand management



Return on Equity:
8.4%

**New 29 MW hydro
station started
production**

**Total generating
capacity now at
128 MW**

The completion of the Chaudière Falls expansion project boosted our renewable generation capacity to 128 megawatts, an increase of more than 500 percent since 2012. This represents enough renewable energy power – 107,000 homes – equivalent to more than a third of Hydro Ottawa’s residential customers, and by far the most of any municipal utility in Ontario. The expansion was in commercial operation as of August 18, and the official public opening of the spectacular falls and surrounding historic site followed on October 16.

A once-in-a-century spring flood event impacted 11 of our generating stations along the Ottawa and Rideau Rivers in 2017. Most stations were restored within the first week, minimising the financial impact, but two stations required extensive repairs and only returned to normal operation in October and November.

In keeping with our 2016–2020 Strategic Direction, we continued to expand and develop Energy and Utility Services – the third driver of our financial strength alongside our distribution and generation operations. The largest current project is the City of Ottawa streetlight conversion, with a total of 21,527 streetlights converted to LED as of the end of 2017. With the project more than one-third completed, Ottawa has begun to see earlier and higher energy savings than originally projected. We also continued to develop and market other new services, and are encouraged by the strong interest in our cable testing offering, which launched in 2016.



Organizational Effectiveness

Strategic Objective: We will achieve performance excellence... by cultivating a culture of innovation and continuous improvement.

Safety remained our top priority

Contained operating costs through productivity

Achieving the objectives set out in our 2016–2020 Strategic Direction requires an effective and constantly learning organization, with the right skills and organizational capacity to deliver on existing and new business lines. For this reason, we sustained our focus on three main outcomes in 2017: a safe and healthy work environment; an engaged, aligned and prepared workforce; and efficient and effective operations that enhance the customer experience.

Maintaining a safe and healthy work environment remained our top priority, with a heightened focus in 2017 on our contractor Occupational Health, Safety and Environment (OHSE) management program, including detailed reviews of field-level performance. Internally, we increased our already extensive training on safe work practices, averaging 28 hours per employee, and more than 55 hours among employees in higher-risk trades roles. Our OHSE management system continued to be certified to the internationally recognized OHSAS 18001 and ISO 14001 standards, and the head of our safety group was recognized by the Canadian Society of Safety Engineering as Safety Professional of the Year – Eastern Ontario and Canada.

We continued to implement our proactive and multifaceted Talent Management Strategy to ensure a well-prepared and sustainable workforce over the next five to ten years. Similar to many companies in our sector, Hydro Ottawa faces challenging demographics, with 35 percent of employees eligible to retire in the next ten years including 38 percent of trades and technical employees. In 2017, attracting and retaining staff remained a major priority for the organization as a whole. There was growth in our powerline technician partnership with Algonquin College and in our hiring of apprentices, who now represent more than 19 percent of our trades workforce.

Our summer and co-op students, and retiree and older-worker engagement programs, continued to be vital; and we launched a refreshed diversity and inclusion plan, with both employee- and community-facing components.





Containing operating costs through performance and productivity improvement also remained a broad and constant effort throughout the company, and continued to deliver operating savings in 2017. We further increased the productivity of the labour we deploy, as well as the efficiency of key assets such as generating facilities and technology infrastructure; and we succeeded in minimizing increases in operating, maintenance and administration spending.

Technology continued to play a key role in our efforts to enhance performance and productivity, as well as customer service. In 2017, we invested almost \$17 million in next-generation technology systems to support customer service, operational efficiency, grid modernization, and cybersecurity. Hydro Ottawa became one of the first utilities to migrate major software systems to the cloud, thereby improving our capacity for innovation and new-technology implementation.

As providers of electricity to the nation's capital, our critical infrastructure is increasingly at risk from cybersecurity threats. In response, we are investing in our cybersecurity program with a greater emphasis on proactive controls. Hydro Ottawa was also a key contributor to the new Ontario Energy Board cybersecurity framework for all utilities and our interconnected grid.

The construction phase of our Facilities Renewal Program also got underway in 2017. This is a key modernization and operational efficiency initiative that will see the company relocate from obsolete, end-of-life facilities in 2019 (specifically, our south and east operations centres and administrative office). When fully implemented, the plan is expected to improve productivity, enhance service through more strategically located and better-equipped facilities, and help reduce environmental impacts.

Corporate Citizenship

Strategic Objective: We will contribute to the well-being of the community... by acting at all times as a responsible and engaged corporate citizen.

Employee charitable fundraising of >\$370K

Educated >24,000 students on electricity safety

Hydro Ottawa has a proud heritage as a responsible company – one that is well-governed, open and engaged with our stakeholders, environmentally responsible, and an active contributor to community well-being.

We remained visible and accessible to our stakeholders in 2017, participating in more than 465 community events – a 32 percent increase over 2016. This participation centered on: energy-related educational programs in schools; Conservation Team involvement in a wide spectrum of community, corporate and retail events; and a range of other presentations and open houses. We also continued to grow our online community presence – with a 92 percent increase in overall engagement from 2016 – in part through our video social media strategy and our new Hydro Ottawa App.

We continued to enhance our communications with community associations and business improvement areas, maintaining newsletters tailored to these specific audiences. We hosted a second annual Community Forum to provide information on our CDM programs, tree trimming efforts, and low-income assistance programs; and hosted 14 community meetings to provide information and answer questions on upcoming infrastructure projects for 2018.

Environmental leadership continued to be a high priority for Hydro Ottawa. In 2017, we diverted more than 90 percent of non-hazardous wastes (liquid and solid) away from landfill, while further cutting our use of paper and physical servers. We revitalized our Environmental Sustainability Strategy, and set a goal to achieve the Canadian Electricity Association's Sustainable Electricity Company™ designation by 2020. We also played a leading role in the City of Ottawa's Energy Evolution initiative.





We continued to make diverse and carefully chosen community investments. Our annual employee charitable campaign raised over \$370,000. Led by our employees' resolve to "give where they live", funds were provided to the Breast Health Centre at the Ottawa Hospital and to United Way Ottawa's mental health programs. Our employees also contributed to the community with their time, with many doing so at the Special Needs Day at the Capital Fair – an annual highlight for many Hydro Ottawa employees. We continued our long-standing corporate support for Christie Lake Kids, which provides recreation and skills and leadership training for economically disadvantaged youth, and we partnered with Ottawa 2017 in support of several elements of the Canada's 150 celebrations, including Red Bull Crashed Ice, Inspiration Village, Kontinuum, La Machine, and the Miwàte – Illumination of Chaudière Falls.

While we put our community donations to work here at home, we also answered the call-to-help from four other utilities during the year including one from a distant neighbour – sending 26 employees to assist with power restoration in Georgia after Hurricanes Irma and Harvey hit the United States. Hydro Ottawa has a long history of participating in such efforts on both sides of the border through membership in the North Atlantic Mutual Assistance Group (NAMAG) – a partnership enabling utilities to deliver and access not-for-profit assistance.

We were honored again in 2017 to have our efforts recognized with third-party awards and rankings in the areas of best employer, human resources and safety innovation, customer programs, and corporate social responsibility.





Management's Discussion and Analysis

INTRODUCTION

The Management's Discussion and Analysis ['MD&A'] reviews Hydro Ottawa Holding Inc.'s operational performance and financial results, and should be read in conjunction with the audited consolidated financial statements and accompanying notes for the year ended December 31, 2017. On January 1, 2015, Hydro Ottawa Holding Inc. adopted International Financial Reporting Standards ['IFRS'] including early adoption of IFRS 14 Regulatory Deferral Accounts ['IFRS 14']. The accompanying consolidated financial statements are prepared in accordance with IFRS, as issued by the International Accounting Standards Board ['IASB'], and are expressed in thousands of Canadian dollars.

The MD&A contains forward-looking statements, including, but not limited to, statements as to future operating results and plans. These statements reflect management's expectations as of the date of approval of the consolidated financial statements. The impacts of risks and uncertainties may cause actual results, performance or achievements to differ materially from those projected here.

CORE BUSINESS AND STRATEGY

Company Profile

Hydro Ottawa Holding Inc. ['Hydro Ottawa', 'the Company' or 'the Corporation'] is 100 percent owned by the City of Ottawa. It is a private company, registered under the *Ontario Business Corporations Act*, and overseen by an independent

Board of Directors consisting of 10 members appointed by City Council and the President and Chief Executive Officer. The core businesses of the Corporation are electricity distribution, renewable energy generation, and energy and utility services. Hydro Ottawa owns and operates two primary subsidiary companies.

Hydro Ottawa Limited, the first of these two subsidiaries, is a regulated electricity local distribution company ['LDC'] operating in the City of Ottawa and the Village of Casselman. As the third-largest municipally owned electrical utility in Ontario, Hydro Ottawa Limited maintains one of the safest, most reliable and cost-effective electricity distribution systems in the province, serving approximately 332,000 residential and commercial customers across 1,116 square kilometres. As a condition of its distribution licence, the Company is required to meet conservation and demand management ['CDM'] targets established by the Ontario Energy Board ['OEB']. The Company's customer base grows by an average of one percent per year.

Energy Ottawa Inc. ['Energy Ottawa'], the second of these two subsidiaries, is the largest Ontario-based municipally owned producer of green power, and provides commercial energy and infrastructure management services to large energy-consuming organizations. These include turnkey energy efficiency solutions (e.g., lighting and building retrofits), non-destructive cable testing and smart data monitoring systems. Energy Ottawa also owns and operates six run-of-the-river hydroelectric generation plants at Chaudière Falls near Ottawa's core, along with the historic Ottawa River Ring Dam, and 10 other run-of-the-river facilities in Ontario and New York. It also holds majority



interests in two gas-to-energy joint ventures, which produce clean, renewable energy from landfill gas at the Trail Road and Laflèche landfill sites in Ottawa and in Moose Creek, Ontario; and has 14 solar installations across the City of Ottawa. In total, Energy Ottawa has 128 megawatts of installed green generation capacity – enough to power 107,000 homes.

For a list of the significant operating subsidiaries and joint ventures included in Hydro Ottawa's consolidated financial results, refer to Note 1 [Description of Business and Corporate Information] in the consolidated financial statements included in this report.

Our Strategic Direction

In 2016, Hydro Ottawa issued a new strategic plan [2016–2020 Strategic Direction], outlining the Company's business strategy and financial projections for the next five years. This strategy retains the core elements of the previous strategic plan [2012–2016 Strategic Direction], while responding to an altered strategic context and reflecting important changes to the Company itself – including the scale of its renewable generation business. It also outlines a new Vision for Hydro Ottawa – to be a *leading partner in a smart energy future*.

Strategy

The essence of Hydro Ottawa's strategy is to put the customer at the centre of everything we do. Reorienting our business around the customer was the primary goal of our 2012–2016 Strategic Direction, and customer centrality continues to drive our business strategy. We believe that a sharp focus on the value we provide to our customers will generate positive results in all areas of performance – our financial strength and business growth, our operational efficiency and effectiveness, and our contributions to the well-being of our community.

A core premise of our 2016–2020 Strategic Direction is that the electricity service model is in the midst of significant transformation – taking on a more decentralized, customer-centric, technologically advanced and environmentally sustainable form. The transition to a more customer-driven and customer-centric model of electricity will present opportunities for energy providers that are able to innovate, and challenges for those that fail to adapt. Our strategy for responding to this emerging landscape involves eight core elements:

- Taking customer experience to the next level;
- Continuing to achieve strategic growth, including continued growth in our renewable energy business, evaluating opportunities to grow our electricity distribution business, and expanding the range of services we provide;
- Ensuring access to capital for growth;
- Making sure we have the right skill sets and organizational capacity to deliver on existing and new business lines;
- Continuing to enhance operational performance, including productivity and safety;
- Delivering on critical projects such as the Chaudière expansion project;
- Continuing to build public confidence and trust; and
- Being ready to embrace change and disruption in our industry.

Our aim is to be the trusted energy advisor for our customers – large and small – and our community. As the energy needs and options of our customers and our community evolve, and as

signature projects and developments proceed, Hydro Ottawa will play a leading role in helping our City to transition to a smart energy future.

We will also continue to grow shareholder value, maintaining a focus on strategic business growth within our core areas of strength. Our growth agenda involves four basic components:

- **Electricity Distribution:** continuing to evaluate opportunities to increase our distribution service territory;
- **Renewable Generation:** increasing the supply of clean energy for customers and earnings for our shareholder by making smart investments in renewable generation;
- **Energy Services:** providing innovative solutions to help consumers, businesses and communities meet their energy objectives, through energy management, conservation, efficient street lighting, energy generation, energy storage, district energy, and demand response opportunities, among others; and
- **Utility Services:** leveraging our assets and expertise to help other utilities to enhance the value they provide, creating new revenue streams and economies of scale.

Taken as a whole, we believe this strategy for the Company's future presents a balanced program for solid performance, adaptation to a changing business environment, and sustainable and profitable business growth.

Mission, Vision & Guiding Principles

OUR MISSION – *To create long-term value for our shareholder, benefitting our customers and the communities we serve*

Hydro Ottawa is both a community asset and an investment for our shareholder, the City of Ottawa. As a community asset, our purpose is to provide efficient and reliable services and a first-class customer experience to our customers, and to continue to be a strong strategic partner with the City, helping to deliver on its economic development and environmental agendas. As an investment, our purpose is to provide stable, reliable and growing returns, and to increase shareholder value both in the short- and long-term.



OUR VISION – Hydro Ottawa – *a leading partner in a smart energy future*

OUR GUIDING PRINCIPLES

Hydro Ottawa is committed to creating long-term value in a manner that will withstand the test of public scrutiny and inspire confidence and trust. To that end, we strive to achieve excellent operating and financial results while abiding by professional standards of conduct. We are guided not only by legal obligations, but also by best governance and business practices, and standards established by independent agencies. These expectations provide the foundation for our commitment to all of our stakeholders, and are reflected in our organizational values, our Code of Business Conduct, and our operating policies and procedures.

OUR ORGANIZATIONAL VALUES

At Hydro Ottawa we are committed to an organizational environment that fosters and demonstrates ethical business conduct at all levels and reflects our shared values of teamwork, integrity, excellence and service. Every employee must lead by example in this endeavour.

OUR COMMITMENTS TO OUR STAKEHOLDERS

Hydro Ottawa takes into account the interests of all our stakeholders including employees, customers, suppliers, our shareholder, and the communities and environment in which we operate.

Employees

The quality of our workforce is our strength and we will strive to hire and retain the best-qualified people available and maximize their opportunities for success. We are committed to maintaining a safe, secure and healthy work environment enriched by diversity and characterized by open communication, trust, and fair treatment.

Customers

Our continued success depends on the quality of our customer interactions, and we are committed to delivering value across the entire customer experience. We are honest and fair in our relationships with our customers, and provide reliable, responsive and innovative products and services in compliance with legislated rights and standards for access, safety, health and environmental protection.

Suppliers and Contractors

We are honest and fair in our relationships with our suppliers and contractors and purchase equipment, supplies and services on the basis of merit, with a preference for local procurement. We pay suppliers and contractors in accordance with agreed terms, encourage them to adopt responsible business practices, and require them to adhere to our health, safety and environment standards when working for Hydro Ottawa.

Community and the Environment

We are committed to being a responsible corporate citizen and will contribute to making the communities in which we operate better places to live and do business. We are sensitive to the community's needs, and dedicated to protecting and preserving the environment where we operate.

Shareholder and Other Suppliers of Finance

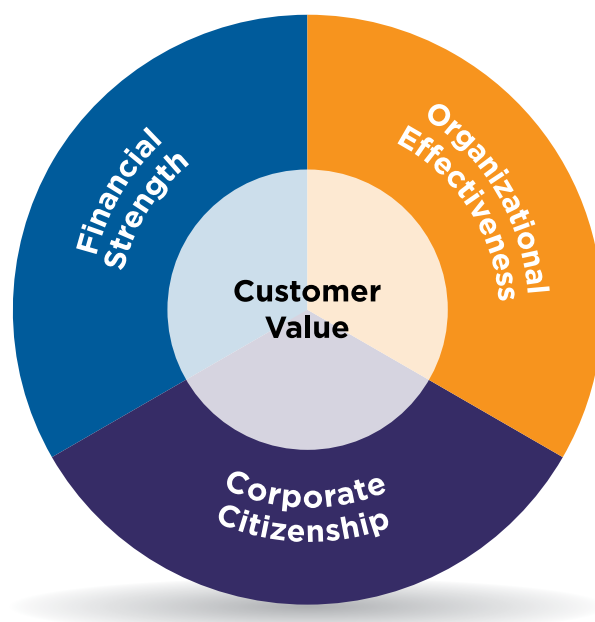
We are financially accountable to our shareholder and to the institutions that underwrite our operations, and communicate to them all matters material to our organization. We protect our shareholder's investment, and manage risks effectively. We communicate to our shareholder all matters that are material to an understanding of our corporate governance.

Four Key Areas of Focus

Hydro Ottawa's success in the past has been achieved by focusing on four critical areas of performance – our four Key Areas of Focus. In each of these areas, we have set one overarching objective:

- **CUSTOMER VALUE:** We will deliver value across the entire customer experience by providing reliable, responsive and innovative services at competitive rates;

- **FINANCIAL STRENGTH:** We will create sustainable growth in our business and our earnings by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people;
- **ORGANIZATIONAL EFFECTIVENESS:** We will achieve performance excellence by cultivating a culture of innovation and continuous improvement; and
- **CORPORATE CITIZENSHIP:** We will contribute to the well-being of the community by acting at all times as a responsible and engaged corporate citizen.



These four areas of focus and strategic objectives will continue to guide our activities through the current plan. As before, the area of Customer Value takes on central importance as the most important driver of our business strategy.

Electricity Industry Overview

Within the broader electricity sector, different entities are responsible for generating electricity, transmitting it, and delivering it to customers' homes and businesses; as well as for directing grid and market operations, and overseeing and regulating the system as a whole. These entities are different in the three markets where Hydro Ottawa operates: Ontario, Québec and New York.

Electricity Generation

Electricity is created at generating stations – hydroelectric, nuclear, fossil-fueled, wind, biomass and biogas, and solar – as well as at small-scale “distributed energy” installations [mainly renewables] at or near end-use locations. Facilities such as nuclear and large hydroelectric stations operate continuously, while wind and solar operate intermittently, and others such as natural gas stations can start up or slow down as required to follow demand fluctuations. Hydro Ottawa, through its subsidiary, Energy Ottawa, has a fleet of hydroelectric, landfill gas-to-energy and solar generating stations, and is the largest Ontario-based municipally owned producer of green power.

Electricity Transmission

Electricity is transmitted from generating stations to large industrial customers and local distribution companies through a high-voltage network of transformer stations, transmission towers and wires. In Ontario, the transmission network is primarily operated by Hydro One, while in Québec it is operated by Hydro-Québec TransÉnergie. In New York State, the transmission system is operated by a number of private and public entities such as National Grid and the New York Power Authority, which are collectively referred to as New York Transmission Owners.

Electricity Distribution

After transmission, electricity in Ontario is distributed at lower voltages to homes, businesses, hospitals, schools, factories, and farms by LDCs such as Hydro Ottawa Limited. LDCs deal directly with electricity customers, maintain their communities' systems of electricity wires, and create and implement electricity conservation programs for customers. LDCs are the primary electricity-billing agent collecting all electricity charges.

Hydro Ottawa Limited is a municipally owned LDC that operates in the City of Ottawa and the Village of Casselman.

While it is always an LDC that delivers electricity through its distribution lines to a home or business, electricity customers have the choice of buying their electricity from their local LDC or an electricity retailer. Most Ontario customers choose to buy from their LDC. Hydro Ottawa is not engaged in electricity distribution in markets outside Ontario.

System Operators

The *Independent Electricity System Operator* ['IESO'] connects all participants in Ontario's power system – generators that produce electricity, transmitters that send it across the province, retailers that buy and sell it, industries that use it in large quantities, and LDCs that deliver it to homes and businesses. The IESO forecasts electricity demand throughout the province in continuously updated five-minute intervals and collects offers from generators to provide the required amount. Customers buying directly from the provincial market can therefore see prices fluctuate based on current supply and demand, and can respond accordingly. The IESO monitors the system, identifies what is required to maintain reliability in the future, and publishes its findings in regular reports. It also coordinates emergency preparedness for the province's electricity system.

The *New York Independent System Operator* ['NYISO'] is at the heart of New York's electricity system, monitoring the grid and power infrastructure, administering and monitoring the wholesale electricity markets, and planning for the state's energy future. The NYISO was created to provide fair and open access to the electrical grid. New York is divided into 11 electricity zones and, within each, the NYISO is responsible for scheduling generation and load, contracting for the services necessary to maintain grid reliability, and scheduling imports and exports. The NYISO is also responsible for publishing current demand or load in real time. Hydro Ottawa's New York State assets are located in the NYISO Zone E – Mohawk Valley.

Hydro-Québec operates the entire electricity system in Québec through various divisions; the division that performs the system operator role is Hydro-Québec TransÉnergie.

Regulatory Framework

In Ontario, the Ministry of Energy [‘the Ministry’] sets the overall policy for the energy sector, guided by relevant laws and regulations. The Ministry oversees the IESO and the Ontario Energy Board [OEB], which regulate the energy sector as set out primarily in three statutes – the *Ontario Energy Board Act, 1998* [‘OEB Act’]; the *Electricity Act, 1998*; and the *Energy Consumer Protection Act, 2010*. The *OEB Act* establishes the authority of the OEB to approve and fix all rates for the transmission and distribution of electricity in Ontario, and to set standards of service, conduct and reporting that must be adhered to as a condition of being licensed.

In the United States, electrical utilities and independent power producers are regulated at both the federal and state levels. Under the *Federal Power Act*, the Federal Energy Regulatory Commission [‘FERC’], an independent agency within the U.S. Department of Energy, regulates the transmission and wholesale sale of electricity in interstate commerce. Unless otherwise exempt, any entity that owns or operates facilities used for the wholesale transmission or sale of electricity in interstate commerce is a public utility subject to FERC’s jurisdiction. NYISO is also under the oversight of the FERC.

In Québec, the electricity sector is regulated by La Régie de l’énergie [‘the Régie’], an independent agency. The *Act Respecting the Régie de l’énergie* grants the Régie exclusive authority to determine or modify the rates and conditions under which electricity is transmitted and distributed by Hydro-Québec.



Rates

Hydro Ottawa Limited recovers its costs from customers through electricity distribution rates. These include the costs to:

- design, build, and maintain overhead and underground distribution lines, poles, stations and local transformers;
- operate local distribution systems, including smart meters; and
- provide customer service and emergency response.

Costs and rates vary from one distributor to another, depending on factors such as the age and condition of assets, geographic terrain and distances served, population density and growth, and the proportion of residential to commercial and industrial consumers.

Hydro Ottawa Limited’s distribution charge represents just over 20 percent of a customer’s total electricity bill. Hydro Ottawa Limited collects the whole amount, but keeps only this portion. The remainder is passed on, without mark-up, to regulators, the provincial government, and the other companies responsible for generating and transmitting electricity.

Hydro Ottawa Limited’s distribution rates are set by the OEB, based on rate-change applications. For more information on the rate-setting framework and Hydro Ottawa Limited’s rates, see Note 3(e) [Significant Accounting Policies - Regulation] to the consolidated financial statements included in this report.

Energy Ottawa’s hydroelectric generation rates are set through facility-specific contracts. For hydroelectric facilities delivering power to Ontario and Québec, Energy Ottawa operates under agreements with the IESO and Hydro-Québec respectively, whereby a “base contractual rate” is determined at the outset of each agreement. In Ontario, an indexing factor is applied on an annual basis until the completion of the contract term; while in Québec the rate is locked in for the first two years after which it fluctuates based on applicable market rates. For hydroelectric stations located in upstate New York, Energy Ottawa’s power purchase agreements – all of which are with the Niagara Mohawk Power Corporation, a subsidiary of National Grid plc – are currently market-based. As a result, the rates that determine generation revenues from these stations fluctuate.

CAPABILITY TO DELIVER RESULTS

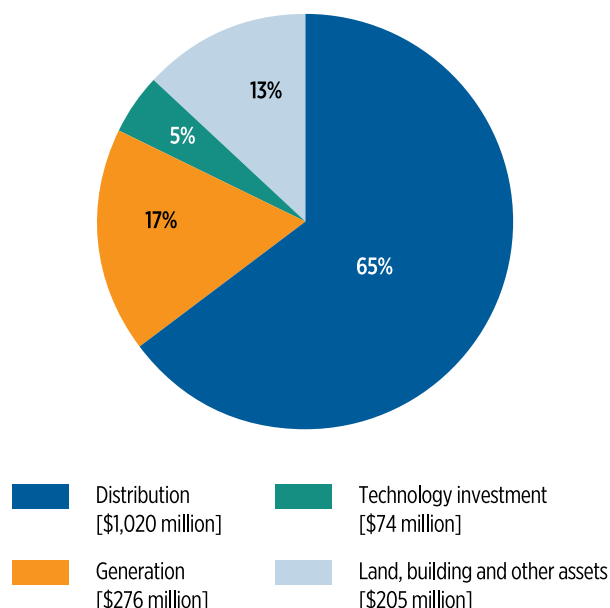
Hydro Ottawa's capability to achieve the objectives set out in its strategic direction is a function of its tangible and intangible assets, expertise, systems, and capital resources across the following areas.

Assets

Hydro Ottawa's gross asset base is \$1.58 billion, with significant ongoing investments in distribution and generation infrastructure and technology systems. Like all utilities, Hydro Ottawa is affected by the reality of aging infrastructure, and continues to manage this through increased infrastructure investments and a detailed Distribution System Plan to target spending where it will have the most benefit. In 2017, the Corporation invested \$68 million to maintain its distribution system and a further \$31 million to expand the system to meet customer needs [see 'Investing Activities' for more details]. These investments are having the desired impact, with electricity service reliability remaining strong system-wide despite the occurrence of major-weather-event days in 2017. Hydro Ottawa has also recognized the need to replace core work and operational centres that are at the end of their useful life. In 2017, work progressed on its facilities renewal project, including construction and preparations for the move in 2019. Hydro Ottawa also continues to grow its renewable generation infrastructure with \$51 million invested in 2017.

- **Electricity Distribution Assets** – For more than 100 years, Hydro Ottawa and its predecessor companies have delivered a reliable supply of electricity to homes and businesses.
 - › Service Area – 1,116 square kilometres
 - › Circuitry – 5,711 kilometres
 - › Substations – 88
 - › Transformers – 45,701
 - › Poles – 49,484
- **Renewable Generation Assets** – Largest Ontario-based municipally owned producer of green power with 128 megawatts of installed generation capacity, enough to power 107,000 homes.
 - › Run-of-the-River Hydroelectric Generating Stations – 16
 - › Landfill Gas-to-Energy Plants – 2
 - › Solar Installations – 14

Gross Tangible and Intangible Assets



Workforce

A highly skilled, properly trained and knowledgeable workforce – and a safe and healthy work environment – are essential to Hydro Ottawa's continued success. The company's strategic objectives will only be achieved through the efforts of an effective and constantly learning organization, with the right skill sets to deliver on existing and new business lines.

Hydro Ottawa employed approximately 730 people at the end of 2017 across the enterprise, with Hydro Ottawa Limited accounting for 88 percent of this workforce.

Like many other utilities, Hydro Ottawa continues to face challenging workforce demographics that require a concerted response. The Company has put in place a comprehensive and integrated talent management strategy. It is anticipating and meeting talent needs through planning, talent attraction and acquisition, effective deployment of resources, and performance management and development. More specifically this includes:

- **Training:** Our in-house apprenticeship and engineering internship programs continued to grow in 2017 with seven new apprentices hired [bringing the total to 34, or 19 percent of our trades workforce]. Eleven apprentices reached journeyperson status in 2017.

- **Succession:** Succession planning and management programs ensure that there are qualified employees in the talent pipeline for key positions.
- **Knowledge Management & Transfer:** A proactive approach for key positions includes an older worker and retiree engagement strategy to help seamlessly transition work from our veteran workforce to the next generation.
- **Diversity & Inclusion:** A plan fosters an inclusive culture that leverages diversity and enhances employee engagement and innovation.
- **Partnerships:** These include, most notably, collaborations with Algonquin College to deliver the College's Powerline Technician programs in the eastern Ontario region, and with Carleton University's Sustainable and Renewable Energy Engineering Department for the establishment of a smart grid laboratory. The latter fosters innovative research on electrical power systems and promotes the training of engineers in the smart grid environment.

Employee compensation programs continued to support a high-performance culture, and include market-driven and performance-based components to attract and retain key employees.

As our business changes, so too does the profile of our workforce. It is increasingly diverse in age, skills, background, belief, ethnicity, sexual orientation, and in many other ways. We aim to create a thriving and respectful workplace for all.

A fundamental component of Hydro Ottawa's commitment to operating efficiently and effectively is the very high priority we place on protecting the health and safety of our employees and our community. Hydro Ottawa has established an integrated health, safety and environment management system that has maintained certification to Occupational Health and Safety Assessment Series 18001, and to International Organization for Standardization 14001, since November 2007.

Systems and Processes

Hydro Ottawa has made significant investments in technology systems to enhance the Company's effectiveness. These include customer information and billing systems, advanced metering, and information and operational technologies such as geographic information systems, system control, outage management, and mobile workforce management systems. We take the security of our critical infrastructure against cyber threats seriously, and collaborate proactively with government, regulators and private sector partners across North America to manage this risk. And our technology decisions continue to be based on three basic criteria: enhancing service to our customers; creating efficiencies that will increase our competitiveness; and improving functionality to be more agile and resilient in the face of industry disruption.

Hydro Ottawa is also focused on maximizing the efficiency and effectiveness of our operations by optimizing productivity at every opportunity.

Examples of initiatives undertaken in 2017 include:

- implemented live GPS tracking of vehicles to optimize dispatching of crews;
- installed 7,000 [for a total of 9,500] remote disconnect meters eliminating the need to dispatch vehicles and helping to reduce our carbon footprint;
- rolled out new customer telephone system providing self-serve features for account information, billing inquiries, and outage management – all leveraging voice recognition technology;
- launched industry leading mobile application that enables our customers to manage their energy consumption, monitor usage, view bills and conservation tips, and track outages;
- enhanced website functionality improving customer sign-in, site navigation and registration process for Pre-authorized Payment and Equal Monthly Payment Plans;
- implemented a new Enterprise Resource Planning [ERP] system with streamlined and automated Human Resources, Finance and Supply Chain processes company-wide; and
- migrated major systems to the Cloud on a large scale, thereby modernizing how we implement future technology.

Capital Resources

Liquidity and Capital Resources

The Corporation's primary sources of liquidity and capital resources are operating activities, banking facilities, and proceeds from bond issuances as and when required. Liquidity and capital resource requirements are primarily for: maintenance of the Hydro Ottawa Limited electricity distribution system; investments in generation assets; and cost of power, interest expense, and prudential requirements.

On July 20, 2017, the Corporation renewed its credit facility for \$340 million. The Corporation may use up to \$190 million of the facility for general operating requirements and annual capital expenditures. To ensure appropriate liquidity, an additional \$150 million, two-year revolving term credit line was also placed to provide short-term bridge financing for large capital projects and acquisitions.

Capital expenditure requirements in excess of the credit facility, if any, will be funded through future bond issuances. The utility sector continues to be a very attractive investment in the capital markets with strong demand across all bond tenures. This provides the Corporation access to significant market capacity to support its ongoing investment requirements. The Corporation's

existing corporate bond profile is very strong with a weighted average maturity of 19 years at an average weighted cost of 3.49 percent. The \$204 million, 40-year non-recourse project bond issued in 2016 for the expansion at Chaudière Falls remains in place at a rate of 4.08 percent. For additional details regarding the Corporation's sources of liquidity and capital resources, see Notes 13, 16 and 17 to the consolidated financial statements.

Credit Ratings

On July 27, 2017, Dominion Bond Rating Service Inc. ['DBRS'] reaffirmed Hydro Ottawa's rating at 'A' with a stable trend during the year. While Hydro Ottawa's portfolio of generation assets have long-term power purchase agreements with creditworthy counterparties, DBRS noted that Hydro Ottawa's business risk profile may be negatively affected if earnings from the non-regulated segment exceed 20 percent. On November 1, 2017, Standard & Poor's ['S&P'] confirmed its rating at 'BBB+' with a stable outlook. S&P noted that Hydro Ottawa continues to have an excellent business risk profile due to: its operation under a transparent, consistent, and predictable regulatory framework for electricity distribution; its large and diverse customer base; and the quality of its government-backed power purchase agreements for the majority of the generation assets, which provide steady, predictable and stable cash flows.



RESULTS – PROGRESS AGAINST PLAN

To ensure Hydro Ottawa makes steady progress towards achieving the corporate strategy set out in our 2016–2020 Strategic Direction, the Company has set enterprise-wide

strategic objectives in each of its four key areas of focus, and established Board-approved performance goals. The table below summarizes performance in relation to its goals for 2017.

KEY AREAS OF FOCUS	ENTERPRISE STRATEGIC OBJECTIVES	2017 PERFORMANCE GOALS	2017 PERFORMANCE HIGHLIGHTS
CUSTOMER VALUE	We will deliver value across the entire customer experience <i>by providing reliable, responsive and innovative services at competitive rates</i>	Assist customers in managing their energy consumption and electricity costs Deliver on customer expectations for service quality and responsiveness Maintain overall distribution system reliability	<ul style="list-style-type: none"> Continued to achieve strong reliability results despite several major-weather-event days, and invested \$68.2M to keep our distribution system safe and reliable Extended the hours and increased the service levels of our customer service contact centre – including Saturday hours, translation support for 120 languages, voice recognition technology [“My Voice is My Password”] Ranked 2nd in terms of lowest operating costs per customer amongst large distributors in Ontario Achieved 90% customer satisfaction rate Achieved highest e-billing participation rate among Ontario LDCs [40% of customers], saving \$1.4M per year Launched industry-leading Mobile App providing customer billing, energy consumption, conservation tips, and outage information Continued to use social media and drone footage to relay real-time information during storms and outages
FINANCIAL STRENGTH	We will create sustainable growth in our business and our earnings <i>by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people</i>	Grow revenues from new sources Enhance / protect revenues from existing business lines	<ul style="list-style-type: none"> Achieved consolidated net income of \$36M, as per 2016–2020 Strategic Direction commitment Completed Chaudière Falls expansion project on schedule and budget <ul style="list-style-type: none"> Largest project in the company’s history Brings total generation capacity to 128 MWs [500% growth since 2012] – enough to power 107,000 homes Solidifies status as largest Ontario-based municipally owned producer of green power Maintained generating revenue stability with over 80% of our 128 MW capacity contracted through long-term power purchase agreement rates Continued to diversify our revenue streams <ul style="list-style-type: none"> 21,527 City of Ottawa street lights converted to LED – over 60% savings in kWh Completed LED retrofit projects at the Robert O. Pickard Environmental Centre, Ottawa Airport, Village of Casselman and Ottawa Community Housing

KEY AREAS OF FOCUS	ENTERPRISE STRATEGIC OBJECTIVES	2017 PERFORMANCE GOALS	2017 PERFORMANCE HIGHLIGHTS
ORGANIZATIONAL EFFECTIVENESS	We will achieve performance excellence <i>by cultivating a culture of innovation and continuous improvement</i>	<p>Continue to enhance operational performance and productivity</p> <p>Maintain leading health and safety record</p> <p>Enhance organizational and employee capability</p>	<ul style="list-style-type: none"> Maintained safety as our top priority, providing an average of 28 hours of safe work practices training for all employees Continued our heavy focus on productivity Invested \$16.6M in next-generation technology systems to support customer service, operational efficiency, grid modernization, and cybersecurity Maintained certifications for our Occupational Health, Safety and Environment Management System to internationally recognized standards Advanced facilities renewal project construction and initiated preparations for the move in 2019 Continued our workforce renewal through apprentice and journey person hiring [without increasing position complement], and through implementation of comprehensive talent management programs
CORPORATE CITIZENSHIP	We will contribute to the well-being of the community <i>by acting at all times as a responsible and engaged corporate citizen</i>	<p>Enhance our brand image in the community and the industry</p> <p>Continue to improve our environmental performance and reduce our impact on the environment</p>	<ul style="list-style-type: none"> Provided support through our Community Investment Program, employee volunteer efforts, and local delivery of provincial financial assistance programs Raised over \$370K as part of our 2017 Employee Charitable Fundraising campaign Increased our engagement with the community <ul style="list-style-type: none"> › Attended more than 465 community events › Educated over 24,000 students about electricity safety, conservation and renewable energy › Hosted our annual Community Forum and 14 Open Houses for planned work › Increased online engagement by 92% [Twitter followers rose by 21%, Facebook by 51% and LinkedIn by 40%] Answered the call for aid by assisting with power restoration in Georgia after Hurricanes Irma and Harvey devastated many communities Diverted more than 90% of our non-hazardous solid and liquid waste away from landfill Received 10 awards for performance excellence, including recognition as one of Canada's Top Employer's [4th year] and as one of the National Capital Region's Top Employers [9th year]

FINANCIAL RESULTS

The selected consolidated financial results of the Corporation presented below should be viewed in conjunction with the audited consolidated financial statements and accompanying notes for the year ended December 31, 2017.

Consolidated Statement of Income [Summary]

With the adoption of IFRS in 2015 – including the early adoption of IFRS 14 – several of the Corporation's line items in its audited consolidated statement of income are subject to high volatility. Specifically, IFRS 14 requires a one-line separate presentation of the net movement within the Corporation's regulatory deferral accounts related to income [i.e. the debit and credit balances, net of taxes] within its consolidated statement of

income. This net movement of regulatory balances primarily arises when there is a timing difference between the cost of power purchased and the cost of power recovered. This difference is recorded as a settlement variance, representing future amounts to be recovered from or refunded to customers through future billing rates approved by the OEB. Consequently, the Corporation's power recovery and purchased power line items can be significantly impacted by these timing differences. For the purposes of the analysis and interpretation of financial variances presented below, management has identified and excluded impacts resulting from the adoption of IFRS 14, and used pre-IFRS 14 results as the basis for its discussion unless otherwise noted. Management believes this more accurately represents the true financial performance of the Corporation, given its rate-regulated environment as prescribed by the OEB.

[in thousands of Canadian dollars]

	2017	IFRS 14 Impact	2017 (Pre- IFRS 14) ⁽¹⁾	2016	IFRS 14 Impact	2016 (Pre- IFRS 14) ⁽¹⁾	Change (Pre- IFRS 14) ⁽¹⁾
Revenue and other income							
Power recovery	896,528	(10,849)	885,679	974,207	(14,021)	960,186	(74,507)
Distribution sales	171,400	(418)	170,982	165,729	986	166,715	4,267
Generation	22,898	-	22,898	17,489	-	17,489	5,409
Commercial services	26,960	-	26,960	18,294	-	18,294	8,666
Conservation and demand management	23,976	-	23,976	19,643	-	19,643	4,333
Net gain from insurance proceeds	2,939	-	2,939	-	-	-	2,939
Other	6,753	-	6,753	7,033	-	7,033	(280)
	1,151,454	(11,267)	1,140,187	1,202,395	(13,035)	1,189,360	(49,173)
Expenses							
Purchased power	908,649	(25,131)	883,518	966,072	(7,883)	958,189	(74,671)
Operating costs	139,797	(307)	139,490	128,072	(242)	127,830	11,660
	1,048,446	(25,438)	1,023,008	1,094,144	(8,125)	1,086,019	(63,011)
Income before the undernoted items	103,008	14,171	117,179	108,251	(4,910)	103,341	13,838
Depreciation and amortization	54,800	-	54,800	49,642	-	49,642	5,158
Financing costs, interest income and taxes	36,838	(9,342)	27,496	28,172	(8,250)	19,922	7,574
Share of profit from joint ventures	(1,092)	-	(1,092)	(1,059)	-	(1,059)	(33)
	90,546	(9,342)	81,204	76,755	(8,250)	68,505	12,699
Net income	12,462	23,513	35,975	31,496	3,340	34,836	1,139
Net movements in regulatory balances, net of tax	23,513	(23,513)	-	3,340	(3,340)	-	-
Net income after net movements in regulatory balances	35,975	-	35,975	34,836	-	34,836	1,139

(1) Non-GAAP financial measure

Net Income

Net income increased by approximately \$1.1 million or three percent in 2017. This increase was primarily due to a \$4.3 million increase in distribution sales, a \$14.1 million increase in generation and commercial services revenue, and a \$2.9 million net gain from insurance proceeds. These positive variances were partially offset by increases in operating costs excluding conservation and demand management costs of \$7.4 million and in depreciation and amortization of \$5.2 million, and by a \$7.6 million increase in financing costs [net of interest income] and taxes.

Revenue and Other Income

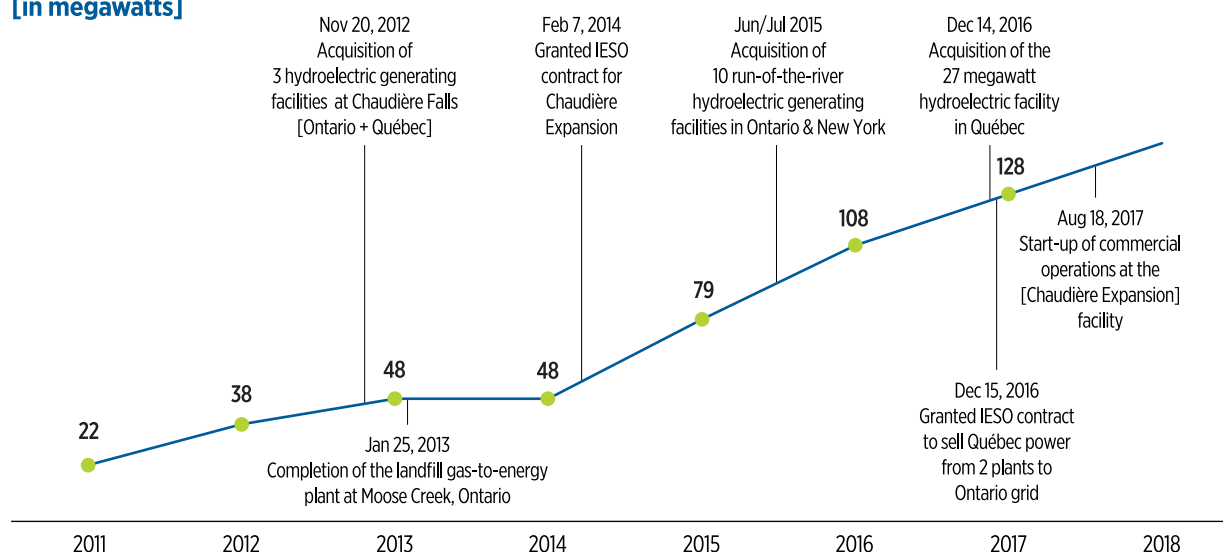
Revenue and other income are earned from electricity distribution, renewable energy generation, energy management and utility services, as well as from CDM programs and sundry activities. In 2017, Hydro Ottawa's total revenue amounted to approximately \$1.1 billion, a slight decrease from 2016.

The largest component of Hydro Ottawa's total revenue is the cost of power recovered from customers through provincially established rates. The cost of power is a flow-through amount, which poses limited risk to Hydro Ottawa's financial performance. However, variances arise between the cost of power purchased and the cost of power recovered, due to timing differences in invoicing from the IESO for

the former, and receipt of payment from customers for the latter. This difference is recorded as a settlement variance. Hydro Ottawa Limited's power recovery revenue decreased by \$74.5 million, mainly due to lower electricity consumption and lower flow-through electricity costs as a result of the Ontario Fair Hydro Plan. The Ontario Fair Hydro Plan, introduced by the Government of Ontario on March 2, 2017, provides eligible customers with financial assistance through various changes to commodity pricing, and through elimination or reduction of certain provincial charges on the electricity bill. As a result, the total electricity bill for eligible customers is reduced by an average of 25 percent and consequently so is Hydro Ottawa's power recovery revenue offset by a similar decrease in power purchased as described below.

Distribution sales are recorded based on OEB-approved distribution rates, set at a level intended to recover the costs incurred by Hydro Ottawa Limited in delivering electricity to customers, and they include revenue related to the collection of OEB-approved rate riders. 2017 marks the second year of rates approved under Hydro Ottawa Limited's 2016-2020 custom incentive rate-application. Distribution sales revenue increased \$4.3 million or three percent from 2016 largely due to this application and the associated recovery of large investments in capital infrastructure. The Ontario Fair Hydro Plan does not have any effect on Hydro Ottawa's distribution sales.

Generation Capacity Growth [in megawatts]



Energy Ottawa's generation revenues continued to grow. The subsidiary significantly increased its generation capacity in the past few years as detailed in the chart above. The most notable addition in 2017 was the start-up of commercial operations at the expanded Chaudière facility on August 18, 2017, which was the largest project in the Corporation's history.

Leading up to the official start-up, we experienced a once-in-one-hundred-year flood event on the Ottawa River system in May 2017 forcing the shutdown of our generation facilities at Chaudière Falls, Rideau Falls and Kingston Mills. The majority of the generation at Chaudière Falls was fully restored within the first week. Following the flood, some facilities or portions thereof required more significant repairs and were out of service for a longer period. All stations were back to their normal operating state as of November 2017. In addition, on August 19, 2017, one of the units experienced a mechanical failure due to a manufacturer defect and sustained significant damage. This unit is expected to be back in service in 2018. The Corporation is seeking compensation for lost revenues from its contractor and its insurers. Despite these setbacks, the Corporation was able to increase generation revenues by \$5.4 million, due to revenue from the 27-megawatt hydroelectric generating station on the Québec side of Chaudière Falls acquired in late 2016 and the revenue from the expansion at Chaudière Falls in the second half of the year.

Commercial services revenue increased by \$8.7 million largely due to the streetlight maintenance and conversion projects. The largest of these is in the City of Ottawa, where a cumulative total of 21,527 LED streetlights have been installed since the project began in 2016. New endeavors such as cable testing and power quality testing continue to gain momentum. CDM was \$4.3 million higher than in 2016 due to an increase in the number of customer projects completed during 2017. Funding for these projects is provided by the IESO, which compensates Hydro Ottawa for all eligible CDM expenditures incurred during the year.

In 2017, the Corporation recognized a net gain of \$2.9 million from insurance proceeds [net of insurance deductibles]. This includes \$1.6 million in lost revenue compensation resulting

from the mechanical failure of a unit at the expanded Chaudière facility and \$1.3 million in business interruption and property damages arising from the shutdown of the facilities at Chaudière Falls, Rideau Falls and Kingston Mills due to a once-in-one-hundred-year flood event.

Expenses

Purchased Power and Operating Costs

Purchased power represents the cost of electricity delivered to customers within Hydro Ottawa Limited's distribution service territory. These costs consist of the commodity, wholesale market service charges, transmission charges and the global adjustment. The cost of purchased power decreased by \$74.7 million in 2017, mainly due to lower electricity consumption and lower flow-through electricity costs resulting from the Ontario Fair Hydro Plan.

Operating costs in 2017 of \$139.5 million were up by \$11.7 million due in part to an increase in CDM and business development [such as non-destructive cable testing] expenditures, along with operating expenses associated with generation assets acquired from Hydro Québec in December of 2016, and technology costs. Bad debt expenses also increased as a result of the Decision and Order banning licensed electricity distributors from disconnecting homes for non-payment during the winter. This order was issued by the OEB on February 22, 2017 [and lifted on April 30, 2017] and again on November 15, 2017 [lifting in April 2018].

Depreciation and Amortization

Depreciation and amortization on Hydro Ottawa's property, plant and equipment, and intangible assets increased in 2017 by \$5.2 million primarily due to the ongoing investment in the Corporation's electricity distribution infrastructure and the expansion of its generation assets.

Share of Profit from Joint Ventures

Share of profit from joint ventures represents the Corporation's share of net income from the continuing operations of Moose Creek Energy LP [50.05 percent] and of PowerTrail Inc. [60.00 percent]. For more information regarding the Corporation's joint ventures, see Note 11 to the consolidated financial statements.

Financing Costs [net of Interest Income] and Taxes

Financing costs [net of interest income] increased by \$2.9 million due to borrowings to finance general operating requirements and annual capital expenditures, and the recognition of interest costs related to the Chaudière Falls expansion project, which had been capitalized during the construction phase.

The Corporation's effective tax rate increased from 20.61 percent in 2016, to 29.15 percent in 2017, as a result of permanent and temporary differences between the accounting treatment and tax basis of assets and liabilities that arose during the year. The \$5.8 million increase in income tax expense is largely the result of an increase in pre-tax income and taxable income, and a change in the U.S. corporate tax rate. For more information regarding income taxes, see Note 22 to the consolidated financial statements.

Net Movement in Regulatory Balances [Net of Tax]

In accordance with IFRS 14, the Corporation has separately presented the net movement in regulatory balances in

the consolidated statement of income. The changes in the regulatory debit and credit balances for the year on the consolidated balance sheet [\$11.7 million and \$12.2 million respectively], equal the net movement in regulatory balances, net of tax, on the consolidated statement of income [increase of \$23.5 million, along with \$0.4 million in comprehensive income]. The net movement in regulatory balances was primarily due to an increase in regulatory debit balances due to deferred taxes and operating costs to be recovered through future rates [\$9.7 million and \$0.3 million, respectively], and to a decrease in settlement variance credit balances of \$14.3 million arising from timing differences between purchased power and cost recovery. These were offset by the recovery of regulatory debit balances through distribution sales rate riders of \$0.4 million. As Hydro Ottawa Limited passes on the benefit of deferred income taxes through annual distribution rate adjustments approved by the OEB, it records a regulatory deferral account credit [or debit] balance for the amounts of deferred taxes expected to be refunded to [or recovered from] customers in future rates.

Consolidated Balance Sheet [Summary]

[in thousands of Canadian dollars]

	2017	2016	Change
Current assets	271,368	283,446	(12,078)
Non-current assets	1,422,863	1,333,388	89,475
Total assets	1,694,231	1,616,834	77,397
Regulatory account balances	25,466	13,744	11,722
Total assets and regulatory account balances	1,719,697	1,630,578	89,119
Current liabilities	315,825	267,524	48,301
Non-current liabilities	941,222	899,574	41,648
Total liabilities	1,257,047	1,167,098	89,949
Shareholder's equity	438,141	426,775	11,366
Total liabilities and shareholder's equity	1,695,188	1,593,873	101,315
Regulatory account balances	24,509	36,705	(12,196)
Total liabilities, shareholder's equity and regulatory account balances	1,719,697	1,630,578	89,119



Assets

Total assets increased by approximately \$77 million in 2017. This increase is largely attributable to property, plant and equipment, and to intangible assets – which have collectively increased by \$123 million – and to a \$6 million increase in other long-term assets. The increase in property, plant and equipment and in intangible assets is a result of the Chaudière Falls expansion, the facilities renewal project, and continuing investments in electrical distribution and generation infrastructure. In addition, on December 13, 2017, the Corporation acquired the primary distribution assets at the Public Services and Procurement Canada campuses located at Tunney's Pasture, Confederation Heights and the Central Experimental Farm with a fair value of \$1.4 million. The increase in assets was partially offset by a \$58 million decrease in restricted cash arising out of the project financing arrangement for the Chaudière Falls expansion project. In 2016, \$124 million of the \$204 million project financing was placed in restricted accounts from which withdrawals may only be made with trustee authorization. At December 31, 2017, \$66 million in restricted cash remained, while \$44 million was held in a distributions reserve account which is expected to be available in 2018 upon final completion as per the terms of the trust indenture.

Liabilities

Total liabilities increased by \$90 million in 2017. The Corporation's current liabilities increased \$48 million largely because of an increase in bank indebtedness of \$77 million offset by a decrease in accounts payable and accrued liabilities of \$26 million. The Corporation also saw a \$17 million increase in deferred revenue due to capital contributions received in 2017, net of amortization, and an increase of \$13 million and \$9 million in customer deposits and deferred income taxes, respectively. The increase in customer deposits stems from the asset transfer with Public Services and Procurement Canada of \$14.6 million as described above for the funding of future expenditures related to the assets.

Regulatory Account Balances

IFRS 14 defines a regulatory account balance as the balance of any expense or [income] account that would not be recognized as an asset or liability in accordance with other IFRS standards, but that qualifies for deferral because it is included, or is expected to be included, by the regulator in establishing the rate[s] that can be charged to customers. As at December 31, 2017, Hydro Ottawa Limited has recognized \$25.5 million in regulatory account debit balances [assets] and 24.5 million in regulatory account credit balances [liabilities].

The \$11.7 million increase in regulatory account debit balances is largely due to a \$9.1 million increase in the regulatory asset for deferred income taxes and a \$1.1 million increase in the Lost Revenue Adjustment Mechanism, which tracks and disposes of lost revenues that result from approved CDM programs.

The \$12.2 million decrease in regulatory account credit balances is largely due to a \$15.4 million decrease in the settlement of electricity and global adjustment pass-through-cost credit balances. Offsetting this decrease is a \$1.4 million increase in the Earnings Sharing Mechanism variance account, which captures 50 percent of any regulated earnings above Hydro Ottawa's approved return on equity for years 2016 to 2020, and an increase of \$0.7 million in other variances and deferred costs.

Consolidated Statement of Cash Flows [Summary]

[in thousands of Canadian dollars]

	2017	2016	Change
Cash (bank indebtedness), beginning of year	(67,769)	4,002	(71,771)
Cash provided by Operating Activities	91,962	96,317	(4,355)
Cash used in Investing Activities	(148,074)	(349,777)	201,703
Cash (used in) provided by Financing Activities	(20,600)	181,696	(202,296)
Foreign exchange impact on cash held in US dollars	(9)	(7)	(2)
Cash (bank indebtedness), end of year	(144,490)	(67,769)	(76,721)

Cash (bank indebtedness) consists of:

Cash	933	982	(49)
Bank indebtedness	(145,423)	(68,751)	(76,672)
	(144,490)	(67,769)	(76,721)



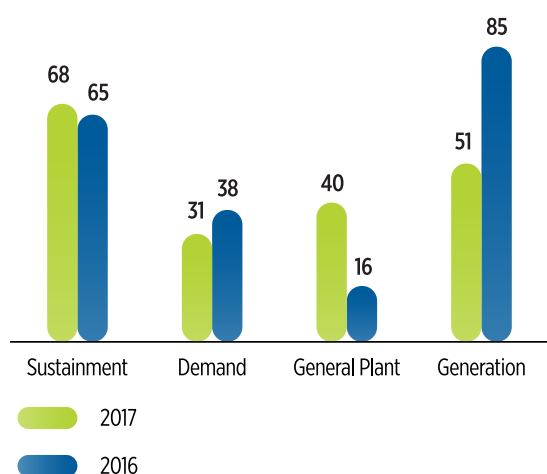
Operating Activities

Cash generated by operating activities decreased by \$4.4 million in 2017. The majority of this decrease relates to the net movement in regulatory balances, which is primarily due to changes impacting settlement variance balances. This was offset by improved working capital cash flows mainly related to timing of settlement of accounts receivable and accounts payable and accrued liabilities.

Investing Activities

Cash used in investing activities decreased by \$201.7 million in 2017. The decrease is partially due to the additional spending in 2016, in connection with the acquisition of the 27-megawatt Centrale Hull-2 hydroelectric generating station from Hydro-Québec. The release of restricted cash held in-trust to Hydro Ottawa, in accordance with the Chaudière expansion project financing trust indenture, further offset the impact of the ongoing construction at Chaudière Falls and our continuing investment in electrical distribution and generation infrastructure. Total investment in property, plant and equipment and in intangible assets was \$190.1 million in 2017. The chart below shows Hydro Ottawa's capital investments by category for both 2017 and 2016.

Gross Capital Expenditures [\$ millions]



Capital investments in 2017 included: \$68 million on sustainment capital to replace aging infrastructure and to modify the existing distribution system; \$31 million on demand projects, including third-party-driven growth projects such as new residential or commercial installations, and municipal improvement projects such as the City of Ottawa's Light Rail Transit project; \$40 million on general plant, including the facilities renewal program, information technology infrastructure, fleet, and other sundry items; and \$51 million on generating plants, of which 77 percent relates to the expansion at Chaudière Falls.

Some of the major capital projects completed in 2017 include the extension of the West 44kV line, which will provide backup supply to the communities of Stittsville, Richmond and Munster; and phase 1 of the Woodroffe switchgear and Leitrim transformer replacements, which will help to improve the reliability of the distribution system. On the generation side, the Chaudière Hydro North L.P. and Hull Energy L.P. generating station refurbishment projects are both proceeding on schedule and on budget. Significant progress was made on engineering and procurement, with construction to commence in 2018.

Financing Activities

Financing activities include dividends paid to the shareholder, the City of Ottawa, as well as proceeds from the issuance of long-term debt.

Dividends were paid to the shareholder in 2017 in accordance with the approved dividend policy. The 2017 payment totalled \$20.6 million based on 2016 results, and the 2016 payment totalled \$19.4 million based on 2015 results. Revisions to the dividend policy were approved by the City of Ottawa on June 22, 2016. The amended policy sets dividends at the greater of 60 percent of Hydro Ottawa Limited's net income, or \$20 million. This positions the Corporation to reinvest in its growth and help strengthen its key credit metrics.

In 2016, the Corporation completed the offering of senior secured amortizing bonds representing a cash inflow of \$204 million.

Accounting Matters

Significant Accounting Estimates

The preparation of consolidated financial statements, in conformity with IFRS, requires management to make estimates and assumptions that affect the reported amounts of consolidated revenues, expenses, assets and liabilities; and requires disclosure of commitments and contingencies as of the date of the consolidated financial statements.

These estimates are based on historical experience, current conditions and various other assumptions believed to be reasonable under the circumstances. Because they involve varying degrees of uncertainty, the amounts currently reported in the consolidated financial statements could prove to be inaccurate in the future.

Significant areas where estimates are made in the application of IFRS are as follows [references to associated notes in the consolidated financial statements are provided in brackets]:

- Accounts receivable [Note 2(d)(i)]
- Regulatory balances [Note 2(d)(ii)]
- Revenue recognition [Note 2(d)(iii)]
- Useful lives of depreciable assets [Note 2(d)(iv)]
- Impairment of non-financial assets [Note 2(d)(v)]
- Employee future benefits [2(d)(vi)]
- Fair value of assets and liabilities acquired [Note 2(d)(vii)]
- Deferred Income taxes [Note 2(d)(viii)]

New Accounting Pronouncements

A number of new standards, amendments and interpretations have either been adopted for the year ended December 31, 2017, or, have been issued but are not yet effective and have therefore not been applied in preparing the accompanying consolidated financial statements.

Recently adopted accounting standards

- **Disclosure to reconcile liabilities related to financing activities in the statement of cash flows:** The IASB issued amendments to IAS 7 requiring entities to disclose changes in their financing liabilities to assist readers in evaluating changes in liabilities arising from financing activities, including changes from cash flows and non-cash changes [such as foreign exchange gains or losses]. IAS 7 is effective for annual periods beginning on or after January 1, 2017. Although there was no financial impact to the Corporation's consolidated financial statements as a result of this change, a reconciliation of liabilities arising from financing activities has been added [refer to Note 24 in the consolidated financial statements].

Recently issued accounting guidance not yet adopted

- **Revenue from contracts with customers:** In May 2014, the IASB published a new standard, Revenue from Contracts with Customers ['IFRS 15'], which replaces most of the detailed guidance on revenue recognition that currently exists under IFRS. IFRS 15 provides a standardized five-step model to recognize all types of revenue earned from customer contracts, while previously significant room was allowed for judgment in devising and applying revenue recognition policies and practices. IFRS 15 is more prescriptive in many areas, such as the combination of related contracts for revenue recognition purposes, unbundling of multiple performance obligations within a single contract, and the capitalization of costs of obtaining or fulfilling a contract. IFRS 15 also contains additional disclosure requirements. IFRS 15 is effective for annual periods beginning on or after January 1, 2018. As the majority of the Corporation's revenue is recognized on a usage basis at regulated prices [power recovery and distribution revenue] or on a per unit basis at contracted or market prices [generation revenue], and does not carry significant bundled contracts of combined products and services, IFRS 15 will not have a material impact on the accounting for these revenue streams. However, IFRS 15 will impact the Corporation's revenue-related disclosures.



- Financial instruments:** In July 2014, the IASB issued the final version of IFRS 9 - Financial Instruments ['IFRS 9'], which replaces International Accounting Standard 39 Financial Instruments: Recognition and Measurement ['IAS 39']. IFRS 9 includes revised guidance on the classification and measurement of financial instruments, including basing the classification of financial instruments on their contractual cash-flow characteristics and on the entity's business model for managing financial assets, whereas IAS 39 bases the classifications on specific definitions for each category. Moreover, IFRS 9 simplifies the current IAS 39 classifications into three main categories [amortized cost, fair value through other comprehensive income, and fair value through profit or loss], and introduces a new expected credit loss model for measuring impairment on financial assets. The standard is effective for annual periods beginning on or after January 1, 2018. As the Corporation does not currently have complex financial instruments, IFRS 9 will not have a material impact on its consolidated financial statements. Management

is currently evaluating the impact of adopting the new expected credit loss model for measuring impairment.

- Leases:** In January 2016, the IASB issued a new standard, IFRS 16 - Leases ['IFRS 16'], which replaces accounting requirements introduced more than 30 years ago that are no longer considered suitable and is a major revision of the way in which companies account for leases. IFRS 16 removes the current requirement for lessees to account for leases as either operating or finance leases – under complex rules and tests – which may result in all-or-nothing being recognised on the balance sheet. Under IFRS 16, all leases from the lessee's perspective will have to be recognized on the balance sheet, except for exempted short-term [< 1 year] and low-value leases. The new standard becomes effective for reporting periods beginning on or after January 1, 2019 and early adoption is permitted if IFRS 15 is also adopted. The Corporation is currently evaluating the IFRS 16 impact on its consolidated financial statements and related disclosures.

- **Uncertain tax positions:** On June 7, 2017, the IASB, through the International Financial Reporting Interpretations Committee, issued Interpretation 23 Uncertainty over Income Tax Treatments ['IFRIC 23']. The interpretation provides guidance on the accounting for current and deferred tax liabilities and assets in circumstances in which there is uncertainty over income tax treatments. IFRIC 23 requires an entity to contemplate whether uncertain tax treatments should be considered separately or together as a group, to determine if it is probable that the tax authorities will accept the uncertain tax treatment, and to measure the tax uncertainty based on the most likely amount or expected value. IFRIC 23 is applicable for annual periods beginning on or after January 1, 2019 and early adoption is permitted. The Corporation is currently evaluating the IFRIC 23 impact on its consolidated financial statements and related disclosures.

RISKS AND UNCERTAINTIES

Hydro Ottawa has adopted a systematic approach to the management of risks and uncertainties, integrated into business processes and the periodic reporting of organizational performance. Capabilities and processes have been built across all business units to enable the effective identification of, and timely responses to, events likely to impede the achievement of corporate objectives.

The Corporation's Enterprise Risk Management ['ERM'] framework, established by the Board in 2006 and renewed annually, consolidates quarterly risk reporting to the President and Chief Executive Officer, and to the Board. Reporting highlights potential risk factors that may have an impact upon Hydro Ottawa's near-term business objectives and strategic direction. The ERM framework supports and complements the Corporation's strategic planning and annual business planning cycles, thereby enabling continuous review of assumptions and regularly refreshed environment scans.

Hydro Ottawa monitors sources of risk that are structural to the industry and to the regulated environment. These include, but are not restricted to: the weather; the policy and regulatory environment; the state of the economy and macro-economic trends; the state of financial markets and of investment in the utilities space; government policies relating to the production and

procurement of renewable and clean energy, as well as carbon emissions and conservation; the convergence of information technology and operational technology; cybersecurity; labour force demographics, with a particular emphasis on the renewal of human resources in the trades; and the impact of fiscal policies on customers. In combination, these sources of risk will shape the evolution of the industry, which could in turn present new and emerging risks that need to be managed effectively.

Policy and Regulatory Environment

Actual performance versus forecasts in electricity distribution

Hydro Ottawa's electricity distribution business has obtained approval from the OEB for a re-basing of its distribution rates for 2016–2020. As a result, the Corporation expects to be able to carry out its planned capital programs, provide safe and reliable electricity to its customers, and earn the allowed rate of return. However, results may be affected if actual loads and energy consumption vary substantially from forecast, or if actual costs of operations, maintenance, administration, capital and financing materially exceed projections included in the approved revenue requirements.

Long-term impact of Government policies and incentives for LDCs

Over the long term, the Ontario Government's policies on the production, procurement, pricing and sale of renewable energy – coupled with financial and other incentives directed at consumers as part of the Province's CDM, climate change action and net metering programs – could result in significant changes in the business environment for rate-regulated LDCs such as Hydro Ottawa Limited. The proposals included in the Government's Long Term Energy Plan, released in late 2017, appear to reinforce and might even accelerate these changes.

Potential adverse impacts include "grid flight". For example, as costs decline for a range of energy generation and storage technologies – such as solar photovoltaics, battery storage, fuel cells, geothermal energy systems, micro turbines, and electric vehicle-enhanced storage – LDCs may see their customers move progressively towards these cost-competitive alternatives, thereby reducing customer need for and dependence on the grid.

At this point, should trends such as grid flight materialize at a significant scale, policy and regulatory responses will be necessary to enable utilities to adapt while maintaining their century-old mandate to deliver electricity reliably, safely and at reasonable cost to their customers.

On a separate but related front, uncertainty exists around the short- and long-term impacts on LDCs from the government's rate mitigation program known as the Ontario Fair Hydro Plan.

In addition, early experience with the province's new prohibition on winter disconnection of residential customers suggests a risk of higher levels of bad debt going forward.

LDC Consolidation in Ontario

At a strategic level, the Corporation has identified consolidation with other municipally owned LDCs as an opportunity to attain economies of scope and scale that would work to the benefit of the customers of all the participating utilities. However, the pursuit of this opportunity may be unviable if valuations for mergers and acquisitions remain at levels that Hydro Ottawa may consider excessive or potentially detrimental to the interests of its own Shareholder and ratepayers. Voluntary consolidation or collaboration with other municipally owned LDCs for mutual benefit can be facilitated by policy direction, regulatory guidance and tax incentives that are appropriately aligned.

Long-term policy direction for the electricity sector

The results of the 2018 provincial elections in Ontario could have a significant impact upon long-term policy direction for the electricity sector. The outcome of this election might affect a variety of areas, including the continuation of the Climate Change Action Plan, ongoing support for CDM programs, the content of the Long Term Energy Plan, support for renewable energy generation, and priorities for rate regulation. The impact could range from a complete reversal of the policy initiatives of the last fifteen years to increased momentum on those very initiatives.

Market Prices for Electricity

Market prices for electricity fluctuate due to a number of factors, including: the amount of excess generating capacity relative to load in the market; the structure of the market; weather conditions that impact electrical load; growth in demand for electricity; absolute and relative prices for energy; and developments in CDM and government policy direction.

Approximately 18 percent of the Corporation's installed generation capacity is directly linked to the market price for electricity in the state of New York. In the absence of a fixed rate power purchase agreement, the Corporation may explore a number of options to reduce its exposure to market fluctuations.

Major Project Execution

The successful and timely completion of major projects is critical to the Corporation's long-term strategic direction, in particular its projected growth in generation revenue.

There are inherent risk factors in such projects, including: construction delays; cost overruns; equipment performance not in accordance with expectations; delays in permissions and clearances from all levels of government and their agencies; and technical issues in connecting to the grid.

Infrastructure

Hydro Ottawa has developed a long-term Distribution System Plan to phase in the investments required to replace its aging distribution infrastructure, and maintain high standards of reliability and operability, while keeping pace with the growth of its service territory. Aging electricity assets pose a dual risk to LDCs. Apart from being more prone to failure [during extreme weather events, for example], they make restoration of the distribution system more complex and financially onerous.

Equipment failure could also have an adverse impact on the generation of electricity at any of the Company's various facilities.

Exchange Rate Fluctuations

The Corporation's functional currency is the Canadian dollar. A significant depreciation of the value of the U.S. dollar relative to the Canadian dollar may adversely affect the value of the Corporation's U.S.-based assets and the related revenues. Conversely, a significant depreciation of the Canadian dollar relative to the U.S. dollar may affect the Corporation's capacity to finance additional growth in the U.S. market.

Economy

The state of the local, national and international economies could have a significant impact on the Corporation's business performance through factors such as inflation, customer credit risk, weakening demand for electricity and/or value-added services, and availability of market capital to fund growth. The economic climate could also have an effect on the stability and performance of some of Hydro Ottawa's key business partners.

Credit Ratings and Interest Rates

The Corporation continues to maintain strong investment grade credit ratings, however the Corporation's continued growth in unregulated businesses may negatively affect future ratings.

Nearly 90 percent of the Corporation's debt is subject to a fixed rate of interest, and is accordingly insulated from the impact of upward revision of interest rates. A rise in interest rates would affect the Corporation's credit facility, though its impact is not expected to be material.

Technology Infrastructure

The Corporation's business performance is dependent upon complex information systems, covering frontline operations [e.g. geographic information system, outage management

system, electricity system supervisory control and data acquisition system] as well as upon back office processes [e.g. customer information and billing systems, and ERP system]. The failure of one or more of these key systems, or a failure of the Corporation to either plan effectively for future technology needs or to transition effectively to new technology systems, could adversely impact the Corporation's business operations.

Many of these key systems also draw upon data and signals from several hundred thousand smart devices [chiefly smart meters], as well as the related systems and web interfaces. The processing of data in many cases entails a number of automated interfaces, as well as multiple internal and external dependencies, including Ontario's Smart Metering Entity. Risks arising from the reliability and performance of any single component of this integrated network, or of the system as a whole, could lead to a disruption of key business processes, such as the meter-to-cash cycle.

There is growing convergence of core operational systems with enterprise information systems, increasing automation, and extensive use of common technology in facilitating such integration and connectivity. This has the potential to heighten existing risks and to create new ones.

Cybersecurity

The Corporation's reliance on information systems and expanded data transmission and exchange networks, in conjunction with the growing extent of systems and data integration within the electricity sector, increases its exposure to information security threats, including cybersecurity risks. Hydro Ottawa's information systems and information assets could be put at risk by a security breach, data corruption or system failure at a shared resource or common service provider.

Customer and Media Perceptions

Electrical utilities across Ontario are confronted with risks arising from negative customer and media perceptions, typically owing to high commodity prices, which are outside of the Company's control.

Pension Plans

The Corporation provides a defined benefit pension plan for the majority of its employees through the Ontario Municipal Employees Retirement System ["OMERS"]. As OMERS is a multi-employer, contributory, defined benefit pension plan, it is not practicable to determine the Corporation's portion of pension obligations or the fair value of plan assets. Future funding shortfalls and net losses at OMERS, if any, are subject to the OMERS Sponsors Corporation Funding Management Strategy, which outlines how benefits and contributions will be modified as the OMERS Primary Plan cycles through periods of funding deficit and surplus.

Hydro Ottawa has also established a separate defined benefit pension plan and a separate defined contribution pension plan for a small number of employees, with appropriate financial and investment procedures and oversight, as required by law. Pension benefit obligations and related net pension cost can be affected by volatility in the global financial and capital markets. There is no assurance that pension plan assets will earn the assumed long-term rates of return. Market-driven changes impacting the performance of the pension plan assets may result in material variations in actual returns on pension plan assets.

Labour Force Demographics

Across the electricity sector, retirements are outpacing new entrants to the workforce, which could have an adverse impact on the ability of the Corporation to build a sustainable workforce and achieve its business objectives. Hydro Ottawa's investments in apprenticeships, internships, diversity, knowledge management, succession planning and retiree and older worker engagement programs are designed to manage risks relating to workforce demographics.

Consolidation of Labour Bargaining Power

Following structural changes in the ownership of several of Ontario's electrical utilities, there has been a degree of consolidation of labour bargaining power within the province's electricity sector. Whether and how this consolidation might grow is difficult to determine at this stage, as is its potential impact on labour relations and service delivery.

Weather, Hydrology and Gas Quality

Severe weather can significantly impact financial results, in part through increased capital and maintenance costs to repair or replace damaged equipment and infrastructure and through reduced revenue. Distribution revenues in turn tend to increase with severe weather and decrease with moderate weather.

Weather is also of potential direct relevance to Energy Ottawa's renewables generation portfolio. Hydroelectric generation depends on weather-sensitive water flows, which have both seasonal and annual variations, and which may be further impacted by either natural disaster or government policy and controls. Weather is also directly relevant to solar generation, while landfill gas availability and quality also fluctuates.



OUTLOOK

Subject to the risks and uncertainties discussed above, Hydro Ottawa expects to continue to provide efficient, reliable and competitively priced electricity distribution services to customers. It further expects to generate green power, and to provide energy and utility services and conservation expertise, while at the same time maintaining sustainable earnings.

Hydro Ottawa Limited has an approved rate structure and capital investment plan for 2016–2020. The application was made using a rate-setting model designed to account for the LDC's significant capital requirements. Approved rates are expected to be sufficient to provide an appropriate return, while also supporting: prioritized replacement of aging infrastructure and other investments in system reliability; major infrastructure development and growth within the service territory; and introduction of new customer services. Hydro Ottawa customers, meanwhile, will continue to benefit from stable, moderate, and predictable rate impacts. In the interests of moderating future rate increases as fully as possible, the Company remains committed to ongoing innovation, productivity and cost containment.

The successful completion of the Chaudière expansion project represents a further and particularly significant milestone in the buildout of Energy Ottawa's renewable generation portfolio – bringing total capacity to 128 megawatts. In addition, the commencement of the refurbishment of generation infrastructure acquired from Hydro Québec in 2016 and Domtar in 2012, coupled with the three associated 40-year fixed price power purchase agreements for the plants in question, provides long-term generation revenue stability.

Hydro Ottawa also continues to pursue expansion in other non-regulated areas, including energy and utility services. Both business lines will leverage existing assets and expertise, and may include: advisory, project-management and design-build services; partnerships and licensing arrangements with third parties; commercialization of Hydro Ottawa technologies; asset-renewal arrangements with municipalities; and outsourced service provision to other utilities. Hydro Ottawa is encouraged by the strong interest received in 2017 in its cable testing technology service offering. These new business lines are expected to represent a third driver of financial strength in future years, supplementing the core distribution business and renewable generation.



Hydro Ottawa Holding Inc.

Consolidated Financial Statements
December 31, 2017

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Report of Management

Management is responsible for the integrity of the financial data reported by Hydro Ottawa Holding Inc. [the 'Corporation']. Fulfilling this responsibility requires the preparation and presentation of consolidated financial statements and other data using management's best judgment and estimates, as well as International Financial Reporting Standards as issued by the International Accounting Standards Board.

Management maintains appropriate systems of internal control and corporate-wide policies and procedures, which provide reasonable assurance that the Corporation's assets are safeguarded and that financial records are relevant and reliable.

The Board of Directors, through the Audit Committee, ensures that management fulfills its responsibility for financial reporting and internal control. The Audit Committee consists of outside directors and, at regular meetings, reviews audit, internal control and financial reporting matters with management and external auditors. The Audit Committee has reviewed the consolidated financial statements and submitted its report to the Board of Directors.

On behalf of Management,



Bryce Conrad
President and Chief Executive Officer



Geoff Simpson
Chief Financial Officer



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INDEPENDENT AUDITORS' REPORT

To the Shareholder of Hydro Ottawa Holding Inc.

We have audited the accompanying consolidated financial statements of Hydro Ottawa Holding Inc., which comprise the consolidated balance sheet as at December 31, 2017, the consolidated statements of income, comprehensive income, changes in equity and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.



Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of Hydro Ottawa Holding Inc. as at December 31, 2017, and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with International Financial Reporting Standards.

KPMG LLP

Chartered Professional Accountants, Licensed Public Accountants

Ottawa, Canada

April 19, 2018

Hydro Ottawa Holding Inc.

Consolidated Statement of Income

Year ended December 31, 2017

[in thousands of Canadian dollars]

	2017 \$	2016 \$
Revenue and other income		
Power recovery revenue	896,528	974,207
Distribution revenue	171,400	165,729
Generation revenue	22,898	17,489
Commercial services revenue	26,960	18,294
Conservation and demand management income	23,976	19,643
Net gain from insurance proceeds [Note 8]	2,939	-
Other revenue	6,753	7,033
	1,151,454	1,202,395
Expenses		
Purchased power	908,649	966,072
Operating costs [Note 20]	139,797	128,072
Depreciation [Notes 7 and 10]	45,234	37,502
Amortization [Note 9]	9,566	12,140
	1,103,246	1,143,786
Income before the undernoted items	48,208	58,609
Financing costs [Note 21]	22,683	19,398
Interest income	(648)	(267)
Share of profit from joint ventures [Note 11(a)]	(1,063)	(1,039)
Income before income taxes	27,236	40,517
Income tax expense [Note 22]	14,803	9,041
Net income	12,433	31,476
Net movements in regulatory balances, net of tax [Note 6]	23,513	3,340
Net income after net movements in regulatory balances	35,946	34,816
Attributable to non-controlling interest	(29)	(20)
Net income after net movements in regulatory balances attributable to equity shareholder	35,975	34,836

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Statement of Comprehensive Income

Year ended December 31, 2017

[in thousands of Canadian dollars]

	2017	2016
	\$	\$
Net income after net movements in regulatory balances attributable to equity shareholder	35,975	34,836
Other comprehensive income		
Items that may be subsequently reclassified to net income		
Exchange differences on translation of foreign operations, net of tax	(3,722)	(1,852)
Items that will not be subsequently reclassified to net income		
Actuarial loss on post-employment benefits, net of tax	(663)	(280)
Net movement in regulatory deferral account balances related to other comprehensive income, net of tax	405	94
Total comprehensive income	31,995	32,798

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Balance Sheet

As at December 31, 2017

[in thousands of Canadian dollars]

	2017 \$	2016 \$
Assets		
Current assets		
Cash	933	982
Accounts receivable [Note 5]	192,696	192,670
Restricted cash [Note 16]	65,798	79,975
Income taxes receivable	1,448	1,762
Prepaid expenses	3,690	4,431
Inventory [Note 12(c)]	2,162	1,577
Current portion of notes receivable from related parties [Note 12]	4,641	2,049
	271,368	283,446
Non-current assets		
Restricted cash [Note 16]	-	44,110
Property, plant and equipment [Note 7]	1,261,191	1,146,170
Intangible assets [Note 9]	130,165	121,668
Investment properties [Note 10]	2,602	2,297
Deferred income tax asset [Note 22]	5,498	5,645
Notes receivable from related parties [Note 12]	8,767	5,462
Investments in joint ventures [Note 11(a)]	8,869	7,875
Other long-term asset [Note 8(a)]	5,771	-
Retirement benefit asset [Note 15(a)]	-	161
Total assets	1,694,231	1,616,834
Regulatory balances [Note 6]	25,466	13,744
Total assets and regulatory balances	1,719,697	1,630,578
Liabilities and shareholder's equity		
Current liabilities		
Bank indebtedness [Note 13]	145,423	68,751
Accounts payable and accrued liabilities [Note 14]	170,286	196,251
Income taxes payable	116	2,522
	315,825	267,524
Non-current liabilities		
Deferred revenue	88,570	71,208
Employee future benefits [Note 15]	14,439	13,335
Customer deposits	31,423	18,402
Long-term debt [Notes 16 and 24]	773,168	772,960
Deferred income tax liability [Note 22]	30,133	20,936
Other liabilities	3,489	2,733
Total liabilities	1,257,047	1,167,098
Shareholder's equity		
Share capital [Note 18]	228,453	228,453
Accumulated other comprehensive income	657	4,637
Retained earnings	209,080	193,705
Non-controlling interest	(49)	(20)
Total liabilities and shareholder's equity	1,695,188	1,593,873
Regulatory balances [Note 6]	24,509	36,705
Total liabilities, shareholder's equity and regulatory balances	1,719,697	1,630,578

Contingent liabilities and commitments [Notes 25 and 26]

On behalf of the Board:



Director



Director

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Statement of Changes in Equity

Year ended December 31, 2017

[in thousands of Canadian dollars]

	Share capital	Accumulated other comprehensive income	Non- controlling interest	Retained earnings	Total
	\$	\$	\$	\$	\$
Balance at December 31, 2015	228,453	6,675	-	178,269	413,397
Net income after net movements in regulatory balances	-	-	(20)	34,836	34,816
Other comprehensive income	-	(2,038)	-	-	(2,038)
Dividends [Note 18(b)]	-	-	-	(19,400)	(19,400)
Balance at December 31, 2016	228,453	4,637	(20)	193,705	426,775
Net income after net movements in regulatory balances	-	-	(29)	35,975	35,946
Other comprehensive income	-	(3,980)	-	-	(3,980)
Dividends [Note 18(b)]	-	-	-	(20,600)	(20,600)
Balance at December 31, 2017	228,453	657	(49)	209,080	438,141

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Statement of Cash Flows

Year ended December 31, 2017

[in thousands of Canadian dollars]

	2017	2016
	\$	\$
Net inflow (outflow) of cash related to the following activities:		
Operating		
Net income	35,946	34,816
Adjustments for:		
Depreciation	45,234	37,502
Amortization	9,566	12,140
Loss on disposal of non-financial assets	581	1,816
Amortization of debt-issuance costs	165	136
Share of profit from joint ventures	(1,063)	(1,039)
Amortization of deferred revenue	(2,180)	(1,628)
Employee future benefits	280	1,647
Financing costs, net of interest income	22,035	19,131
Income tax expense	14,803	9,041
Other	(53)	75
Changes in non-cash working capital and other operating balances [Note 23]	(2,169)	(13,362)
Income taxes paid, net of refunds received	(6,045)	(2,863)
Financing costs paid, net of interest income received	(21,122)	(18,720)
Additions to deferred revenue	19,542	20,160
Change in customer deposits	(45)	805
Net movements in regulatory balances	(23,513)	(3,340)
	91,962	96,317
Investing		
Acquisition of property, plant and equipment [Note 23]	(167,992)	(170,806)
Acquisition of intangible assets [Note 23]	(19,830)	(13,256)
Proceeds from disposal of property, plant and equipment	1,183	640
Acquisition of subsidiaries, net of cash acquired [Note 27]	(10,000)	(41,131)
Financing costs paid	(10,109)	(1,969)
Restricted cash held in-trust	58,288	(124,085)
Repayment of notes receivable from joint ventures	386	830
	(148,074)	(349,777)
Financing		
Proceeds from issuance of long-term debt, net of debt-issuance costs	-	201,096
Dividends paid [Note 18]	(20,600)	(19,400)
	(20,600)	181,696
Effects of exchange rate changes on cash held in U.S. dollars	(9)	(7)
Net change in cash	(76,721)	(71,771)
Bank indebtedness, net of cash, beginning of year	(67,769)	4,002
Bank indebtedness, net of cash, end of year	(144,490)	(67,769)

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

1. DESCRIPTION OF BUSINESS AND CORPORATE INFORMATION

Hydro Ottawa Holding Inc. ['HOHI' or the 'Corporation'] is a holding company incorporated on October 3, 2000 whose sole shareholder is the City of Ottawa. The Corporation's primary operations, as carried out by its subsidiaries and joint ventures below, are the distribution of electricity within the City of Ottawa, the generation of renewable energy throughout Ontario, Québec and New York state, and the provision of distribution and energy related commercial services. The Corporation is domiciled in Canada with its registered head office located at 3025 Albion Road North, Ottawa, Ontario, K1G 3S4. Significant subsidiaries, each of which is wholly-owned, either directly or indirectly, by the Corporation as at December 31, 2017, are as follows:

Subsidiary	Principal activity
Hydro Ottawa Limited	An electricity distribution company regulated by the Ontario Energy Board ['OEB'] that owns and operates electrical infrastructure in the City of Ottawa and the Village of Casselman. In addition to distribution services, Hydro Ottawa Limited invoices customers for amounts it is required to pay to other organizations in Ontario's electricity system for providing wholesale generation and transmission services.
Energy Ottawa Inc. ['Energy Ottawa']	Owns and operates three hydroelectric generating stations totalling 16MW located in Ontario at Chaudière Falls. In addition to providing streetlight installation and maintenance services to the City of Ottawa, the Company also provides expert energy management and procurement services to large energy-consuming organizations.
Chaudiere Hydro L.P. ['CHLP']	Owns and operates a 29MW generating station completed in 2017 via a major expansion of its Ontario facilities at Chaudière Falls [the 'Chaudière Expansion'].
Hull Energy L.P. ['Hull Energy LP']	Owns and operates a 27MW generating station located in Québec at Chaudière Falls.
EONY Generation Limited ['EONY']	Owns and operates four hydroelectric generation stations totalling 23MW located in New York state. EONY is a foreign operating subsidiary.
Chaudiere Hydro North L.P. ['CHLP North']	Owns and operates a 12MW generating station located in Québec at Chaudière Falls.
EO Generation Limited Partnership ['EO Gen']	Owns and operates six hydroelectric generation stations totalling 8MW located throughout eastern Ontario.

Joint ventures the Corporation is a party of as at December 31, 2017, are as follows:

Joint venture	Principal activity
PowerTrail Inc. [60% owned]	Owns and operates a 6MW landfill gas-to-energy plant at the Trail Road landfill site in Ottawa, Ontario.
Moose Creek Energy LP [50.05% owned]	Owns and operates a 4MW landfill gas-to-energy plant at the Lafleche landfill site in Moose Creek, Ontario.

Beginning in 2018 and over the next two years, the Corporation plans to refurbish its facilities held by Hull Energy LP and CHLP North [the 'refurbishment projects']. Both entities currently sell electricity to Hydro Québec. Upon completion of the refurbishment projects, these entities will sell electricity to the Province of Ontario under two separate forty-year Hydroelectric Standard Offer Program – Municipal Steam Contracts with the Independent Electrical System Operator ['IESO'].

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

2. BASIS OF PRESENTATION

(a) Statement of compliance

These consolidated financial statements have been prepared by management on a going-concern basis in accordance with International Financial Reporting Standards ['IFRS']. In the opinion of management, all adjustments necessary for fair presentation are reflected in these consolidated financial statements. These consolidated financial statements have been approved and authorized by the Corporation's Board of Directors for issue on April 19, 2018.

(b) Basis of measurement

The Corporation's consolidated financial statements are prepared on a historical cost basis, except for employee future benefits as disclosed in Note 3 (q).

(c) Functional and presentation currency

These consolidated financial statements are presented in Canadian dollars, which is the Corporation's functional currency.

(d) Use of estimates

The preparation of consolidated financial statements in conformity with IFRS requires management to make estimates and assumptions that affect the reported amounts of revenue, expenses, assets, liabilities and the disclosure of contingent assets and liabilities at the date of the consolidated financial statements.

Due to the inherent uncertainty involved, actual results could differ from estimates recorded in preparing these consolidated financial statements, including changes as a result of future decisions made by the Ontario Energy Board ['OEB'] or the Ontario provincial government. Management reviews its estimates on an ongoing basis using the most current information available. These consolidated financial statements have, in management's opinion, been properly prepared using reasonable limits of materiality and within the framework of the significant accounting policies. Significant areas where estimates are made in the application of IFRS are as follows:

(i) Accounts receivable

Accounts receivable, which includes unbilled revenue, are reported based on the amounts expected to be recovered less an estimated allowance for uncollectible amounts. Management utilizes historical loss experience in conjunction with the aging and arrears status of accounts receivable at year-end in the determination of the allowance.

(ii) Regulatory balances

The recognition and measurement of regulatory balances is subject to certain estimates and assumptions, including assumptions made in the interpretation of the OEB's regulations and decisions.

(iii) Revenue recognition

The Corporation uses the percentage-of-completion method in accounting for its fixed-price contracts to deliver certain products and services. The use of the percentage-of-completion method requires the Corporation to estimate the work performed to date as a proportion of the total work to be performed. Management conducts periodic reviews of its estimated costs to complete, percentage-of-completion estimates and revenues and margins recognized, on a contract-by-contract basis. The impact of any revisions in cost and earnings estimates is reflected in the period in which the need for a revision becomes known.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

2. BASIS OF PRESENTATION [CONTINUED]

(d) Use of estimates [continued]

(iv) Useful lives of depreciable assets

Depreciation and amortization expense is calculated based on estimates of the useful lives of property, plant and equipment, intangible assets and investment properties. Management estimates the useful lives of the various types of assets using assumptions and estimates of life characteristics of similar assets based on a long history of electricity distribution and generation industry experience.

(v) Impairment of non-financial assets

Non-financial assets are reviewed by management for impairment using the future cash flows method as outlined in Note 3(p). By their nature, estimates of future cash flows, including estimates of future capital expenditures, revenue, operating expenses, discount rates, generation production, inflation, terminal capitalization rates and forecasted market pricing are subject to measurement uncertainty. Management factors in current economic conditions, past experience and obtains third party consultations to support its estimates when necessary.

(vi) Employee future benefits

The measurement of employee future benefits involves the use of numerous estimates and assumptions. Actuaries make assumptions for items such as discount rates, future salary increases and mortality rates in the determination of benefits expenses and defined benefit obligations.

(vii) Fair value of assets and liabilities acquired

The purchase of an existing business requires management to assign fair values to the assets and liabilities acquired, as well as the consideration transferred [including contingent consideration]. Fair values can be determined by applying judgment based on experience in the industry, third-party independent appraisals and by examining open market data for similar assets in the same industry.

(viii) Deferred income taxes

Tax interpretations, regulations and legislation in the various jurisdictions in which the Corporation and its subsidiaries operate are subject to change. Deferred income tax assets are assessed by management at the end of each reporting period to determine the likelihood that they will be realized from future taxable income.

(e) Key management judgments

(i) Evidence of asset impairment

At the end of each reporting period, or earlier if required, management uses its judgment to assess whether there is an indication that the carrying amount of a non-financial asset [or cash-generating unit, 'CGU'] exceeds its recoverable amount. This assessment involves the consideration of whether any events or changes in circumstances could have affected the recoverability of the carrying amount of a non-financial asset or CGU. Management considers various indicators including, but not limited to, adverse changes in the industry or economic conditions, changes in the degree or method of use of an asset, a lower-than-expected economic performance of an asset or a significant change in market or interest rates.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

2. BASIS OF PRESENTATION [CONTINUED]

(e) Key management judgments [continued]

(i) Evidence of asset impairment [continued]

Based on management's judgment, an indicator of impairment [under International Accounting Standards 36 Impairment of Assets ['IAS 36']] existed within EONY at December 31, 2017 pertaining to the energy market prices in New York State. However, management's discounted cash flow analysis under the value-in-use method [as prescribed by IAS 36] resulted in no impairment to be recognized in the 2017 fiscal year. Assumptions with respect to these cash flows are sensitive to the various inputs into the value-in-use calculation, and thus are subject to measurement uncertainty [Note 2(d)(v)].

3. SIGNIFICANT ACCOUNTING POLICIES

(a) Basis of consolidation

The consolidated financial statements include the accounts of the Corporation and its subsidiaries including those described in Note 1 of these consolidated financial statements. Subsidiaries are entities controlled by the Corporation. The Corporation controls an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns by directing and controlling the activities of the entity. Subsidiaries are fully consolidated from the date on which the Corporation obtains control, and continue to be consolidated until the date that control ceases to exist. All intercompany balances and transactions have been eliminated in these consolidated financial statements. The financial statements of the subsidiaries are prepared for the same reporting period as the Corporation using consistent accounting policies.

One subsidiary has a non-controlling interest which is presented as part of equity.

(b) Joint ventures

The Corporation is party to two joint ventures as described in Note 1 of these consolidated financial statements whereby control is shared with third parties via a contractual agreement. Joint ventures are accounted for using the equity method. Under this method, the Corporation's interests in joint ventures are initially recorded at cost, and subsequently adjusted to recognize the Corporation's share of post-acquisition profits or losses, movements in other comprehensive income ['OCI'] and dividends or distributions received.

(c) Business combinations

Business combinations are accounted for using the acquisition method. The consideration for an acquisition is measured at the aggregate of the fair values, at the date of exchange, of the assets transferred, equity instruments issued, and the liabilities incurred to former owners of the acquired business in exchange for control. Identifiable assets acquired and liabilities assumed in a business combination are measured initially at their fair values at the date of acquisition.

The Corporation evaluates the integrated set of activities [inputs, processes, outputs] associated with an acquired asset group to determine whether it meets the definition of a business as prescribed by IFRS 3 *Business Combinations*.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Corporation will report in its consolidated financial statements provisional amounts for the items for which the accounting is incomplete. Within one year, the Corporation will retrospectively adjust the provisional amounts recognized at the acquisition date to reflect new information obtained about facts and circumstances that existed as of the acquisition date and, if known, would have affected the measurement of the amounts recognized as at that date.

Transaction costs with respect to a business combination are expensed as incurred and included in general and administrative expenses as part of operating costs.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(d) Foreign currency translation

Transactions denominated in foreign currencies are translated at exchange rates in effect at the transaction date. At each reporting date, monetary assets and liabilities denominated in foreign currencies are translated into Canadian dollars at the exchange rate in effect at the end of the reporting period. Non-monetary assets and liabilities carried at historical cost are not re-translated; they remain at the exchange rate in effect at the date of the original transaction. Non-monetary assets and liabilities carried at fair value are translated at the exchange rate in effect at the date the fair value was measured. Any resulting exchange gains or losses are included in net income for the year.

The assets and liabilities of EONY are translated into Canadian dollars at the exchange rate in effect at the end of the reporting period. Revenue and expenses are translated into Canadian dollars at the average exchange rate in effect during the reporting period. Any resulting exchange gains and losses arising from the translation are included in OCI for the year.

Fair value adjustments to identifiable assets acquired and liabilities assumed through acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the rate of exchange prevailing at the end of each reporting period. Exchange differences are recognized in OCI.

(e) Regulation – Hydro Ottawa Limited

Hydro Ottawa Limited is regulated by the OEB under the authority of the *Ontario Energy Board Act, 1998*. The OEB is charged with the responsibilities of approving or setting rates for the transmission and distribution of electricity, and ensuring that distribution companies fulfill obligations to connect and service customers.

For the fiscal year ended December 31, 2017, Hydro Ottawa Limited operated under an incentive rate-setting application ['Custom IR'] prescribed by the OEB. The Custom IR is one of the rate-setting options contained in the *Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* ['RRFE'] policy. The RRFE provides distributors three rate-setting methods: 4th Generation IR, Custom IR and Annual IR Index. Hydro Ottawa Limited filed a Custom IR application with the OEB on April 29, 2015 seeking approval to change the rates that Hydro Ottawa Limited charges for electricity delivery, retail services, allowances, loss factor and specific service charges for a period of five years, to be effective January 1, 2016 to December 31, 2020. This application requested a revenue requirement to recover costs, and to provide a rate of return on a deemed capital structure applied to rate base assets.

The key components of Hydro Ottawa Limited's Custom IR framework included the establishment of several regulatory accounts, namely: an asymmetrical earnings sharing mechanism variance account, revenue requirement differential variance account related to capital additions, new facilities deferral account, connection cost recovery agreement deferral account, and the efficiency adjustment mechanism deferral account. An annual IR application is required to set rates each year for 2017 to 2020. 2017 rates were set based on Hydro Ottawa Limited's Year 2 IR annual update.

On August 14, 2017, Hydro Ottawa Limited filed its Custom IR year 3 update application for distribution rates and other charges, effective January 1, 2018. This application was approved in December 2017 and included adjustments to base rates, low voltage, transmission, retailer services and specific services charges. As well it includes the approval for the disposition of certain deferral and variance accounts as at December 31, 2016 including interest projected to December 31, 2017. Hydro Ottawa Limited also applied to change the composition of certain distribution service rates. The fixed monthly charge for residential customers for 2018 is adjusted upward while the variable usage rate is lowered as stipulated in OEB's residential rate design policy. The distribution rates for residential classes will be fully fixed effective January 1, 2020.

Hydro Ottawa Limited applies for distribution rates based on estimated costs. Once rates are approved, they are not adjusted as a result of actual costs being different from those that were estimated, other than for certain prescribed costs that are eligible for deferral treatment and are either collected or refunded in future rates. The OEB has the general power to include or exclude costs and revenue in the rates of a specific period, resulting in a change in the timing of accounting recognition from that which would have applied in an unregulated company.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(e) Regulation – Hydro Ottawa Limited [continued]

Hydro Ottawa Limited continues to assess the likelihood of recovery of all regulatory debit balances subject to recovery through a future rate filing. The absence of OEB approval is a consideration in this evaluation. If the requirement for a provision becomes more likely than not, Hydro Ottawa Limited will recognize the provision in operating costs for the year.

The following regulatory treatments have resulted from the adoption of IFRS 14 *Regulatory Deferral Accounts* [IFRS 14], which permits rate-regulated entities to use its existing rate-regulated activities practices if and only if, in its first IFRS financial statements, it recognized regulatory deferral account balances by electing to apply the requirements of IFRS 14:

(i) Regulatory balances – Hydro Ottawa Limited

Regulatory debit balances primarily represent costs that have been deferred because it is probable that they will be recovered in future rates. Similarly, regulatory credit balances can arise from differences in amounts billed to customers for electricity services and the costs that Hydro Ottawa Limited incurs to purchase these services.

Hydro Ottawa Limited accrues interest on the regulatory balances as directed by the OEB.

Regulatory balances principally comprise of the following:

- Regulatory asset/liability refund account ['RARA'/'RLRA'] consists of balances of regulatory assets or regulatory liabilities approved for disposition by the OEB through temporary additional rates referred to as rate riders.
- Settlement variances relate primarily to the charges Hydro Ottawa Limited incurred for transmission services, the commodity, wholesale market operations and the global adjustment that were not settled with customers during the year. The nature of the settlement variances is such that the balance can fluctuate between assets and liabilities over time, and they are reported at year-end dates in accordance with rules prescribed by the OEB.
- In its Guidelines released December 19, 2014 with an update on August 11, 2016, the OEB advised Distributors to continue to rely on the Lost Revenue Adjustment Mechanism to track and dispose of lost revenues ['LRAM'] that result from approved Conservation and Demand Management ['CDM'] programs between 2015 and 2020, noting that the same process as described in the OEB guidelines released April 26, 2012 regarding the 2011 to 2014 period should be followed. Hydro Ottawa Limited is to record the difference between the actual validated CDM activities and activities included in Hydro Ottawa Limited's load forecast multiplied by the appropriate variable distribution rate. On May 19, 2016 the OEB released an updated policy for LRAM that clarified the inclusion of peak demand savings in the LRAM calculation.
- Earnings sharing mechanism ['ESM'] variance account captures 50% of any regulated earnings above Hydro Ottawa Limited's approved return on equity for years 2016 to 2020.
- Other Post-employment Benefits deferral account ['OPEB deferral account'] was authorized by the OEB in 2011 to record the adjustment to employee future benefits other than pension relating to the cumulative actuarial gains or losses. This account is adjusted annually to record any changes in the cumulative actuarial gains or losses. No interest charges are recorded on this account as instructed by the OEB.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(e) Regulation – Hydro Ottawa Limited [continued]

(ii) Other regulatory variances and deferred costs – Hydro Ottawa Limited

Other regulatory variances and deferred costs principally comprise the following:

- The OEB allows electricity distributors to record in a deferral account the difference between low voltage charges paid to Hydro One Networks Inc. ['HONI'] and those charged to customers.
- The OEB allows electricity distributors to record in deferral accounts the net cost of providing retailer billing services and transaction request services. As of January 1, 2016, Hydro Ottawa Limited has incorporated the net costs into its revenue requirement and will no longer record the net cost into the deferral accounts.
- In its Guidelines released June 16, 2009, the OEB created four new deferral accounts to allow distributors to begin recording expenditures for certain activities relating to the connection of renewable generation and the development of a smart grid. These deferral accounts were authorized to be used to record qualifying incremental capital investments or operating, maintenance and administrative expenses. These accounts have been subsequently discontinued and future investments should be addressed in the local distribution company's consolidated distribution plan.

(iii) Income taxes – Hydro Ottawa Limited

Hydro Ottawa Limited is considered to be a Municipal Electric Utility ['MEU'] and is required to make payments in lieu of corporate income taxes ['PILs'] as contained in the *Electricity Act, 1998*, as all of its share capital is indirectly owned by the City of Ottawa and not more than 10% of its income is derived from activities carried on outside the municipal boundaries of the City of Ottawa [excluding generation income earned from a contract with a crown agency]. The *Electricity Act, 1998* provides that a MEU that is exempt from tax under the *Income Tax Act (Canada)* ['ITA'] and the *Taxation Act, Ontario* ['TAO'] is required to make, for each taxation year, a PILs payment to the Ontario Electricity Financial Corporation in an amount approximating the tax that it would be liable to pay under the ITA and the TAO if it were not exempt from tax.

Hydro Ottawa Limited follows the liability method for recording income taxes. Under the liability method, current income taxes payable are recorded based on taxable income. Deferred income taxes arising from temporary differences in the accounting and tax basis of assets and liabilities are provided based on substantively enacted tax rates that will be in effect when the differences are expected to reverse.

The *Accounting Procedures Handbook* issued by the OEB provides for the recovery of income taxes by Hydro Ottawa Limited through annual distribution rate adjustments as approved by the OEB. Hydro Ottawa Limited recognizes regulatory balances for the amounts of deferred income taxes expected to be refunded to or recovered from customers in future electricity rates.

(iv) Employee future benefits – Hydro Ottawa Limited

Hydro Ottawa Limited provides other post-employment benefits, the accounting treatment of which is described in Note 3(q)(ii). However, actuarial gains and losses recognized in OCI with respect to Hydro Ottawa Limited are reclassified to a regulatory debit balance as permitted by the OEB.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(f) Revenue recognition

The Corporation recognizes revenue when it is likely that economic benefits will flow to the Corporation and where the revenue can be reliably measured. Revenue is measured at the fair value of the consideration received or receivable, excluding any discounts, rebates and sales taxes. The Corporation has determined that it acts as a principal in the following revenue arrangements and therefore has presented them on a gross basis.

(i) Power recovery

Power recovery revenue represents the flow-through of the cost of power to the consumer as purchased by the Corporation and is recognized when electricity is delivered to the customer, as measured by meter readings or usage estimates. Power recovery revenue is regulated by the OEB and includes charges to customers for the electricity commodity, the transmission of electricity and the administration of the wholesale electricity system.

(ii) Distribution

The Corporation charges customers for the delivery of electricity, based on rates established by the OEB. The rates are intended to allow the Corporation to recover its prudently-incurred costs and earn a fair return on invested capital. Distribution revenue is recognized when electricity is delivered to the customer, as measured by meter readings or usage estimates.

(iii) Generation

Generation revenue is recorded on the basis of regular meter readings.

(iv) Commercial services revenue

Commercial services revenue comprise revenue earned under contracts related to distribution projects, energy-related turnkey projects, the provision of street light installation and maintenance services, pole attachment and duct rental services, energy management and data analysis and non-destructive cable testing.

Certain commercial services [distribution projects, turnkey projects and street light installation services] are accounted for using the percentage-of-completion method, whereby revenue and the corresponding costs are recognized proportionately with the degree of completion of the services under contract. Losses on such contracts are fully recognized when they become evident. Other commercial service revenues are recognized as services are rendered, or on a straight-line basis over the period of the contract if the services performed consist of an indeterminate number of acts over a specified period of time.

(v) Other

Other revenue consists primarily of investment property rentals, amortization of capital contributions and other revenue ancillary to electricity distribution such as account set-up charges and fees.

Capital contributions received from electricity customers to construct or acquire property, plant and equipment for the purpose of connecting a customer to the Corporation's distribution network are recorded to deferred revenue. Since the contributions will provide customers with ongoing access to the supply of electricity, these contributions are classified as deferred revenue, and recognized as other revenue at an equivalent rate to that used for the depreciation of the related property, plant and equipment.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(g) Interest income and financing costs

Interest income is recognized as it accrues under the effective interest method and comprises interest earned on cash and notes receivable from related parties.

Financing costs are calculated using the effective interest rate method and are recognized as an expense unless they are capitalized as part of the cost of a qualifying asset.

(h) Government grant income

CDM income stems from the delivery of provincial government programs that promote conservation. Government grants under CDM programs are recognized when there is reasonable assurance that the grant will be received and all related conditions will be met. Grants under full cost recovery funding are recognized as income on a systematic basis over the period to match to the costs they are intended to compensate. CDM performance incentives under full cost recovery funding are recognized when it is probable that future economic benefits will flow to the Corporation, and the amount can be measured reliably.

(i) Income taxes

The Corporation and Energy Ottawa are MEUs that account for income taxes using the liability method.

EONY is subject to the income tax regime in the United States [the 'Internal Revenue Service'], as more than 10% of its income is derived from activities carried on outside the municipal boundaries of the City of Ottawa. PowerTrail is taxable under the ITA and TAO as less than 90% of each company's capital is owned by the City of Ottawa through Energy Ottawa and the Corporation. Corporate income taxes are accounted for using the liability method as described above.

Moose Creek Energy LP, CHLP, EO Gen, CHLP North and Hull Energy LP are not taxable entities for federal and provincial income tax purposes. Tax on the net income (loss) is borne by the individual partners through the allocation of taxable income.

(j) Restricted cash

Cash and cash equivalents [highly-liquid temporary investments with a maturity date between three months and one year] that are restricted as to withdrawal or use under the terms of certain contractual agreements are classified as restricted cash.

(k) Bank indebtedness

Bank indebtedness includes short-term advances and/or bankers' acceptances drawn on the Corporation's credit facility with a maturity date of three months or less, and outstanding cheques.

(l) Financial instruments

All financial instruments are initially recorded at fair value. When financial instruments are not measured at fair value through profit and loss ['FVTPL'], directly attributable transaction costs are included in the initial measurement. The fair value of a financial instrument is the amount of consideration that would be agreed upon in an arm's-length transaction between willing parties. The subsequent measurement of each financial instrument depends on the classification elected by the Corporation at the time of recognition.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(l) Financial instruments [continued]

The Corporation classifies and measures its financial instruments as follows:

- Cash, restricted cash, accounts receivable and notes receivable from related parties are classified as loans and receivables and are measured at amortized cost using the effective interest method, less any impairment if applicable.
- Bank indebtedness, accounts payable and accrued liabilities, customer deposits and long-term debt are classified as other financial liabilities and are measured at amortized cost using the effective interest rate method.

Financial instruments which are measured at fair value are classified using a three-level hierarchy. Each level reflects the inputs used to measure the fair values of financial assets and financial liabilities, and are as follows:

- Level 1: inputs are unadjusted quoted prices of identical instruments in active markets;
- Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly; and
- Level 3: inputs for the liabilities that are not based on observable market data [unobservable inputs].

All financial assets except for those classified as FVTPL are subject to review for impairment at least at each reporting date. Financial assets are impaired only when an event has occurred after the initial recognition of the asset and that event has an impact on the estimated future cash flows of the financial asset. Impairment losses, if any, are recognized in net income. An impairment loss is reversed if the reversal can be related objectively to an event occurring after the impairment loss was recognized.

(m) Property, plant and equipment

Property, plant and equipment consist principally of land, buildings and fixtures, electricity distribution and infrastructure, furniture and equipment, rolling stock, generating equipment, reservoirs, dams and waterways, civil structures and assets under construction. Property, plant and equipment acquired in a business combination are initially recorded at their acquisition date fair values.

Property, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment losses, if any. Self-constructed asset costs comprise all directly attributable expenditures to bring the asset into operation including labour, materials, employee benefits, transportation, contracted services and borrowing costs. Where parts of an item in property, plant and equipment are significant and have different estimated economic useful lives, they are accounted for as separate items [major components] of property, plant and equipment. Certain assets may be acquired or constructed with financial assistance in the form of contributions from customers. Contributions from customers are treated as deferred revenue.

The cost of major inspections and maintenance is recognized in the carrying value of an asset provided that the Corporation will derive future economic benefits from the expenditure. The carrying amount of a replaced part is derecognized. The costs of day-to-day servicing, repairs, and maintenance, are expensed as incurred.

Depreciation is recorded on a straight-line basis over the estimated service life of each component of property, plant and equipment. Emergency capital spare parts that are expected to be used for more than one year are considered to be assets under construction and are depreciated only once they are put into service.

Gains and losses on disposal of retired, sold or otherwise derecognized property, plant and equipment are recognized in income and are calculated as the difference between net proceeds from disposal and the carrying amount of the asset. Compensation from third parties for property, plant and equipment lost, impaired or given up is measured at fair value and recognized when the compensation becomes receivable.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(m) Property, plant and equipment [continued]

The estimated useful lives, residual values and depreciation methods are reviewed at each year-end with the effect of any changes in estimate being accounted for on a prospective basis.

Estimated service lives for property, plant and equipment classes are as follows:

Land, buildings and structures	
Land	Indefinite
Buildings and fixtures	20 to 100 years
Civil structures	100 years
Electricity distribution infrastructure	10 to 60 years
Generation and other	
Generating equipment	10 to 50 years
Reservoirs, dams and waterways	100 to 125 years
Furniture and equipment	5 to 10 years
Rolling stock	7 to 15 years

Assets under construction and land are not subject to depreciation. Borrowing costs are capitalized as a component of the cost of self-constructed property, plant and equipment assets that take a substantial period of time to get ready for their intended use. The capitalization rate is the Corporation's weighted average cost of borrowing.

(n) Intangible assets

Intangible assets include land and water rights, computer software, capital contributions, power purchase agreements, deferred contract costs and assets under development. Water rights represents the inherent value of the right to draw water from government-owned rivers and lakes for purposes of generating electricity.

Intangible assets with finite lives are measured at cost less accumulated amortization and accumulated impairment losses, if any. Intangible assets with finite lives are amortized on a straight-line basis over the estimated service lives of the related assets while those with indefinite lives are not amortized. Intangible assets acquired in a business combination are initially recorded at their acquisition-date fair values.

Intangible assets are derecognized on disposal or when no further future economic benefits are expected from their use. Gains or losses on disposal of intangible assets are recognized in income and are calculated as the difference between net proceeds from disposal and the carrying amount of the asset.

The estimated useful lives and amortization methods are reviewed at each year-end with the effect of any changes in estimate being accounted for on a prospective basis.

Estimated service lives for intangible assets with finite lives are as follows:

Land rights	50 years
Water rights with a definite useful life	7 to 100 years
Computer software	5 to 10 years
Other contractual rights	
Capital contribution agreements	45 years
Power purchase agreements ['PPA']	15 years
Deferred contract costs	15 years

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(o) Investment properties

Investment property is land and/or buildings held for purposes other than for use in the Corporation's operating activities. The Corporation holds investment properties either for potential expansion of the service delivery network or as excess administrative property. Investment properties are measured at cost plus transaction costs, and have estimated service lives ranging between 25 and 50 years. Any gain or loss arising from the sale of an investment property is immediately recognized in the consolidated statement of income. Rental income from investment property, net of the related operating expenses, is presented as part of other revenue.

(p) Impairment of non-financial assets

At the end of each reporting period, or earlier if required, the Corporation assesses whether there is an indication that a non-financial asset [or CGU] may be impaired. A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. If any indication exists, the Corporation estimates the asset's recoverable amount, which is the higher of an asset or CGU's fair value less costs of disposal and its value in use. If the carrying value of a non-financial asset exceeds its recoverable amount, the difference is immediately recognized as an impairment loss in the consolidated statement of income.

Intangible assets with indefinite useful lives [i.e. certain water rights] and assets under development are tested for impairment [within their respective CGUs] at least annually, and whenever there is an indication that the asset may be impaired.

When determining the recoverable amount, the Corporation determines its value-in-use by discounting estimated future cash flows to their present value using a discount rate that reflects changes in the time value of money and the risks specific to the asset of the CGU. The discount rate estimated and used by management represents the weighted average cost of capital determined for the CGU being tested. Terminal values are included in the determination of management's value-in-use calculations and are based on an earnings multiple approach via a terminal capitalization rate.

Where the assets and liabilities of a CGU containing water rights with indefinite useful lives have not changed significantly; the CGU is not impacted by events or circumstances that would cause its VIU calculation to significantly change; and the most recent VIU calculation resulted in an amount that exceeded the CGUs' carrying amount by a substantial margin; the most recently performed VIU calculation will continue to be used in the Corporation's evaluation of impairment in the current year.

At the end of a reporting period, if there is any indication that an impairment loss recognized in a prior period no longer exists or has decreased, the loss is reversed up to its recoverable amount. The carrying amount following the reversal must not be higher than the carrying amount that would have prevailed [net of amortization] had the original impairment not been recognized in prior periods.

Compensation for impairment of non-financial assets, such as insurance recoveries, is included in determining profit or loss when it becomes receivable and is not offset against the cost of restoring, purchasing or constructing replacement assets.

(q) Employee future benefits

(i) Pension plans

The Corporation provides pension benefits for its employees through the Ontario Municipal Employees Retirement System ['OMERS'] Fund [the 'Fund']. OMERS is a multi-employer pension plan that provides pensions for employees of Ontario municipalities, local boards, public utilities and school boards. The Fund is a defined benefit pension plan, which is financed by equal contributions from participating employers and employees and by the investment earnings of the Fund.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(q) Employee future benefits [continued]

(i) Pension plans [continued]

Although the plan is a defined benefit plan, sufficient information is not available to the Corporation to account for it as such because it is not possible to attribute the fund assets and liabilities between the various employers who contribute to the Fund. As a result, the Corporation accounts for the plan as a defined contribution plan, and contributions payable as a result of employee service are expensed as incurred as part of operating costs. The Corporation shares in the actuarial risks of the other participating entities in the plan, and its future contributions may therefore be increased due to actuarial losses relating to the other participating entities. In addition, the Corporation's contributions could be increased if other entities withdraw from the plan.

CHLP is the sponsoring employer of the Pension Plan for Employees of Chaudiere Hydro L.P. and Participating Employers ['Chaudiere Hydro Pension Plan' or 'CHPP'] which provides pension benefits for certain of the Corporation's employees and is accounted for as follows:

- CHPP assets are held by an insurance corporation and are measured at fair value, which are determined as follows: bond, equity and other investment funds are valued using the unit values supplied by the fund manager, which reflects the fund's proportionate share of underlying net assets at fair values determined using closing quotations from Canadian investment dealers, and short-term investments are valued at cost, including accrued interest, which due to their short-term maturity approximates fair value.
- Defined benefit obligations of the CHPP are determined based on the expected future benefit payments discounted using market interest rates on high-quality debt instruments that match the timing and amount of expected benefit payments.
- The cost of pension earned by employees is actuarially determined using the projected benefit method prorated on services, and management's best estimate of salary escalation, retirement ages and life expectancy.
- The defined benefit expense is presented in employee benefits in net income on the consolidated statement of income and includes, as applicable, the estimated cost of employee benefits for the current year service, interest cost, interest income on CHPP's assets, plan amendments, curtailments, other administration costs of the pension plans and any gain or loss on settlement. Current service cost, interest income on CHPP's assets and interest costs are computed by applying the discount rate used to measure the plan obligation at the beginning of the annual period.
- Remeasurements arising on CHPP's assets and defined benefit obligation are presented in OCI on the consolidated statement of comprehensive income and arise from actuarial gains and losses on defined benefit obligations, the difference between the actual return [net of costs of managing CHPP's assets] and interest income on plan assets, if applicable. CHPP's significant assumptions are assessed and revised, as appropriate.
- Past service costs are included in the cost of the CHPP for the year when they arise.

The fair value of the CHPP assets is offset against the defined benefit obligation. The net amount is recognized as a retirement benefit asset or retirement benefit liability.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(q) Employee future benefits [continued]

(ii) Other post-employment benefits

Other post-employment benefits provided by the Corporation include life insurance, a retirement grant and other benefits. These plans provide benefits to certain employees when they are no longer providing active service.

Employee future benefits expense is recognized in the period during which the employees render services.

Employee future benefits are recorded on an accrual basis. The defined benefit obligation and current service costs are calculated using the projected benefit method prorated on service and based on assumptions that reflect management's best estimates. The current service cost for a period is equal to the actuarial present value of benefits attributed to employees' services rendered in the period. Actuarial gains and losses resulting from experience different from that assumed or from changes in actuarial assumptions are recognized in OCI.

(iii) Short-term employee benefits

The Corporation provides short-term employee benefits such as salaries, employment insurance, short-term compensated absences, sick leave and health and dental care. These benefits are recognized as the related service is rendered and are measured on an undiscounted basis. Short-term employee benefits are recognized as an expense unless they qualify for capitalization as part of the cost of an item of property, plant and equipment or intangible assets. A liability is recognized in respect of any unpaid short-term employee benefits for services rendered in the reporting period.

The Corporation recognizes a liability for the expected cost of accumulated non-vested sick leave benefits at the end of the reporting period. The Corporation presents its non-vested sick leave obligation as a non-current liability since it does not expect to settle all of its sick leave benefits within twelve months from the balance sheet date.

(r) Customer deposits

Customer deposits are cash collections from non-residential customers to guarantee the payment of future energy bills and fulfillment of construction obligations. Deposits estimated to be refundable to such customers within the next fiscal year are classified as current liabilities and included in accounts payable and accrued liabilities.

(s) Provisions and contingencies

The Corporation recognizes provisions when there is a present legal or constructive obligation as a result of a past event, it is probable that an outflow of economic benefits will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation. If the effect is material, provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and, where appropriate, the risks specific to the liability.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(s) Provisions and contingencies [continued]

The evaluation of the likelihood of the contingent events requires judgment by management as to the probability of exposure to potential loss. Actual results could differ from these estimates.

A contingent asset is not recognized in the financial statements. However, a contingent asset is disclosed where an inflow of economic benefits is probable.

(t) Deferred revenue

In certain situations, financial assistance in the form of contributions is required from customers to finance additions to property, plant and equipment. This occurs when the estimated revenue resulting from the addition to property, plant and equipment is less than the cost of providing the service or where special equipment is needed to supply the customers' specific requirements. Since the contributions will provide customers with ongoing access to the supply of electricity, these contributions are classified as deferred revenue, and recognized as other revenue at an equivalent rate to that used for the depreciation of the related property, plant and equipment.

(u) Debt-issuance costs

The Corporation incurs debt-issuance costs that are external, direct and incremental in nature arising from its debenture and bond offerings. Debt-issuance costs associated with its debenture and bond offerings are netted against the proceeds of the debt and amortized using the effective interest method.

(v) Leases

Leases in which the Corporation assumes all of the risks and rewards of ownership are classified as finance leases. Upon initial recognition, the leased asset is measured at an amount equal to the lower of its fair value and the present value of the minimum lease payments. Subsequent to initial recognition, the asset is accounted for in accordance with the accounting policy applicable to the asset. Payments under finance leases are apportioned between interest expense and a reduction of the outstanding liability.

All other leases are classified as operating leases and the leased assets are not recognized on the Corporation's consolidated balance sheets. Payments made under operating leases are recognized in the consolidated statement of income on a straight-line basis over the term of the lease.

(w) Inventory

Inventory consists of work-in-process and finished goods used in the installation and maintenance of street lights as part of the Corporation's commercial services. Inventory is measured at the lower of weighted average variable costs and net realizable value. The cost of inventory is based on the first-in, first-out cost formula based on standard costs. Net realizable value is the estimated selling price in the ordinary course of business less any applicable selling expenses.

4. NEW ACCOUNTING PRONOUNCEMENTS

A number of new standards, amendments and interpretations relevant to the Corporation have either been adopted for the year ended December 31, 2017, or, are not yet effective and have not been applied in preparing these consolidated financial statements.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

4. NEW ACCOUNTING PRONOUNCEMENTS [CONTINUED]

(a) Recently adopted accounting standards

- (i) Disclosure to reconcile liabilities related to financing activities in the statement of cash flows

The International Accounting Standards Board ['IASB'] issued amendments to IAS 7 requiring entities to disclose changes in their financing liabilities to assist readers in evaluating changes in liabilities arising from financing activities, including changes from cash flows and non-cash changes [such as foreign exchange gains or losses]. IAS 7 is applied prospectively for annual periods beginning on or after January 1, 2017. Although there was no change to the Corporation's consolidated financial statements, a reconciliation of liabilities arising from financing activities is disclosed in Note 24.

(b) Recently issued accounting guidance not yet adopted

- (i) Revenue from contracts with customers

In May 2014, the IASB published a new standard, *Revenue from Contracts with Customers* ['IFRS 15'], which replaces most of the detailed guidance on revenue recognition that currently exists under IFRS. IFRS 15 provides a standardized five-step model to recognize all types of revenue earned from customer contracts, while previous IFRSs allowed significant room for judgment in devising and applying revenue recognition policies and practices. IFRS 15 is more prescriptive in many areas, such as the combination of related contracts for revenue recognition purposes, unbundling of multiple performance obligations within a single contract and the capitalization of costs of obtaining or fulfilling a contract. IFRS 15 also contains additional disclosure requirements. IFRS 15 is effective for annual periods beginning on or after January 1, 2018. As the majority of the Corporation's revenue is recognized on a usage basis at regulated prices [power recovery and distribution revenue] or per unit of output basis at contracted or market prices [generation revenue], and does not carry significant bundled contracts of combined products and services, IFRS 15 will not have a material impact on the accounting for these revenue streams. However, IFRS 15 will impact the Corporation's revenue-related disclosures.

- (ii) Financial instruments

In July 2014, the IASB issued the final version of *IFRS 9 - Financial Instruments* ['IFRS 9'], which replaces International Accounting Standard 39 *Financial Instruments: Recognition and Measurement* ['IAS 39']. IFRS 9 includes revised guidance on the classification and measurement of financial instruments, including basing the classification of financial instruments on their contractual cash flow characteristics and the entity's business model for managing financial assets, whereas IAS 39 bases the classifications on specific definitions for each category. Moreover, IFRS 9 simplifies the current IAS 39 classifications into three main categories [amortized cost, fair value through other comprehensive income and fair value through profit or loss], and introduces a new expected credit loss model for measuring impairment of financial assets. The standard is effective for annual periods beginning on or after January 1, 2018. As the Corporation does not currently have complex financial instruments, IFRS 9 will not have a material impact on its consolidated financial statements. Management is currently evaluating the impact of adopting the new expected credit loss model for measuring impairment.

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4. NEW ACCOUNTING PRONOUNCEMENTS [CONTINUED]

(b) Recently issued accounting guidance not yet adopted [continued]

(iii) Leases

In January 2016, the IASB issued a new standard, *IFRS 16 - Leases* ['IFRS 16'], which removes the current requirement for lessees to account for leases as either operating or finance leases – under complex rules and tests – which may result in all-or-nothing being recognised on the balance sheet. Under IFRS 16, all leases from the lessee's perspective will have to be recognized on the balance sheet, except for exempted short-term [< 1 year] and low value leases. The new standard becomes effective for reporting periods beginning on or after January 1, 2019 and early adoption is permitted if IFRS 15 is also adopted. The Corporation is currently evaluating the IFRS 16 impact on its consolidated financial statements and related disclosures.

(iv) Uncertain Tax Positions

On June 7, 2017, the IASB issued International Financial Reporting Interpretations Committee 23 *Uncertainty over Income Tax Treatments* ['IFRIC 23']. IFRIC 23 requires an entity to contemplate whether uncertain tax treatments should be considered separately or together as a group, to determine if it is probable that the tax authorities will accept the uncertain tax treatment, and to measure the tax uncertainty based on the most likely amount or expected value. IFRIC 23 is applicable for annual periods beginning on or after January 1, 2019 and early adoption is permitted. The Corporation is currently evaluating the IFRIC 23 impact on its consolidated financial statements and related disclosures.

5. ACCOUNTS RECEIVABLE

	2017 \$	2016 \$
Electricity receivables	54,056	70,370
Unbilled revenue	84,963	103,253
Trade and other receivables	47,158	11,579
Less: allowance for doubtful accounts [Note 19(c)]	(2,512)	(1,782)
	183,665	183,420
Amounts due from related parties [Note 28]	9,031	9,250
	192,696	192,670
Aging:		
Outstanding for 30 days or less	97,229	80,893
Outstanding for more than 30 days but not more than 120 days	9,585	8,018
Outstanding for more than 120 days	3,431	2,288
Unbilled revenue	84,963	103,253
Less: allowance for doubtful accounts	(2,512)	(1,782)
	192,696	192,670

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6. REGULATORY BALANCES

Information about the Corporation's regulatory balances is as follows:

	Remaining recovery/ reversal [years]	2016 \$	Balances arising in the year \$	Recovery/ reversal \$	Other movements ⁽¹⁾ \$	2017 \$
Regulatory debit balances						
RARA	1	274	(5,679)	4,868	975	438
Settlement variances	1 - 5	2,496	(805)	-	817	2,508
OPEB deferral account	1 - 5	147	635	-	-	782
LRAM	1 - 5	1,469	1,102	-	-	2,571
Regulatory asset for deferred income taxes	(2)	7,684	9,113	-	-	16,797
Other variances and deferred costs	1 - 5	1,674	682	13	1	2,370
		13,744	5,048	4,881	1,793	25,466
Regulatory credit balances						
RLRA	1	409	15,162	(15,083)	976	1,464
Settlement variances	1 - 5	36,137	(16,193)	-	817	20,761
ESM	1 - 5	-	1,385	-	-	1,385
Other variances and deferred costs	1 - 5	159	740	-	-	899
		36,705	1,094	(15,083)	1,793	24,509

Hydro Ottawa Holding Inc.

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6. REGULATORY BALANCES [CONTINUED]

	Remaining recovery/ reversal [years]	2015 \$	Balances arising in the year \$	Recovery/ reversal \$	Other movements ⁽¹⁾ \$	2016 \$
Regulatory debit balances						
RARA	1	205	68	1	-	274
Settlement variances	1 - 5	5,502	(3,006)	-	-	2,496
OPEB deferral account	1 - 5	4,432	(4,285)	-	-	147
LRAM	1 - 5	-	1,628	-	(159)	1,469
Regulatory asset for deferred income taxes	(2)	-	7,684	-	-	7,684
Other variances and deferred costs	1 - 5	4,291	(2,776)	-	159	1,674
		14,430	(687)	1	-	13,744
Regulatory credit balances						
RLRA	1	3,266	1,618	(4,475)	-	409
Settlement variances	1 - 5	29,919	6,218	-	-	36,137
Stranded meters	1	5,974	(5,974)	-	-	-
LRAM	1 - 5	159	-	-	(159)	-
Regulatory liability for deferred income taxes	(2)	513	(513)	-	-	-
Other variances and deferred costs	1 - 5	994	(994)	-	159	159
		40,825	355	(4,475)	-	36,705

⁽¹⁾ Other movements represent reclassifications of balances.

⁽²⁾ The balance is being reversed through timing differences in the recognition of deferred income tax assets.

The following regulatory balances include accrued interest which is presented in net movements in regulatory balances:

- The RARA/RLRA includes accrued interest costs of \$129 [2016 – \$27].
- Settlement variances include accrued interest costs of \$137 [2016 – \$268].
- Other variance and deferred costs include accrued interest earned of \$37 [2016 – \$15].

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Year ended December 31, 2017

[in thousands of Canadian dollars]

7. PROPERTY, PLANT AND EQUIPMENT

	Land, buildings and structures \$	Distribution \$	Generation and other \$	Assets under construction \$	Total \$
Cost					
Balance as at December 31, 2015	115,796	714,764	122,748	77,605	1,030,913
Additions, net of transfers	855	90,696	10,340	85,461	187,352
Acquired via business combination [Note 27]	10,031	-	29,969	-	40,000
Disposals	(2)	(1,544)	(153)	-	(1,699)
Exchange differences	(553)	-	(1,145)	7	(1,691)
Balance as at December 31, 2016	126,127	803,916	161,759	163,073	1,254,875
Additions, net of transfers	71,053	97,518	85,471	(82,835)	171,207
Disposals [Note 8(a)]	-	(2,602)	(8,762)	-	(11,364)
Exchange differences	(1,186)	-	(2,443)	(102)	(3,731)
Balance as at December 31, 2017	195,994	898,832	236,025	80,136	1,410,987
Accumulated depreciation					
Balance as at December 31, 2015	(5,996)	(48,388)	(17,157)	-	(71,541)
Depreciation	(3,406)	(27,340)	(6,647)	-	(37,393)
Disposals	1	178	46	-	225
Exchange differences	(14)	-	18	-	4
Balance as at December 31, 2016	(9,415)	(75,550)	(23,740)	-	(108,705)
Depreciation	(3,962)	(30,277)	(10,883)	-	(45,122)
Disposals	-	1,206	2,619	-	3,825
Exchange differences	55	-	151	-	206
Balance as at December 31, 2017	(13,322)	(104,621)	(31,853)	-	(149,796)
Net book value					
As at December 31, 2016	116,712	728,366	138,019	163,073	1,146,170
As at December 31, 2017	182,672	794,211	204,172	80,136	1,261,191

Hydro Ottawa Holding Inc.

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7. PROPERTY, PLANT AND EQUIPMENT [CONTINUED]

The Corporation substantially completed the Chaudière Expansion on October 20, 2017 which resulted in the componentization of significant assets previously under construction; the commencement of depreciation thereon; and the ceasing of borrowing cost capitalization. Amounts componentized to land, buildings and structures during the year include \$56,514 in civil structures pertaining to the Chaudière Expansion.

On December 13, 2017, the Corporation acquired the primary distribution assets of the Public Services and Procurement Canada ['PSPC'] campuses of Tunney's Pasture, Confederation Heights and the Central Experimental Farm for the sum of one dollar. PSPC agreed to pay the Corporation \$14,586 to fund future expenditures related to the asset transfer and replacement, direct maintenance and administration, the supply and installation of meters, and the decommissioning and installation of PSPC's equipment. The Corporation has determined that the acquisition of the group of assets does not constitute a business, and has recognized the individual identifiable assets acquired on the basis of their fair value of \$1,436, at the date of purchase.

During the year, the Corporation capitalized borrowing costs of \$6,676 [2016 – \$4,055] to property, plant and equipment. The average annual interest rate for 2017 was 4.0% [2016 – 3.7%].

8. NET GAIN FROM INSURANCE PROCEEDS

	2017	2016
	\$	\$
Unit 1 Event	1,600	-
Flood Event	1,339	-
	2,939	-

(a) Unit 1 Event and other long-term asset

On August 19, 2017, the Unit 1 turbine-generator [of 4 Units] of CHLP experienced a mechanical failure while in operation due to a manufacturer defect and sustained significant damage, requiring a complete overhaul [the 'Unit 1 Event']. Pursuant to the contractual warranty provisions, the subcontractor is responsible for, and has agreed to, reconstruct Unit 1. As a result, the various asset components relating to Unit 1, totalling \$5,771, have been derecognized from property, plant and equipment and the Corporation has recognized an asset under warranty of the same amount on its consolidated balance sheet at December 31, 2017. No gain or loss on derecognition has been recorded with respect to this transaction.

In addition, the Corporation's contract with said subcontractor and its insurance policy relating to the Chaudière Expansion provides business interruption compensation in circumstances such as the Unit 1 Event. Accordingly, a \$1,600 gain on insurance proceeds has been recognized which compensates the Corporation for lost revenues. The Corporation will continue to make claims for lost revenues going forward to the maximum allowable amount under this contract and its insurance policy until such time Unit 1 is back in service in 2018.

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Notes to the Consolidated Financial Statements

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[in thousands of Canadian dollars]

8. NET GAIN FROM INSURANCE PROCEEDS [CONTINUED]

(b) Flood Event

In May 2017, spring melt and heavy rain led to a flooding of the Ottawa River system [the 'Flood Event'] – resulting in a shut-down of several of the Corporation's generating stations, predominately at Chaudière Falls. Remediation efforts commenced as soon as water levels permitted and the affected stations came back into operation between October and November 2017. At December 31, 2017, the Corporation has recorded insurance proceeds receivable totalling \$3,660 which comprise reimbursements for remediation expenses incurred of \$1,321 [net of a \$1,000 deductible]; property, plant and equipment acquired of \$204 as a result of the flood; and \$2,135 [net of a \$297 deductible] in business interruption proceeds to help compensate the Corporation for lost revenues during the shut-down period. As a result of the above, the Corporation has recorded a net gain on insurance proceeds of \$1,339. The insurance proceeds have been received by the Corporation subsequent to year-end.

9. INTANGIBLE ASSETS

	Land rights and water rights \$	Computer software \$	Other contractual rights \$	Assets under development \$	Total \$
Cost					
Balance as at December 31, 2015	52,364	50,345	21,027	4,052	127,788
Additions, net of transfers	473	2,118	3,811	5,857	12,259
Acquired via business combination [Note 27]	10,000	-	-	-	10,000
Exchange differences	(798)	(12)	-	-	(810)
Disposals	-	-	(2,610)	-	(2,610)
Balance as at December 31, 2016	62,039	52,451	22,228	9,909	146,627
Additions	11	14,202	2,218	3,102	19,533
Exchange differences	(1,704)	(26)	-	-	(1,730)
Disposals	-	(1,063)	-	-	(1,063)
Balance as at December 31, 2017	60,346	65,564	24,446	13,011	163,367
Accumulated amortization					
Balance as at December 31, 2015	(98)	(12,782)	(1,549)	-	(14,429)
Amortization	(3,314)	(7,871)	(955)	-	(12,140)
Exchange differences	(20)	3	-	-	(17)
Disposals	-	-	1,627	-	1,627
Balance as at December 31, 2016	(3,432)	(20,650)	(877)	-	(24,959)
Amortization	(2,258)	(6,763)	(545)	-	(9,566)
Exchange differences	250	10	-	-	260
Disposals	-	1,063	-	-	1,063
Balance as at December 31, 2017	(5,440)	(26,340)	(1,422)	-	(33,202)
Net book value					
As at December 31, 2016	58,607	31,801	21,351	9,909	121,668
As at December 31, 2017	54,906	39,224	23,024	13,011	130,165

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9. INTANGIBLE ASSETS [CONTINUED]

A significant portion of the Corporation's water rights with indefinite lives [68% or \$16,941] stems from a historical 1889 lease agreement with PSPC. This contract provides rights to waters on the Ottawa River at Chaudière Falls for two of the Corporation's CGUs – the CHLP CGU [water rights carrying value of \$9,575] and the CHLP North CGU [water rights carrying value of \$7,366] – and effectively renews every 21 years into perpetuity. As a result of the deemed indefinite life, the Corporation does not amortize these water rights. In addition, the Corporation also carries water rights held by the Hull Energy LP CGU [water rights carrying value of \$9,889 at December 31, 2017], which stem from a lease agreement with the Gatineau Power Company and are amortized over the 100-year life of the agreement.

The Corporation's annual impairment test with respect to the CHLP CGU is based on its most recent detailed calculations made in the preceding year, which exceeded the carrying value of the CHLP CGU. Based on an analysis of events and circumstances that have changed since the most recent VIU calculations, the likelihood that a current VIU amount determination would be less than the current carrying amount of the CHLP CGU is remote.

In light of the upcoming refurbishment projects as described in Note 1, the Corporation performed impairment tests with respect to the CHLP North CGU and Hull Energy LP CGU which resulted in no impairment for the 2017 fiscal year [2016 – \$nil]. Management's VIU calculations were based on discounted future cash inflows to be earned under each CGUs' 40-year HESOP contract, while the cash outflows were based on management's industry experience and third party input; taking into account the estimated cost of the refurbishment projects. The key assumption in the VIU calculations were a weighted average cost of capital ["WACC"] of 4.6% [2016 – \$4.6%]. A 10% increase or decrease in the WACC, while holding all other assumptions constant, would not impact management's position with respect to its water rights at December 31, 2017 or 2016.

Capital contribution agreements are connection and cost recovery agreements that govern the construction by HONI of new or modified transformer stations for the purpose of serving the Corporation's customers. Each of the Corporation's capital contribution agreements has a term of 25 years.

During the year, the Corporation capitalized borrowing costs of \$900 [2016 – \$81] to intangible assets. The average annual interest rate for 2017 was 3.9% [2016 – 3.7%].

10. INVESTMENT PROPERTIES

	2017 \$	2016 \$
Net book value, beginning of year	2,297	2,360
Additions	417	46
Depreciation	(112)	(109)
Net book value, end of year	2,602	2,297

The fair value of investment properties is \$8,913, which is based on the latest Municipal Property Assessment Corporation valuation dated May 23, 2017.

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11. INVESTMENTS IN JOINT VENTURES

(a) Investment in joint ventures summary

	2017 \$	2016 \$
Moose Creek LP [50.05%]		
Investment in joint venture, beginning of year	4,055	3,488
Share of profit	448	567
Investment in joint venture, end of year	4,503	4,055
PowerTrail [60%]		
Investment in joint venture, beginning of year	3,820	3,306
Share of profit, net of tax	594	451
Other adjusting items related to profit	21	21
Non-cash (distribution) contribution	(69)	42
Investment in joint venture, end of year	4,366	3,820
Total investments in joint ventures	8,869	7,875

(b) Balance sheet and statement of income summary

	2017 \$	2016 \$
Moose Creek LP [50.05%]		
Current assets	1,306	1,276
Non-current assets	13,269	12,882
Total assets	14,575	14,158
Current liabilities	2,016	1,585
Non-current liabilities	3,320	4,229
Total liabilities	5,336	5,814
Revenue	2,739	3,679
Net income	895	1,134
PowerTrail [60%]		
Current assets	1,182	915
Non-current assets	11,167	10,761
Total assets	12,349	11,676
Current liabilities	859	938
Non-current liabilities	3,826	3,949
Total liabilities	4,685	4,887

Hydro Ottawa Holding Inc.

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11. INVESTMENTS IN JOINT VENTURES [CONTINUED]

(b) Balance sheet and statement of income summary [continued]

	2017 \$	2016 \$
Revenue	3,682	3,658
Net income	990	752

(c) Credit facility

During the 2017 year, PowerTrail entered into an operating revolving line of credit totalling \$1,000 for general business purposes, that bears annual interest at the prime rate. PowerTrail continues to also maintain a credit facility of \$200 [2016 – \$200] to provide standby letters of credit to the IESO. As at December 31, 2017, PowerTrail had drawn an amount of \$133 [December 31, 2016 – \$133] in standby letters of credit and had no outstanding balances drawn against its operating revolving line of credit [December 31, 2016 – \$nil]. Both facilities contain customary covenants and events of default, including a covenant to maintain a tangible net worth of \$1,000.

12. NOTES RECEIVABLE FROM RELATED PARTIES

	2017 \$	2016 \$
Moose Creek LP promissory note, 6.0%, due January 1, 2025	2,324	2,710
PowerTrail promissory notes, non-interest bearing	1,338	1,179
City of Ottawa note, 3.0%	9,746	3,622
	13,408	7,511
Less: current portion	(4,641)	(2,049)
	8,767	5,462

(a) Moose Creek LP

The note receivable is an unsecured ten-year promissory note with quarterly blended repayments. As approved by the Board of Directors of Moose Creek LP in 2017, accelerated principal payments in the aggregate of \$350 are to be made to the Corporation in addition to the regular quarterly blended payments in 2018. Future principal and interest payments on the notes receivable are therefore as follows: 2018 – \$660, 2019 – \$326, 2020 – \$349, 2021 – \$370, 2022 and thereafter – \$619.

(b) PowerTrail

To fund the construction of its gas generation plant at the Trail Road landfill site, between 2005 and 2007, the Corporation provided unsecured, non-interest bearing grid promissory notes to PowerTrail totaling \$4,860. Pursuant to the Shareholder Agreement, loans from the Corporation to PowerTrail are made on a pro rata basis – based upon its share of contributions of capital in the Corporation [60%]. Repayments on the grid promissory notes are made when possible as agreed to by the shareholders. The initial fair value of each advance was calculated using discount rates ranging between 7.6% and 8.0%. Future cash repayments on the notes receivable are estimated to be as follows: 2018 – \$390, 2019 – \$600 and 2020 – \$510 while the remaining imputed interest to be earned by the Corporation over the next three years is \$162.

Hydro Ottawa Holding Inc.

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12. NOTES RECEIVABLE FROM RELATED PARTIES [CONTINUED]

(c) City of Ottawa

In February 2016, the Corporation entered into two agreements with the City of Ottawa [the 'City']. Over a span of an estimated six years from the contract signing date, the Corporation is engaged to convert 58,000 legacy street lights to LED [S/L conversion contract] and to provide maintenance services to all legacy and converted LED street lights [S/L maintenance contract].

While payment terms under the S/L maintenance contract are in accordance with the Corporation's usual credit terms, the Corporation and the City have negotiated a 3% interest bearing note, calculated on a quarterly basis with open repayment terms, for the S/L conversion contract. Under such terms, the City is to pay the Corporation on a quarterly basis an amount calculated based on the City's electricity, maintenance and capital expenditure savings resulting from the LED street light conversions. Of the total \$9,746 outstanding at December 31, 2017, \$937 represents accrued work performed to be billed in early 2018. The Corporation estimates that \$3,591 will be repaid in 2018.

The Corporation carries inventory of \$2,162 [December 31, 2016 – \$1,577] relating to City of Ottawa street light conversion and maintenance endeavours at December 31, 2017. During the year, the Corporation expensed \$4,826 of inventory as cost of goods sold which is included in operating and maintenance costs [2016 – \$2,426].

13. CREDIT FACILITY

During the year, the Corporation renewed and restructured its credit facility for an amount of \$340,750 and US\$200 [December 31, 2016 – \$340,750 and US\$200]. The Corporation cancelled its revolving line of \$100,000 in 2017 and the facility is now structured into four types of credit availability and consists of a \$190,000 [2016 – \$75,000] revolving operating line maturing on August 1, 2020, a \$150,000 [2016 – \$150,000] 364 day revolving operating term line which may be used to assist with refinancing debt and support day to day operations and a \$750 and US\$200 [2016 – \$750 and US\$200] commercial card facility – all of which matures on August 1, 2019. The revolving operating lines can be used by way of direct advances, bankers' acceptances, and/or by way of letters of credit and other guarantees. Generally, the need to use these forms of credit is based on the Corporation's consolidated cash position and therefore any drawings outstanding may not necessarily coincide with the amount of bank indebtedness presented on the Corporation's consolidated balance sheet.

The credit facility is unsecured and has customary covenants including a maximum debt to total capitalization of 75% and a negative pledge not to encumber the assets of the Corporation, Hydro Ottawa Limited, or Energy Ottawa Inc., other than those permitted in the credit facility.

As at December 31, 2017, the Corporation had drawn \$28,400 in direct advances against the revolving operating line of credit [2016 – \$1,100] and \$129,000 in bankers' acceptances against the \$150,000 revolving operating term line [2016 – \$76,000]. The Corporation has also drawn \$24,771 [2016 – \$24,451] against its facilities in standby letters of credit.

As at December 31, 2017, the Corporation has a standby letter of credit to the Receiver General of Canada on behalf of Fisheries and Oceans Canada in the amount of \$538 [December 31, 2016 – \$538] in connection with the Chaudière Expansion. Also, the Corporation has a standby letter of credit to BNY Trust Company of Canada in the amount of \$12,900 [December 31, 2016 – \$12,900] in connection with the Trust Indenture dated September 7, 2016 as described in Note 16. No amounts have been drawn on any of these letters of credit. Finally, during the year, two standby letters of credit that existed at December 31, 2016 in connection with CHLP's 40-year HESOP contract in the amount of \$587 and \$294 were cancelled.

The Corporation has an operating revolving line of credit totaling \$500 for general business purposes. This line of credit bears annual interest at the prime rate. As at December 31, 2017, the Corporation had drawn \$129 against this line [December 31, 2016 – \$76] and is netted against cash on the Corporation's consolidated balance sheet.

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14. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

	2017 \$	2016 \$
Purchased power payable	79,120	92,874
Trade accounts payable and accrued liabilities	56,081	63,039
Customer deposits	16,017	14,452
Customer credit balances	11,203	7,391
Acquisition-related payables	-	10,000
Accrued interest on long-term debt	7,812	8,359
Due to related parties [Note 28]	53	136
	170,286	196,251

15. EMPLOYEE FUTURE BENEFITS**(a) Pension plans**

The Corporation contributes to two defined benefit plans covering substantially all of its employees.

The Corporation's participating employer contributions under OMERS for the year ended December 31, 2017 amounted to \$6,434 [2016 – \$6,218].

The Corporation provides retirement benefits to certain employees through the Chaudiere Hydro Pension Plan. As at December 31, 2017, CWPI and Chaudiere Hydro North L.P. are the only two entities with employees who are part of the Chaudiere Hydro Pension Plan.

(i) Defined benefit obligation

	2017 \$	2016 \$
Balance, beginning of year	5,753	4,502
Current service cost	196	159
Interest cost	221	183
Benefits paid	(111)	(91)
Employee contributions	75	58
Actuarial loss	415	182
Acquired via business combination [Note 27]	-	760
Balance, end of year	6,549	5,753

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[in thousands of Canadian dollars]

15. EMPLOYEE FUTURE BENEFITS [CONTINUED]

(a) Pension plans [continued]

(ii) Plan assets

	2017 \$	2016 \$
Fair value, beginning of year	5,914	4,889
Interest credit	231	179
Employer contributions	199	147
Benefits paid	(111)	(91)
Non-investment expenses	(40)	(10)
Employee contributions	75	60
Actuarial loss (gain)	164	(110)
Acquired via business combination [Note 27]	-	850
Fair value, end of year	6,432	5,914

(iii) Funded status

	2017 \$	2016 \$
Retirement benefit asset, beginning of year	161	387
Change in retirement benefit asset	(278)	(316)
Acquired via business combination [Note 27]	-	90
Retirement benefit (liability) asset, end of year	(117)	161

The assets of the Chaudiere Hydro Pension Plan are held and managed by an independent custodian and accounted for separately in the Corporation's pension plan. The asset allocation structure is subject to diversification requirements and constraints which reduce risk by limiting exposure to individual equity investments, credit rating categories and foreign currency exposures. Based on the fair value of assets held as at December 31, 2017, the Chaudiere Hydro Pension Plan's assets were comprised of 89.8% [2016 – 89.3%] fixed income Canadian bonds, 6.9% [2016 – 7.1%] Canadian and international equities and 3.3% [2016 – 3.6%] in alternative investments. The Chaudiere Hydro Pension Plan's investments are primarily held and managed in pooled funds, and thus do not have a quoted market price in an active market.

Employee future benefits under the Chaudiere Hydro Pension Plan are calculated using an annual compensation rate of 2.0% [2016 – 2.0%], an inflation rate of 2.0% [2016 – 2.0%] and a discount rate of 3.4% [2016 – 3.9%]. The valuations also include several other economic and demographic assumptions including mortality rates, which are based on the Canadian Pensioners' Mortality report published by the Canadian Institute of Actuaries in February 2014.

An actuarial extrapolation was performed as at December 31, 2017 and the last actuarial valuation was performed at January 1, 2015. No valuation allowance has been recorded by the Corporation as at December 31, 2017 and December 31, 2016 with respect to the retirement benefit asset.

Significant actuarial assumptions for defined benefit obligation measurement purposes are discount rate and salary scale. The following sensitivities are based on reasonably possible changes of the assumptions, in isolation of one another, occurring at the end of the reporting period. A 1.0% decrease in discount rate would increase the defined benefit obligation by \$1,216 or 37.7% [2016 – \$1,140 or 22.8%], while a 1.0% increase in salary scale would increase the defined benefit obligation by \$172 or 5.7% [2016 – \$162 or 3.2%].

Hydro Ottawa Holding Inc.

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15. EMPLOYEE FUTURE BENEFITS [CONTINUED]

(b) Other post-employment and short-term employee benefits

The Corporation provides life, health and dental benefits to certain employees. Employee future benefits are calculated using an annual compensation rate increase of 2.0% [2016 – 2.0%] and a discount rate of 3.4% [2016 – 3.9%]. Cost trends for health are estimated to increase [at a declining rate from 7.5% to 5.0%] and dental benefits are estimated to increase by 5.0% per annum. The valuations also include several other economic and demographic assumptions including mortality rates, which are based on the Canadian Pensioners' Mortality report published by the Canadian Institute of Actuaries in February 2014.

Information about the Corporation's other post-employment benefits is as follows:

	2017 \$	2016 \$
Defined benefit obligation, beginning of year	13,335	11,332
Current service costs	341	380
Past service costs	-	1,778
Interest on defined benefit obligation	516	521
Benefits paid	(661)	(607)
Actuarial loss (gain)	791	(105)
Acquired via business combination [Note 27]	-	36
Defined benefit obligation, end of year	14,322	13,335

An actuarial valuation was performed as at December 31, 2017 [December 31, 2016 – actuarial valuation].

Significant changes in actuarial assumptions related to discount rates, future health and dental costs, mortality rates and retirement age may affect the valuation of the defined benefit obligation.

16. LONG-TERM DEBT

	2017 \$	2016 \$
Senior unsecured debentures		
Series 2006-1, 4.97%, due December 19, 2036	50,000	50,000
Series 2013-1, 3.99%, due May 14, 2043	150,000	150,000
Series 2015-1, 2.61%, due February 3, 2025	200,000	200,000
Series 2015-2, 3.64%, due February 2, 2045	175,000	175,000
Senior secured amortizing bonds		
Series 2016-1, 4.08%, due March 31, 2057	203,802	203,802
	778,802	778,802
Less: unamortized debt-issuance costs	(5,634)	(5,842)
	773,168	772,960

Hydro Ottawa Holding Inc.

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16. LONG-TERM DEBT [CONTINUED]

(a) Senior unsecured debentures

Interest payments on each of the above debentures are payable semi-annually in arrears in equal installments. Each debenture contains customary covenants and events of default, including a covenant to ensure that the aggregate principal amount of the consolidated funded obligations does not exceed 75% of the total consolidated capitalization. Interest payments on these debentures over the next five years will be \$20,067 per year.

(b) Senior secured amortizing bonds

On September 7, 2016, the Corporation completed the offering of senior secured amortizing bonds [the 'bonds'] of \$203,802 to fund the Chaudière Expansion. The bonds carry an interest rate of 4.08% and are due on March 31, 2057 [the 'maturity date']. Equal semi-annual interest-only payments are due and payable on March 31 and September 30 each year until and including March 31, 2022. Thereafter, semi-annual blended payments of principal and interest will be due and payable on March 31 and September 30 in each year commencing on September 30, 2022 until and including the maturity date. In addition, a balloon payment of \$30,570 [15% of the principal] will be due and payable on the maturity date. The Corporation incurred debt issuance costs of \$2,684 in 2016 with respect to this issuance which consisted of legal, broker and consulting fees.

The bonds are secured by a first-charge interest on the assets of the Chaudière Expansion, and the Corporation is required to maintain a minimum debt-coverage service ratio ['DCSR']. The DCSR divides the sum of the net operating and investing cash flows [as defined by the Trust Indenture] by the current interest and principal repayments due within the next calendar year. The Corporation was in compliance with all financial covenants associated with the bonds at December 31, 2017 and 2016.

Cash proceeds from the bonds are restricted and held in-trust prior to release to the Corporation, as periodic submissions of qualifying costs are required in accordance with the Trust Indenture. Of the total bond proceeds, \$44,110 is held in a distributions reserve account which is expected to be available to the Corporation upon "Final Completion" of the Chaudière Expansion. Final Completion requires, among other items, approval of final construction costs for the remaining non-generation components of the Chaudière Expansion and the expiration of all holdback periods under the *Lien Act* relating to construction; both of which have been achieved subsequent to year-end. As required by the Trust Indenture, the Corporation must maintain, in a reserve account, an amount equal to the next six months of interest and principal; and in a major maintenance account, a three year look-forward reserve that covers 100%, 67% and 33% of the projected major maintenance expenses in the coming three years. As the Corporation plans to obtain new standby letters of credit to ensure these obligations are met, these requirements will not restrict the use of the Corporation's cash after its initial release from trust.

Annual interest payments on the bonds are expected to be \$8,315 over the next five years.

17. CAPITAL DISCLOSURES

The Corporation's main objectives when managing capital are to:

- Ensure continued access to funding to maintain and improve the operations and infrastructure of the Corporation;
- Ensure compliance with covenants related to the credit facilities and its long-term debt; and
- Align the capital structure of the Corporation's regulated subsidiary, Hydro Ottawa Limited, with the debt to equity structure recommended by the OEB.

Hydro Ottawa Holding Inc.

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17. CAPITAL DISCLOSURES [CONTINUED]

The Corporation's capital consists of the following:

	2017 \$	2016 \$
Bank indebtedness	145,423	68,751
Long-term debt	773,168	772,960
Total debt	918,591	841,711
Shareholder's equity	438,141	426,775
Total capital	1,356,732	1,268,486
Debt capitalization ratio	67.71 %	66.34 %

A subsidiary of the Corporation, Hydro Ottawa Limited, is deemed by the OEB to have a capital structure that is funded by 56% long-term debt, 4% short-term debt and 40% equity. The OEB uses this deemed structure only as a basis for setting distribution rates. As such, the Corporation's actual capital structure may differ from the OEB deemed structure.

The Corporation is in compliance with all financial covenants and limitations associated with its credit facilities and its long-term debt.

The Corporation met its capital management objectives, which have not changed during the year.

18. SHARE CAPITAL

(a) Authorized

Unlimited number of voting first preferred shares, redeemable at one dollar per share
 Unlimited number of non-voting second preferred shares, redeemable at ten dollars per share
 Unlimited number of non-voting third preferred shares, redeemable at one hundred dollars per share
 Unlimited number of voting fourth preferred shares [ten votes per share], redeemable at one hundred dollars per share
 Unlimited number of voting Class A common shares
 Unlimited number of non-voting Class B common shares
 Unlimited number of non-voting Class C common shares, redeemable at the price at which such shares are issued

The above shares are without nominal or par value.

Holders of second preferred shares, fourth preferred shares and common shares are entitled to receive dividends as and when declared by the Board of Directors at their discretion.

(b) Issued

	2017 \$	2016 \$
214,901,003 Class A common shares	228,453	228,453

Hydro Ottawa Holding Inc.

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18. SHARE CAPITAL [CONTINUED]

(b) Issued [continued]

Any invitation to the public to subscribe for shares of the Corporation is prohibited by shareholder resolution.

A shareholder's resolution directs the Corporation to target dividends at the greater of 60% of its subsidiary, Hydro Ottawa Limited's net income or \$20,000, provided that the Corporation is in compliance with the *Business Corporations Act (Ontario)* and relevant OEB Guidelines; is not in breach of any covenants on its senior unsecured debentures or credit facility obligations; and the payment thereof does not negatively impact the Corporation's credit rating.

On April 20, 2017, the Board of Directors declared a \$20,600 dividend to the City of Ottawa, which was paid on April 28, 2017 [April 21, 2016 the Board of Directors declared a \$19,400 dividend to the City of Ottawa, which was paid on April 29, 2016].

19. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

(a) Fair value disclosures

The carrying value of the Corporation's financial instruments, except for the instruments described below, approximate fair value because of the short maturity and nature of the instruments.

The Corporation has estimated the fair value of notes receivable from joint ventures as at December 31, 2017 as amounting to \$4,662 [December 31, 2016 – \$3,878]. The fair value has been determined by discounting all estimated future repayments of principal and imputed interest required to fully repay the loan at the estimated interest rate of 5.7% [December 31, 2016 – 5.7%] that would be available to PowerTrail and Moose Creek LP on December 31, 2017.

The Corporation has estimated the fair value of the senior unsecured debentures as at December 31, 2017 as amounting to \$574,693 [December 31, 2016 – \$573,518]. The fair value has been determined based on discounting all future repayments of principal and interest between February 3, 2025 and March 31, 2057 at the estimated interest rate of 3.7% [December 31, 2016 – 3.7%] that would be available to the Corporation on December 31, 2017.

The Corporation has estimated the fair value of its senior secured amortizing bonds as at December 31, 2017 as amounting to \$203,802 [December 31, 2016 – \$203,802]. The fair value has been determined by discounting all estimated future repayments of principal and interest required to fully repay the loan at the estimated interest rate of 4.0% [December 31, 2016 – 4.0%] that would be available to the Corporation at December 31, 2017.

(b) Market risk

The Corporation is exposed to market risk, which is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market prices. Market prices are comprised of three types of risks: interest rate risk, foreign exchange risk and commodity price risk.

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19. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(b) Market risk [continued]

(i) Interest rate risk

The Corporation is exposed to interest rate risk on its borrowings. The Corporation mitigates exposure to interest rate risk by issuing long-term fixed-interest-rate debt. Under the Corporation's credit facility, advances on its credit lines expose it to fluctuations in short-term interest rates related to prime rate loans and bankers' acceptances. Given the fact that the borrowing requirements on the credit lines are typically for a short duration [i.e., to bridge gaps between the cash outflows related to the Corporation's monthly power bill and the inflows related to settlements with customers, or the cash outflows related to significant capital acquisitions and the inflows related to the issuance of additional long-term fixed-interest-rate debt], there is limited exposure to interest rate risk.

(ii) Foreign exchange risk

The Corporation's earnings from, and net investment in, its foreign operating subsidiary, EONY, are exposed to fluctuations in the U.S. dollar to Canadian dollar exchange rate. Also, the Corporation purchases a small proportion of goods and services that are denominated in foreign currencies, predominately the U.S. dollar. The Corporation monitors its exposure to foreign currency fluctuations on a regular basis, and has not used derivative instruments to hedge against these exposures to date. On an annual basis, it is estimated that a 5% increase or decrease in the U.S. dollar relative to the Canadian dollar exchange rate of U.S. \$1 = CDN \$0.80 as at December 31, 2017 would increase or decrease the equity of the Corporation by approximately \$2,755.

(iii) Commodity price risk

The Corporation, through its foreign operating subsidiary EONY, is exposed to commodity price risk associated with renewable energy produced and sold in the U.S. wholesale market. The Corporation has not used derivative instruments to hedge against this exposure to date. As all renewable energy produced and sold in Canada is at rates specified by their respective power purchase agreements, the remainder of the Corporation's generation revenue is not exposed to significant commodity price risk. A 10% increase or decrease in the price of electricity in the U.S. through December 31, 2017 would have increased or decreased net income by \$280.

(c) Credit risk

Credit risk is the risk that a counterpart will default on its obligations, causing a financial loss to the Corporation. Concentration of credit risk associated with accounts receivable is limited due to the large number of customers the Corporation services. The Corporation has approximately 332,000 customers served by Hydro Ottawa Limited, the majority of which are residential. As a result, the Corporation does not earn a significant amount of revenue and does not have a significant receivable from any individual customer in the ordinary course of business.

The Corporation performs ongoing credit evaluations of customers serviced by Hydro Ottawa Limited and requires collateral to support non-residential customer accounts receivable on specific accounts to mitigate significant losses in accordance with OEB legislation. As at December 31, 2017, the Corporation held customer deposits related to power recovery and distribution revenue in the amount of \$15,121 [December 31, 2016 – \$14,600] with respect to these customers.

The Corporation's other subsidiaries limit credit risk by dealing with customers that are considered to be of high credit quality. These customers include government agencies, utilities, municipalities, universities, school boards, hospitals, and customers with investment grade credit ratings. The Corporation monitors and limits its exposure to credit risk on a continuous basis.

Hydro Ottawa Holding Inc.

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19. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(c) Credit risk [continued]

The carrying amount of accounts receivable is reduced by an allowance for doubtful accounts based on the credit risk applicable to particular customers given their applicable payment history and other information. The Corporation records an allowance for doubtful accounts when the recoverability of an amount becomes doubtful. When the receivable amount is deemed to be uncollectible, it is written off and the allowance for doubtful accounts is adjusted accordingly. Subsequent recoveries of receivables previously provisioned or written-off results in a reduction of operating costs in the consolidated statements of income. As at December 31, 2017, the allowance for doubtful accounts was \$2,512 [December 31, 2016 – \$1,782]. For details of accounts receivable and the aging of the accounts, refer to Note 5.

As at December 31, 2017, there were no significant concentrations of credit risk with respect to any class of financial assets or counterpart and approximately 12% [December 31, 2016 – 12%] of the Corporation's accounts receivable [excluding unbilled revenue] were aged more than 30 days. The Corporation's maximum exposure to credit risk is equal to the carrying value of accounts receivable less customer deposits held.

(d) Liquidity risk

Liquidity risk is the risk that the Corporation will not meet its financial obligations as they come due. The Corporation regularly monitors and manages its liquidity risk to ensure access to sufficient funds to meet operational and capital investment requirements. The Corporation achieves this objective by ensuring that sufficient facilities, as described in Note 13, are maintained to meet obligations as they come due while minimizing standby fees and interest.

Liquidity risks associated with financial commitments are as follows:

	2017		
	Due within one year \$	Due between one and five years \$	Due after five years \$
Accounts payable and accrued liabilities	162,474	-	-
Senior unsecured debentures			
Series 2006-1, 4.968%, due December 19, 2036	-	-	50,000
Series 2013-1, 3.991%, due May 14, 2043	-	-	150,000
Series 2015-1, 2.614% due February 3, 2025	-	-	200,000
Series 2015-2, 3.639%, due on February 2, 2045	-	-	175,000
Senior secured amortizing bonds			
Series 2016-1, 4.080%, due March 31, 2057	-	-	203,802
Interest to be paid on long-term debt	28,382	113,529	499,803
	190,856	113,529	1,278,605

Accounts payable and accrued liabilities in the above table exclude \$7,812 of accrued interest which is included in interest to be paid on long-term debt.

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20. OPERATING COSTS

	2017 \$	2016 \$
Salaries, wages and benefits	84,993	84,545
Maintenance and other	13,197	11,196
Outside services	41,719	32,356
General and administrative	32,896	32,033
Less: capitalized salaries, wages and benefits	(33,008)	(32,058)
	139,797	128,072

21. FINANCING COSTS

	2017 \$	2016 \$
Interest on debentures and bonds payable	27,725	22,537
Short-term interest and fees relating to credit facility	2,534	997
Less: capitalized borrowing costs	(7,576)	(4,136)
	22,683	19,398

22. INCOME TAXES

Income tax expense recognized in net income comprises the following:

	2017 \$	2016 \$
Current tax expense		
Current income tax expense	4,120	4,457
Deferred tax expense		
Origination and reversal of temporary differences	10,683	4,584
Income tax expense recognized in net income	14,803	9,041

Income tax recovery recognized in OCI comprises the following:

	2017 \$	2016 \$
Income tax effect on exchange differences on translation of foreign subsidiary	(1,536)	(552)

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22. INCOME TAXES [CONTINUED]

The provision for income taxes differs from the amount that would have been recorded using the combined Canadian federal and Ontario statutory income tax rates. A reconciliation between the statutory and effective tax rates is provided as follows:

	2017 \$	2016 \$
Federal and Ontario statutory income tax rate	26.50 %	26.50 %
Income attributable to equity shareholder before income taxes	50,778	43,877
Income taxes at statutory rate	13,457	11,627
Increase (decrease) in income taxes resulting from:		
Permanent differences	30	49
Impact on foreign exchange translation on subsidiary	(407)	(180)
Impact from change in future U.S. tax rate	1,676	-
Foreign tax rate differential	14	(762)
Corporate minimum tax, net of tax credit	79	-
Unrecognized tax benefit	189	(1,255)
Tax impact on joint venture	(282)	(275)
Adjustment	(126)	265
Other	173	(428)
	14,803	9,041
Effective income tax rate	29.15 %	20.61 %

The Corporation's subsidiary Hydro Ottawa Limited, as a rate-regulated enterprise, is required to recognize deferred income tax assets and liabilities and related regulatory deferral account credit and debit balances for the amount of deferred income taxes expected to be refunded to, or recovered from, customers in future electricity rates.

Significant components of the Corporation's net deferred income tax asset are as follows:

	2017 \$	2016 \$
Property, plant and equipment and intangible assets	(812)	1,106
Non-capital loss carryforwards	6,620	4,492
Other temporary differences	(310)	47
	5,498	5,645

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22. INCOME TAXES [CONTINUED]

Significant components of the Corporation's net deferred income tax liability are as follows:

	2017 \$	2016 \$
Property, plant and equipment and intangible assets	(34,988)	(24,244)
Tax recognized in OCI related to foreign subsidiary translation	(479)	(1,821)
Exchange differences and other	63	(448)
Non-capital loss carryforwards	-	268
Employee future benefits	4,934	4,648
Other	337	661
	(30,133)	(20,936)

Movements in the net deferred tax asset balances during the year were as follows:

	2017 \$	2016 \$
Deferred tax asset, beginning of year	5,645	2,250
Impact of foreign exchange rate change on opening deferred tax asset balance	(321)	19
Recognized in net income	260	3,370
Recognized in OCI	11	6
Other	(97)	-
Deferred tax asset, end of year	5,498	5,645

Movements in the net deferred tax liability balances during the year were as follows:

	2017 \$	2016 \$
Deferred tax liability, beginning of year	(20,936)	(13,695)
Recognized in net income	(10,819)	(7,793)
Recognized in OCI	1,525	552
Other	97	-
Deferred tax liability, end of year	(30,133)	(20,936)

The Corporation's regulatory deferral account credit balance for the amounts of deferred income taxes expected to be collected/refunded to customers in future electricity rates is \$16,798 [2016 – \$7,694].

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22. INCOME TAXES [CONTINUED]

As at December 31, 2017, the Corporation had capital losses of \$708 [December 31, 2016 – \$750] and non-capital losses of \$1,069 [December 31, 2016 – \$313] for tax purposes, for which the tax benefit has not been recognized in the consolidated financial statements. The Corporation has U.S. losses carried forward of \$15,247, which expires between 2035 and 2037. All are considered more likely than not to be realized, resulting in a recognized deferred tax asset of \$3,985.

As at December 31, 2017, the Corporation's regulated subsidiary Hydro Ottawa Limited and its joint venture PowerTrail had corporate minimum tax credit carryforwards of \$nil and \$19 respectively [December 31, 2016 – \$470 and \$97 respectively], which expire 2035.

Deferred tax assets are recognized to the extent that it is probable that taxable profit will be available against which the deductible temporary differences and the carry-forward of unused tax assets and unused tax losses can be utilized. Deferred tax assets of \$4,243 have been recognized in EONY as there is sufficient positive evidence to demonstrate that it is probable that a deferred tax asset will be realized. Factors considered include: historic and expected future taxable income and the nature, amount and expected timing of reversal of taxable temporary differences.

A deferred tax liability for all taxable temporary differences associated with investments in subsidiaries and investments in joint ventures has not been recognized as the Corporation is able to control the timing of the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future.

23. CHANGES IN NON-CASH WORKING CAPITAL AND OTHER OPERATING BALANCES

	2017 \$	2016 \$
Accounts receivable	128	(20,430)
Prepaid expenses	732	(1,498)
Other	-	(4)
Note receivable from parent	(6,125)	(3,622)
Accounts payable and accrued liabilities	(29,227)	33,757
Inventory	(585)	(1,577)
Customer deposits in accounts receivable [Note 7]	14,586	-
Net change in accruals related to property, plant and equipment	8,331	(11,416)
Net change in accruals related to intangible assets	(9)	297
Net change in accruals related to business combinations	10,000	(8,869)
	(2,169)	(13,362)

24. RECONCILIATION OF LIABILITIES ARISING FROM FINANCING ACTIVITIES

	January 1, 2017 \$	Amortization of bond issuance costs expensed \$	Amortization of bond issuance costs capitalized \$	December 31, 2017 \$
Long-term debt	772,960	165	43	773,168

Hydro Ottawa Holding Inc.

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[in thousands of Canadian dollars]

25. CONTINGENT LIABILITIES

Purchasers of electricity from the IESO are required to provide security to mitigate the risk of their default based on their expected activity in the market. The IESO could draw on these guarantees if the Corporation fails to make a payment required by a default notice issued by the IESO. A prudential support obligation is calculated based upon a default protection amount and the distributor's trading limit less a reduction for the distributor's credit rating. As at December 31, 2017, the Corporation had drawn standby letters of credit in the amount of \$10,000 [December 31, 2016 – \$10,000] against its credit facility to cover its prudential support obligation.

The Corporation participates with other electrical utilities in Ontario in an agreement to exchange reciprocal contracts of indemnity through the Municipal Electrical Association Reciprocal Insurance Exchange. The Corporation is liable for additional assessments to the extent premiums collected and reserves established are not sufficient to cover the cost of claims and costs incurred. If any additional assessments were required in the future, their cost would be charged to income in the year during which they occur.

The Corporation is party to connection and cost recovery agreements with HONI as described in Note 9. To the extent that the cost of a project is not recoverable from future transformation connection revenues, the Corporation is obligated to pay a capital contribution equal to the difference between these revenues and the construction costs allocated to the Corporation.

Various lawsuits have been filed against the Corporation for incidents that arose in the ordinary course of business. In the opinion of management, the outcomes of the lawsuits, now pending, are neither determinable nor material. Should any loss result from the resolution of these claims, such losses would be claimed through the Corporation's insurance carrier, with any unrecoverable amounts charged to income in the year of resolution.

26. COMMITMENTS

As at December 31, 2017, the Corporation's regulated subsidiary, Hydro Ottawa Limited, has \$155,335 in total open commitments spanning between 2018 and 2024. This includes commitments relating to a customer information system services agreement, construction projects, spare parts and standby equipment and overhead and underground services.

Energy Ottawa has committed \$10,272 in outstanding purchase commitments relating to finalizing the non-generation components of the Chaudière Expansion. In addition, Energy Ottawa has \$7,189 in outstanding purchase commitments relating to the refurbishment projects as referenced in Note 1 of these consolidated financial statements.

Energy Ottawa maintains leases with various entities for the rights to certain lands, waterways, buildings and other generating assets at its generating stations in Ontario, Québec and New York. These leases are in place through various dates, ranging between August 19, 2019 and December 13, 2117. Certain leases have annual payments which have a fixed and contingent portion, the latter of which is based on either annual gross revenues or power generation levels. During the 2017 fiscal year, the Corporation expensed lease payments of \$308 [2016 – \$292], which included \$136 [2016 – \$112] of contingent lease payments. The Corporation's future minimum lease payments will be: 2018 – \$172, 2019 to 2022 – \$711 and \$5,376 thereafter.

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27. BUSINESS COMBINATIONS

On December 14, 2016, the Corporation entered into an Agreement of Purchase and Sale ['APS'] with Gatineau Power Company [a subsidiary of Hydro-Québec] to acquire its 27 megawatt Centrale Hull-2 hydroelectric generating station [the 'HQ assets'] and its 33.33% interest in Chaudière Water Power Inc. ['CWPI'] for a cash purchase price of \$50,000, inclusive of contingent consideration estimated at the date of acquisition to be \$10,000. CWPI is a non-operating entity with no significant assets or liabilities that flows-through costs associated with maintaining the Chaudière Dam at Chaudière Falls to its shareholders. Also on December 14, 2016, the Corporation entered into two agreements incidental to the APS: [1] a 25-year fixed-price, indexed power purchase agreement with Hydro-Québec to sell electricity from the HQ assets at a market base-rate and [2] a 100-year-less-a-day lease with Gatineau Power Company for the land and associated water rights pertaining to the Québec side of the Ottawa River at Chaudière Falls. The acquisition of the 33.33% interest in CWPI resulted in the Corporation controlling 100% of the entity, resulting in consolidation going forward. The acquisition of HQ assets was determined to be a business combination for accounting purposes.

The following table summarizes the fair values of the assets acquired and liabilities assumed as part of the transaction with Gatineau Power Company.

	Acquisition date fair value \$
Non-current assets	
Generation and other	
Reservoirs, dams and waterways	17,944
Generating equipment	12,025
Land, buildings and structures	10,031
Water rights	10,000
Retirement benefit asset	90
Non-current liabilities	
Other post-employment benefits	(36)
Accounts payable and accrued liabilities	(54)
Total net assets acquired	50,000

The fair value of the property, plant and equipment acquired was based on the direct method-replacement cost approach. As such, the asset values were estimated as if they were to be reconstructed on an undeveloped site. These estimates were developed through discussions with third-party engineers, market research and comparisons with similar equipment and facility replacement cost data based on capacity. Moreover, since the assets have been in use over varying periods of time, allowances have been made for physical, functional, and economic factors affecting utility and value as they might apply. The fair value of the water rights was based on the present value of the net cash flow benefits derived from the water rights ownership. As a result, the fair value measurement for the acquired HQ assets are classified within Level 3 of the fair value hierarchy.

Amounts with respect to the retirement benefit asset, other post-employment benefits and accounts payable and accrued liabilities relate to the Corporation's acquired 33.33% interest in CWPI. The \$10,000 earn out was included in accounts payable and accrued liabilities as at December 31, 2016 and was settled in 2017.

The Corporation incurred transaction costs [primarily legal and consulting] totaling \$1,754 with respect to the acquisition of net assets from Gatineau Power Company. As management is not privy to the applicable financial information, it is impracticable to determine the amount of revenue or income (loss) the HQ assets would have produced had the acquisition occurred on January 1, 2016.

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28. RELATED PARTY TRANSACTIONS

Transactions with related parties occur in the normal course of business, and are transacted at the amount of consideration determined and agreed to by the related parties. Trade amounts due from and to related parties are non-interest bearing, result from normal operations and are due within one year.

(a) Transactions and balances outstanding with parent

During the year, the Corporation earned power recovery and distribution revenue from the City of Ottawa and its subsidiaries, which is billed at prices and terms approved by the OEB. In addition, the Corporation earned commercial services revenue totaling \$744 [2016 – \$1,322] via its regulated subsidiary, Hydro Ottawa Limited, and \$16,314 [2016 – \$8,882] via Energy Ottawa, from the City of Ottawa and its subsidiaries. During the year, the Corporation also received \$2,028 [2016 – \$4,484] in additions to deferred revenue relating to the upgrade and/or expansion of the Corporation's existing electricity distribution infrastructure and earned \$152 [2016 – \$nil] in interest revenue with respect to the note receivable from the City of Ottawa.

The Corporation incurred \$2,875 [2016 – \$2,744] of operating costs to the City of Ottawa. The Corporation also incurred \$2,872 [2016 – \$nil] in building permit costs and development charges, which are included in property, plant and equipment.

As at December 31, 2017, the Corporation's accounts receivable include \$8,872 [December 31, 2016 – \$9,203] while the Corporation's accounts payable and accrued liabilities include \$53 [December 31, 2016 – \$136] due to the City of Ottawa and its subsidiaries in respect of the transactions described above. In addition, the Corporation's note receivable from the City of Ottawa is disclosed in Note 12 of these consolidated financial statements.

(b) Transactions and balances outstanding with joint ventures and joint operations

(i) Moose Creek LP

During the year, the Corporation earned interest income in the amount of \$147 [2016 – \$182] on its note receivable from the Moose Creek LP joint venture, as well as \$34 [2016 – \$21] in other revenue for the provision of administrative services. As at December 31, 2017, the Corporation's accounts receivable include \$142 [December 31, 2016 – \$45] due in respect of the transactions described for balances paid on behalf of Moose Creek LP.

The Corporation's note receivable from Moose Creek LP is disclosed in Note 12 of these consolidated financial statements.

(ii) PowerTrail

During the year, the Corporation earned imputed interest income in the amount of \$90 [2016 – \$104] on its note receivable from the PowerTrail joint venture, as well as \$37 [2016 – \$24] in other revenue for the provision of administrative services. As at December 31, 2017, the Corporation's accounts receivable include \$17 [December 31, 2016 – \$2] due in respect of the transactions described.

The Corporation's note receivable from PowerTrail is disclosed in Note 12 of these consolidated financial statements.

(iii) CWPI

Prior to the consolidation of the CWPI joint operation as of December 14, 2016, the Corporation incurred \$971 of operating expenses in relation to the management and operation of the Chaudière Dam at Chaudière Falls, and earned \$78 in other revenue for the provision of administrative services. The Corporation also capitalized \$329 of generating assets. Subsequent to December 14, 2016, all intercompany balances with CWPI have been eliminated.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2017

[in thousands of Canadian dollars]

28. RELATED PARTY TRANSACTIONS [CONTINUED]**(c) Compensation of key management personnel**

	2017	2016
	\$	\$
Salaries, director fees and other short-term benefits	1,401	1,349
Employee future benefits	160	159
Other long-term benefits	12	12
	1,573	1,520

29. COMPARATIVE INFORMATION

In certain instances, the 2016 information presented for comparative purposes has been reclassified to conform to the consolidated financial statement presentation adopted for the current year.

Hydro Ottawa's newest 29-megawatt state-of-the-art hydroelectric facility at Chaudière Falls is built entirely below ground and has been feeding clean, renewable energy into the provincial grid since its energization in July 2017 – on time, and on budget.

Two months before production was scheduled to begin, Ottawa experienced one of the worst floods in a century... the first time in history that all gates in the ring dam were opened.

Employees who participated in the response that weekend will never forget the power of the water and the quick action that was needed to save our generating assets. It was a tremendous effort that allowed us to stay on track for our completion date, and an inspiring example of the power of teamwork.





Statement of Executive Compensation

The Governance and Management Resources Committee of the Board is responsible for developing and recommending the approval of the compensation framework for the Corporation and each of its subsidiaries.

In developing the compensation framework, the Governance and Management Resources Committee is guided by two principles: the need to provide a total compensation package that will attract and retain qualified and experienced executives, and linking compensation to performance.

Executive compensation is reviewed by the Governance and Management Resources Committee and approved by the Board of Directors. In making its recommendations to the Board, the Committee examines the responsibilities and performance of individual executives, and considers the recommendations of the President and Chief Executive Officer.

In an effort to attract and retain qualified and experienced executives, the Corporation aims to offer a total compensation package that is competitive with other organizations of a similar size and scope. Executive compensation is reviewed on an annual basis and compared to market data, with the assistance of independent consultants, on an ad hoc basis to ensure competitiveness. In line with best practices for the sector, as identified by the Ontario Minister of Energy's Agency Review Panel in 2007, Hydro Ottawa applies a 50/50 weighting of market data from public and private comparators. The industry component of the market comparator group has a strong sector affiliation [e.g., Transportation and Utilities sector], and is assessed by revenue levels to ensure comparability.

Total cash compensation for Executives consists of two components*: base salary and an at risk performance incentive.

The at risk performance incentive component is paid on an annual basis, and is expressed as a percentage of base salary. It is designed to retain and motivate executives, to reward them for their performance during the preceding year, and to ensure alignment with shareholder objectives. Payments are based on the achievement of corporate and division objectives, both financial and non-financial, which are established each year by the Board of Directors. Non-financial targets are designed to achieve continuous improvement in relation to a number of strategic objectives including, but not limited to, customer service, operational and organizational efficiency and effectiveness, and service reliability.

Executives participate in a benefits program, which includes extended health care, dental care, basic and optional life insurance, and short-term and long-term disability insurance. This same program is available to all management group employees of the Corporation.

Executives also participate in the OMERS pension plan. This plan is a multi-employer, contributory, defined benefit pension plan established by the Province for employees of municipalities, local boards and school boards in Ontario. Pension benefits are determined by a formula based on the highest consecutive five-year average of contributory earnings and years of service. Pension benefits are indexed to increases in the Consumer Price Index subject to an annual maximum of 6 percent. Both participating employers and participating employees are required to make equal contributions to the plan based on the participating employees' contributory earnings. Earnings for pension purposes are capped by the plan.

* The total cash compensation for the President and Chief Executive Officer consists of a base salary only.

COMPENSATION OF OFFICERS AND BOARD MEMBERS

Officers

NAME AND PRINCIPAL POSITION ¹	YEAR	BASE SALARY (\$) ²	AT RISK PERFORMANCE INCENTIVE (\$) ³	OTHER COMPENSATION (\$) ⁴
Bryce Conrad	2017	380,957	N/A	18,166
President and Chief Executive Officer	2016	375,711	N/A	22,398
	2015	384,163	N/A	15,178
Geoff Simpson	2017	183,839	61,842	8,491
Chief Financial Officer	2016	180,783	67,711	8,479
	2015	184,850	57,254	8,471
Lance Jefferies	2017	162,668	54,720	8,412
Chief Electricity Distribution Officer	2016	159,830	34,798 ⁵	8,401
Gregory Clarke	2017	186,627	62,780	8,501
Chief Electricity Generation Officer	2016	183,525	66,484	8,798
	2015	187,654	57,055	8,482

1 Officers whose earnings are reported are those who occupied the position at December 31, 2017.

2 The pay cycle for 2015 resulted in 27 pay periods versus the standard 26 in other years. Amounts shown in this column have been rounded to the nearest dollar.

3 Amounts shown in this column reflect the at risk performance incentive for the executive in respect of the achievement of the performance objectives for the previous financial year, paid in the reporting year. These amounts have been rounded to the nearest dollar.

4 Amounts in this column include Board approved discretionary payments such as payments of earned and unused vacation credits, car allowance, computer allowance and employer's share of basic life insurance premiums. These amounts have been rounded to the nearest dollar.

5 Given that Mr. Jefferies assumed the position on January 1, 2016, the at risk performance incentive for 2015, paid in 2016, is based on his previous position with the Corporation.

Board Members

The remuneration of the members of the Boards of Directors of Hydro Ottawa Holding Inc. and Hydro Ottawa Limited is as determined by the City of Ottawa and the Hydro Ottawa Holding Inc. Board respectively. In addition to reimbursement for reasonable out-of-pocket expenses incurred while performing their duties, directors receive an annual stipend and meeting fees for service:

- The Board Chair receives an annual stipend of \$40,000;
- All other Board members receive an annual stipend of \$7,000;
- The Board Chair receives \$600 for each Board or committee meeting chaired or attended;

- Committee Chairs receive \$800 for each meeting of the committee chaired; and
- All other Board members receive \$600 for each Board or committee meeting attended.

Only one annual stipend is paid where an individual is a director of both the Hydro Ottawa Holding Inc. and Hydro Ottawa Limited Boards of Directors. Members of the Council of the City of Ottawa, as well as the President and Chief Executive Officer, and the one member of management on the Hydro Ottawa Limited Board receive no remuneration in their capacity as directors of the boards.

Corporate Governance

Hydro Ottawa is committed to establishing and maintaining leading governance practices for a company of its size and mandate. Because governance standards and best practices are always evolving, the company seeks to continuously improve its governance practices.

Hydro Ottawa Holding Inc. is a private, for-profit company, incorporated under the *Business Corporations Act* [Ontario]. At the same time, the company is wholly owned by the City of Ottawa and fulfills a public mandate, and is therefore mindful of its responsibility to be accountable both to its shareholder and the public. The company's governance practices are guided not simply by legal obligations, but by best business practices and standards established by independent agencies.

While Hydro Ottawa is not a reporting issuer under the Securities Act and is therefore not subject to governance standards that apply to publicly-traded companies, the company is guided by these standards and seeks to meet or exceed them. In addition, Hydro Ottawa regularly compares its governance practices to those of private and public sector organizations, and to standards set by agencies such as the Canadian Securities Administrators and the Ontario Securities Commission.

GOVERNANCE STRUCTURE

Accountability for the effective oversight of the Corporation and its wholly-owned subsidiaries [Hydro Ottawa Limited and Energy Ottawa Inc.] rests with an eleven-member Board of Directors, which provides direction to the Corporation on behalf of the shareholder, the City of Ottawa. The Board provides leadership within a framework of effective controls that enables risks to be assessed and managed, and is responsible for supervising the management of the business and affairs of the Corporation and its wholly-owned subsidiaries. In carrying out its oversight function, the Board of Directors is guided by a Shareholder Declaration issued by Ottawa City Council and revised from time to time. The Corporation's Code of Business Conduct, its Director Conflict of Interest and Conduct Guidelines and a Related Party Transaction Disclosure Policy and Process also govern the actions of the Board.

In 2006, a separate Board of Directors was established to oversee the operations of Hydro Ottawa Limited, in accordance with the Affiliate Relationships Code for Electricity Distributors and Transmitters issued by the Ontario Energy Board. The powers and functions of that Board are set out in a Shareholder Declaration issued by the Hydro Ottawa Holding Inc. Board of Directors. On a day-to-day basis, the Corporation is led by an Executive Management Team, comprising the Corporation's President and Chief Executive Officer, the Chief Financial Officer and the senior executives of the subsidiaries and critical functional areas. This team oversees the alignment of business practices and strategies with the goals of the Corporation, and drives performance by managing risks and opportunities. The Executive Management Team is accountable to the Corporation's Board of Directors through the President and Chief Executive Officer.

KEY GOVERNANCE PROCESSES AND CONTROLS

Hydro Ottawa has established a number of leading governance processes and controls to assist the Board and executive management in carrying out their oversight functions.

Risk Management: An extensive, corporate-wide risk management system has been established to track indicative and predictive measures of risk. Risk assessments are included with regular reporting to the Board on all areas of the Corporation's operations.

Internal Audit: Hydro Ottawa conducts a rigorous internal audit program to verify controls and maximize business efficiency and effectiveness. A number of business processes and functions are audited annually based on an audit plan approved by the Board. The use of experienced auditors both internal and external to the Corporation ensures rigour and objectivity.

Business Continuity Plans: Plans are in place to ensure the continuance of critical operations in the event of a major emergency such as a pandemic, and to return the Corporation to normal operations as quickly as possible after such an event. They include detailed strategies for the re-assignment of resources to critical processes, and redundant supply arrangements with critical external suppliers.

APPOINTMENTS TO THE BOARDS OF DIRECTORS

The governance structure for the Corporation [Hydro Ottawa Holding Inc.] and its wholly-owned subsidiaries [Hydro Ottawa Limited and Energy Ottawa Inc.] includes two boards of directors – the Hydro Ottawa Holding Inc. Board and the Hydro Ottawa Limited Board.

In accordance with the terms of the Shareholder Declaration, the City of Ottawa appoints all Directors to the Boards except the President and Chief Executive Officer, and the one member of management on the Hydro Ottawa Limited Board. In doing so, the City considers candidates recommended by the Nominating Committee of the Board of Hydro Ottawa Holding Inc., but is not obliged to select these candidates. The Nominating Committee is assisted by outside consultants in its search for candidates for appointment to the Boards.

As set out in the Shareholder Declaration, all candidates for appointment to the Boards must meet certain requirements, including demonstrated integrity and high ethical standards, relevant career experience and expertise, and an understanding of the role of Hydro Ottawa both as a service to local ratepayers and an asset of taxpayers.

In addition, the nomination and selection process is designed to maintain a Board that includes the following overarching competencies among one or more directors: strong business background including competitive business experience and strategic planning; a strong financial background including financial accreditation and public or private market financing experience; industry sector experience in the areas of business of the subsidiary companies; board experience; and merger and acquisition experience.

COMMITTEES

The following committees were created to help the Boards of Directors carry out their duties. The committees meet regularly and provide feedback on their discussions to their respective Boards.

Hydro Ottawa Holding Inc.

Audit: The Audit Committee reviews financial statements, accounting practices and policies, auditing processes and the results of internal and external audits and related matters. It also oversees financial risk management and assesses internal controls.

Governance and Management Resources: The Governance and Management Resources Committee reviews the Corporation's governance structures and practices to ensure that the Board of Directors can fulfill its mandate. It reviews management resources and compensation practices to ensure systems are in place to attract, retain and motivate qualified management employees. It also reviews and assesses the performance of the President and Chief Executive Officer, oversees the Board Assessment process, and monitors compliance with codes of conduct.

Investment Review: The Investment Review Committee is responsible for assisting management and the Board of Directors in the review and pursuit of business development, acquisition and investment opportunities. In carrying out these functions, the Committee focuses on the consistency of opportunities with strategic plans and investment guidelines, the maximization of shareholder value and the management of risk.

Nominating: The Nominating Committee, with the assistance of outside consultants, identifies and evaluates potential candidates for appointment as Directors. The Nominating Committee makes recommendations to the shareholder [represented by Ottawa City Council] for the appointment of directors.

Strategic Initiatives Oversight: The Strategic Initiatives Oversight Committee is responsible for assisting the Board of Directors in guiding management and providing support and focus for large-scale capital project efforts as identified by the Board from time to time.

BOARD AND COMMITTEE MEETING ATTENDANCE

The following tables illustrate the attendance of members at meetings of the Boards of Directors and their committees.

HYDRO OTTAWA HOLDING INC.

DIRECTOR	BOARD MEETINGS	COMMITTEE MEETINGS
Jim Durrell, C.M., ICD.D [Chair]	7/7	19/19
Bryce Conrad [President and CEO]	7/7	N/A
Dale Craig	5/7	8/8
Jan Harder	7/7	5/5
Andrea Johnson	6/7	9/9
Kalai Kalaichelvan	7/7	8/10
Cyril Leeder ²	3/3	2/2
J. Douglas McLarty	7/7	9/9
Philip Murray	7/7	8/8
Lori O'Neill	7/7	10/10
Zaina Sovani ¹	4/4	4/5
Marianne Wilkinson	7/7	6/6

1 Depicts outgoing Board member whose term ended on June 30, 2017

2 Depicts incoming Board member whose term took effect July 1, 2017

HYDRO OTTAWA LIMITED

DIRECTOR	BOARD MEETINGS	COMMITTEE MEETINGS
Jim Durrell, C.M., ICD.D [Chair]	4/4	N/A
Bryce Conrad [President and CEO]	4/4	N/A
Lance Jefferies	4/4	N/A

Members of the Boards of Directors

HYDRO OTTAWA HOLDING INC.



Jim Durrell, C.M., ICD.D [Chair]



Bryce Conrad



Dale Craig



Councillor Jan Harder



Andrea Johnson



Kalai Kalaichelvan



Cyril Leeder



J. Douglas McLarty



Philip Murray



Lori O'Neill



Zaina Sovani



Councillor Marianne Wilkinson

HYDRO OTTAWA LIMITED



Jim Durrell, C.M., ICD.D [Chair]



Bryce Conrad



Lance Jefferies

Note: Zaina Sovani was first appointed to the Hydro Ottawa Holding Inc. Board of Directors effective December 1, 2014 and was previously a Director of the Hydro Ottawa Limited Board from July 1, 2012 to November 30, 2014. She was appointed to the Audit Committee on July 17, 2012, and Governance and Management Resources Committee on September 18, 2015, and served on these Committees until the end of her term on June 30, 2017. We wish to convey our sincere appreciation to Zaina Sovani for her dedicated service.

Cyril Leeder was appointed to the Hydro Ottawa Holding Inc. Board of Directors effective July 1, 2017.



CSWEEK expanding excellence awards







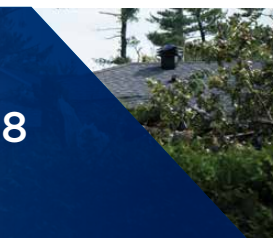
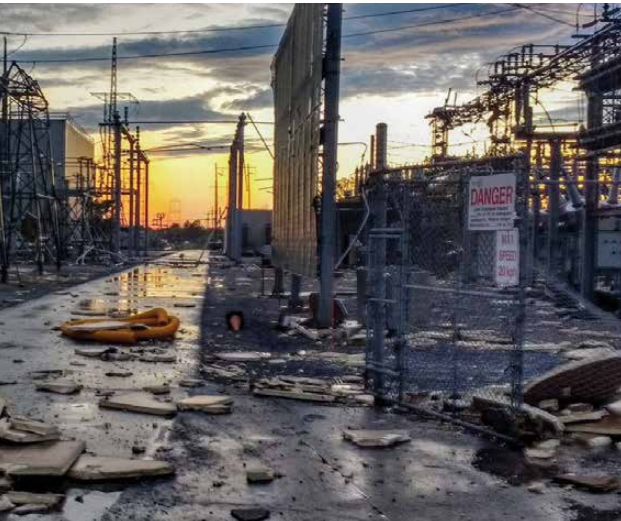
Hydro Ottawa wishes to thank all the employees
whose photos appear in this Annual Report.

La version française du présent rapport annuel est
affichée sur le site hydroottawa.com.

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Our Mission

To create long-term value for our shareholder, benefitting our customers and the communities we serve

Our Organizational Values

Teamwork, Integrity, Excellence and Service

Our Vision

Hydro Ottawa – a leading partner in a smart energy future

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Message from the Chair of the Board and the President and Chief Executive Officer

On behalf of the Board of Directors of Hydro Ottawa Holding Inc., our management and employees, we are pleased to provide this 2018 Annual Report to our shareholder, the City of Ottawa. This report marks our third year of reporting on progress towards the vision and commitments laid out in our 2016-2020 Strategic Direction, which was endorsed by our shareholder in June 2016.

Once again in 2018 – and in fact even more so – key defining events in the life of our city and the conduct of our business were weather related. The ice and wind storms of the spring, while extreme in their own right, paled in comparison to the tornadoes that struck our service territory on Friday, September 21. The devastation in several neighbourhoods was profound, and power was interrupted over wide swaths of the city. It was the worst damage we have suffered since the 1998 ice storm, and affected not only our own distribution grid, but also one of the two critical power transformer stations we rely on to connect to the provincial electricity supply.

We activated our crisis response plan, dispatched crews and staffed an incident command centre round-the-clock, communicated extensively with customers, and kept a sharp focus on employee and public safety. By the early hours of Monday, September 24, service was restored to 95 percent of affected customers with all areas re-energized by Wednesday. Crucially, we achieved this feat with no lost-time injuries. This left us with three takeaways: our employees are remarkably dedicated, our customers are highly supportive, and our ongoing investments in infrastructure resilience are essential.

Despite disruptive weather effects, our financial performance remained strong in 2018. Consolidated net income at \$42.1 million was up \$6.2 million over 2017, strengthened by a one-time

Conservation and Demand Management incentive payment of \$4.1 million. This resulted in a \$22.3 million dividend payment to the City of Ottawa, while our consolidated return on equity rose to 9.4 percent.

It is important to note that in March 2019, the provincial government announced its intention to refocus and centralize delivery of conservation and demand management programs. The programs that will remain in place will be delivered by the Independent Electricity System Operator [IESO] rather than by local distribution companies. This will have a significant impact on our business, as CDM programs have contributed to our net income and dividends, and this revenue stream will not be available in future years. Hydro Ottawa and local residents and businesses have been leaders in the field of energy conservation and we will continue to work with the IESO to ensure that our customers have access to the remaining programs. Other electricity policy reforms are underway in Ontario, and we will continue to closely monitor and respond to these developments.

What remains constant is our focus on effectively operating and investing in the electricity grid, while insulating our customers as much as possible from cost increases. In 2018, we continued to respond to our customers' strong expectation that we pursue all available savings, through innovation, productivity improvement and cost-control measures. This helped us rank second among our peers in Ontario in terms of lowest costs per customer.

We also continued to improve the customer experience by improving the flow of information and developing innovative services. Enhancements in 2018 focused on social media, our mobile app, digital outage communication, and making it easier to register for our payment plans and other transactional



activities such as moves. Notably, we became the first Canadian utility whose customers can access account and conservation information via smart home audio assistants.

We made prudent and strategic investments to strengthen aging components of our distribution grid, guided by our OEB-approved capital expenditure plan and the principle of directing investments where they will have the greatest value for customers. Our distribution system capital spending was at its highest level ever, reflecting in part asset-replacement expenses arising out of the extreme weather events.

We also maintained strong performance in our non-distribution businesses. 2018 was the first full year in operation of our new generation facility at Chaudière Falls, which boosted our green energy revenues by 52 percent, or \$13.3 million. We continued to invest in our generating assets, commencing refurbishments of our two stations in Gatineau. Upon completion of this work in

2020, these stations will feed power into the Ontario grid under 40-year power purchase agreements, helping to alleviate a forecast capacity shortage in Ottawa's downtown core.

Our community involvement remained extensive, encompassing outreach to key stakeholders, and high-impact charitable investments to enhance community well-being. Within our own walls, employee safety and well-being remained an unwavering priority throughout the year.

In a year when we encountered significant weather-related challenges, Hydro Ottawa achieved 94 percent customer satisfaction – our highest rating in the past decade. For us, this is a signal that we are on the right track. We remain committed to providing safe, reliable and competitively priced electricity, and delivering value to our shareholder, our customers and our community.

Jim Durrell, C.M., ICD.D
Chair, Board of Directors

Bryce Conrad
President and Chief Executive Officer

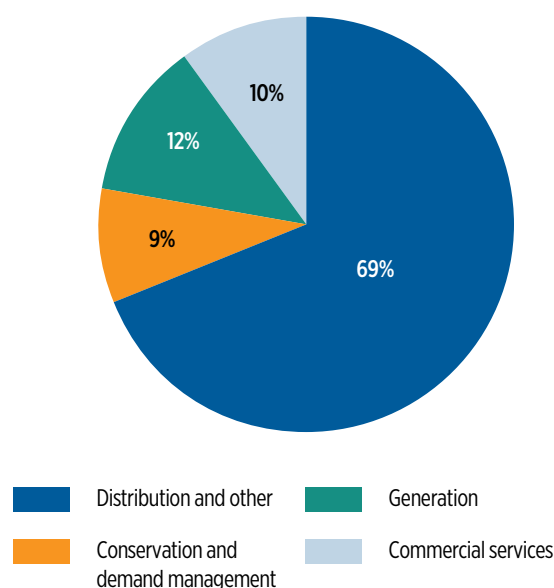
Financial Highlights

[in thousands of Canadian dollars]

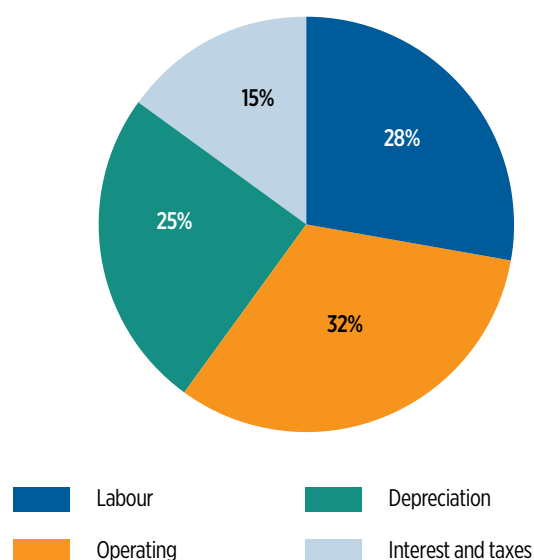
	2018	2017
Operations		
Total revenue ¹	\$ 1,132,294	\$ 1,140,187
Distribution revenue ¹	\$ 180,216	\$ 170,982
Generation revenue	\$ 32,325	\$ 22,898
Commercial services revenue	\$ 28,998	\$ 26,960
Conservation and demand management income	\$ 24,865	\$ 23,976
EBITDA ¹	\$ 141,675	\$ 118,271
Net income	\$ 42,138	\$ 35,975
Dividends	\$ (22,300)	\$ (21,900)
Balance Sheet		
Total assets and regulatory balances	\$ 1,855,616	\$ 1,732,334
Capital assets	\$ 1,573,661	\$ 1,391,356
Debentures	\$ 773,390	\$ 773,168
Shareholder's equity	\$ 462,882	\$ 438,141
Cash Flows		
Operating	\$ 138,979	\$ 91,962
Investing	\$ (182,747)	\$ (148,074)
Financing	\$ (21,900)	\$ (20,600)

¹ Pre-IFRS 14 amounts and EBITDA are non-GAAP financial measures

Revenue by Type^{1,2}



Expenses by Type^{1,2}



¹ Pre-IFRS 14

² Excludes Power Recovery and Purchased Power

Progress Against Plan

Hydro Ottawa's 2018 Annual Report is the third to report against the Company's 2016–2020 *Strategic Direction* that outlines our business strategy and financial projections for the next five years. This strategy retains the core elements of the previous strategic plan [2012–2016 Strategic Direction], while responding to an altered strategic context and reflecting important changes to the Company itself – including the scale of its renewable generation business. It also outlines a new vision for Hydro Ottawa – to be *a leading partner in a smart energy future*.

The essence of Hydro Ottawa's strategy is to put the customer at the centre of everything that we do. We believe that a sharp focus on the value we provide to our customers will generate

positive results in all areas of performance – our financial strength and business growth, our operational efficiency and effectiveness, and our contributions to the community.

Hydro Ottawa's success in the past has been achieved by focusing on four critical areas of performance – our Four Key Areas of Focus: Customer Value, Financial Strength, Organizational Effectiveness, and Corporate Citizenship. These four Key Areas of Focus and supporting strategic objectives continue to guide our activities through the current plan and form the basis of our annual reporting in the pages that follow.

As before, the area of Customer Value takes on central importance as the most important driver of our business strategy.

FOUR KEY AREAS OF FOCUS

Customer Value

STRATEGIC OBJECTIVE

We will deliver value across the entire customer experience

- By providing reliable, responsive and innovative services at competitive rates

Financial Strength

STRATEGIC OBJECTIVE

We will create sustainable growth in our business and our earnings

- By improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people

Organizational Effectiveness

STRATEGIC OBJECTIVE

We will achieve performance excellence

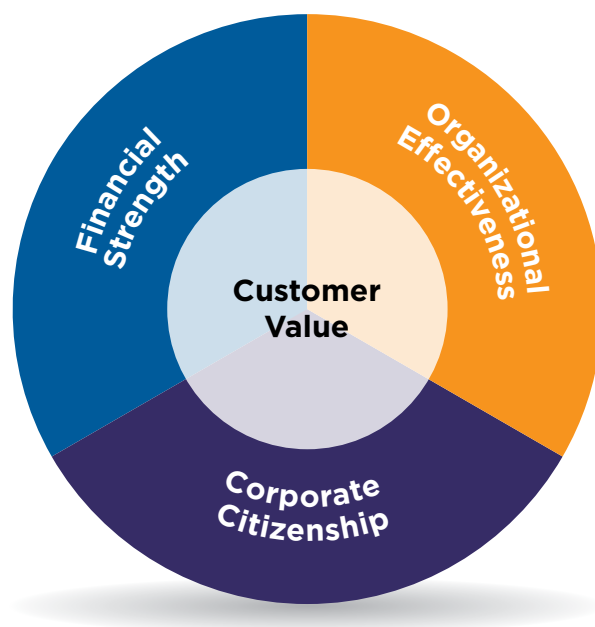
- By cultivating a culture of innovation and continuous improvement

Corporate Citizenship

STRATEGIC OBJECTIVE

We will contribute to the well-being of the community

- By acting at all times as a responsible and engaged corporate citizen



Customer Value

Strategic Objective: We will deliver value across the entire customer experience...by providing reliable, responsive and innovative services at competitive rates.

99% power restored within three days after tornadoes

\$84.7M invested to keep distribution system safe and reliable

The essence of Hydro Ottawa's business strategy is to put the customer at the centre of everything we do. In 2018, we continued to deliver on our core commitment of a reliable supply of electricity – even at a time when weather extremes are becoming increasingly routine.

Our service territory was hit by a major ice storm in April, a major wind storm in May, and then by the tornadoes of September 21, which had devastating effects on several Ottawa neighbourhoods and disrupted the power supply for 174,000 customers. Hydro Ottawa immediately moved onto an emergency-operations footing, and was able to fully restore power to all residents within five days of the tornadoes –

despite sustaining more damage to the distribution grid than during any other event since the 1998 ice storm.

While these weather events had an unavoidable impact on average outage duration during the year, we were able to moderate that impact due to improvements we have made to our physical infrastructure and our monitoring and remote-response capabilities, which have increased resilience. In early September, for example, we upgraded our Supervisory Control and Data Acquisition [SCADA] system, and were therefore better able to monitor and respond to grid impacts when the tornadoes struck just days later.



48% e-billing participation – highest in Ontario

Launched market leading smart speaker service

94% customer satisfaction rate – highest in a decade

Our investments in system renewal totaled \$84.7 million in 2018, including asset-replacement costs arising out of the extreme weather events. Consistent with both our customer-value focus and our OEB-approved capital plan, these investments targeted aging infrastructure and other imminent reliability risks. We invested a further \$40.9 million to meet growing demand and to connect new customers to the grid, and gross distribution-related capital spending reached its highest-level ever in 2018.

We also continued to advance well beyond traditional utility service models in 2018. We made it easier for customers to report outages, to stay informed through social media, and to access detailed information through our outage map. We became the first Canadian utility whose customers can access account and conservation information via their Alexa and Google home audio assistants, and launched a residential electric vehicle charging pilot project.

We also made transactions more convenient by simplifying electronic payments and equal-monthly-payment services. Nearly half of our customers now use our e-billing option.

We continued to offer services and information to support energy conservation, including various features of the Hydro Ottawa App, while also continuing to deliver a broad suite of both commercial and residential conservation and demand management programs in 2018.

We achieved a 94 percent overall customer satisfaction score, which was the highest level in the past decade. We also received favourable customer and stakeholder feedback on the effectiveness of our response to the tornadoes and other weather events.



Financial Strength

Strategic Objective: We will create sustainable growth in our business and our earnings... by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people.

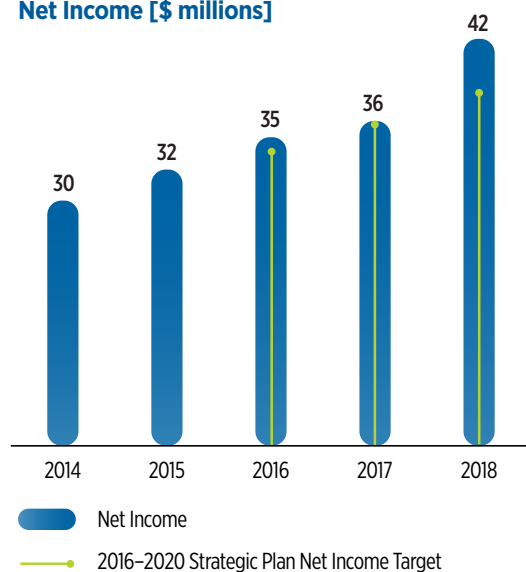
\$42.1M in net income

\$22.3M dividend to shareholder

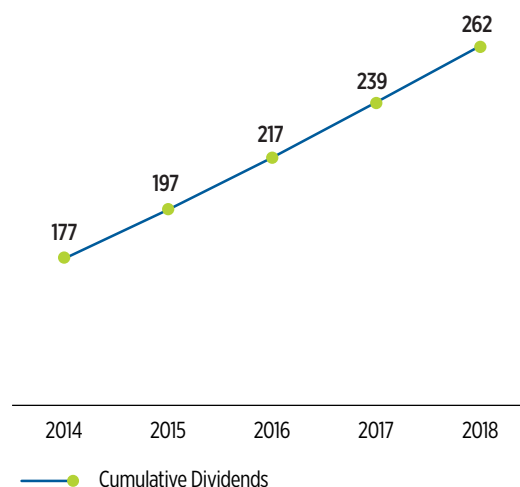
Hydro Ottawa achieved excellent financial results again in 2018. Key contributing factors included a one-time conservation and demand management [CDM] incentive payment of \$4.1 million; the first full year in operation of the new Chaudière generating station on the Ottawa River, resulting in a 52 percent [\$13.3 million] increase in generation revenues; and continued development of new business lines and revenues. Due to provincial policy changes announced in March 2019, Hydro Ottawa will not receive CDM incentive payments in future years.

Our consolidated net income rose by \$6.2 million to \$42.1 million, surpassing the commitment in our 2016-2020 Strategic Direction by 11 percent. With a consolidated return on equity of 9.4 percent, Hydro Ottawa continued to create value for its sole shareholder, the City of Ottawa. Our 2018 performance generated a dividend payment of \$22.3 million, well above the floor of \$20 million, due in large part to the CDM incentive payment. This brought cumulative dividends paid to \$262 million since 2005.

Net Income [\$ millions]



Cumulative Dividends [\$ millions]



**Return on Equity
of 9.4%**

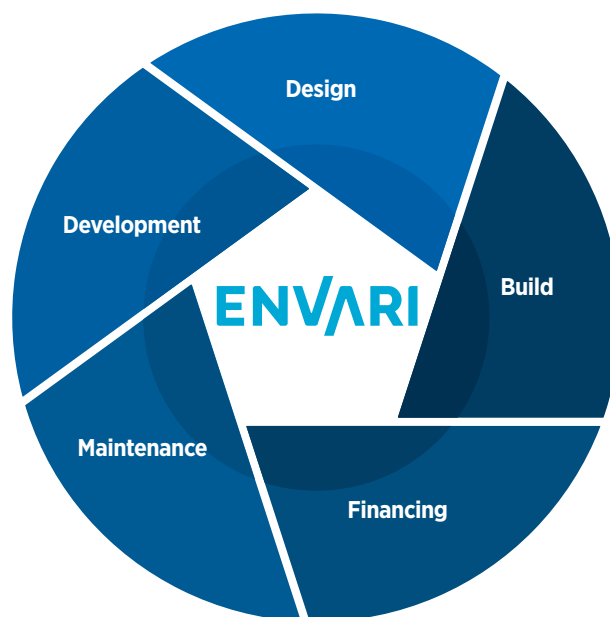
**Generation revenues
up by \$13.3M**

**Converted >60% of
Ottawa street lights
to LED**

These results were achieved despite the financial impacts of the tornadoes and other major weather events during the year; and despite the cancellation of Ontario's cap-and-trade program, which previously helped customers finance the purchase of energy-efficiency services and products. Productivity and cost containment gains were key to our financial success. In 2018, Hydro Ottawa ranked second for lowest costs per customer among large distributors in Ontario.

In July 2018, we suspended operations at two generating stations in Québec to commence significant refurbishments. Once this work is fully completed in 2020, Hydro Ottawa will sell electricity from these stations to the Province of Ontario under a 40-year contract with the IESO, helping to alleviate a forecast capacity shortage in Ottawa's downtown core.

At the end of 2018, our energy and utility-services business was separated from our generation business, and is now pursuing a growth and diversification strategy under the Enviri brand. Enviri's largest current project is the City of Ottawa streetlight conversion contract, which is almost two-thirds complete and delivering earlier and higher than projected energy savings to the City. Enviri is also exploring and developing a range of other services. To date, it has seen particularly encouraging interest in its cable testing service, which achieved significant revenue growth in 2018.



Organizational Effectiveness

Strategic Objective: We will achieve performance excellence...by cultivating a culture of innovation and continuous improvement.

Safety remained our top priority

Renewed our trades workforce with 15 new apprentices

We believe that achieving the objectives set out in our 2016-2020 Strategic Direction for enhancing customer, shareholder and community value requires an effective and constantly learning organization, with the right skills and organizational capacity to deliver on existing and new business lines. As such, in 2018 we continued to focus on three main outcomes: a safe and healthy work environment; an engaged, aligned and prepared workforce; and effective and efficient operations that enhance the customer experience.

Protection of employee and public health and safety remained our top priority, with a particular focus on employee wellness, and mindful and safe work practices. We provided an average of 20 hours of safe work practices training per employee, and more than 33 hours for employees in higher risk trades. Our Occupational, Health, Safety and Environment [OHSE] management system continued to be certified to the internationally recognized standards of OHSAS 18001 and ISO 14001.

We reached two noteworthy safety-related milestones, the first being zero lost-time injuries during our demanding emergency responses to the tornadoes and other extreme weather events during the spring and fall. And we achieved a full one-million hours worked without a new lost time injury during the year.

Like many other utilities, Hydro Ottawa faces challenging workforce demographics. But with the benefit of a proactive and long-standing Talent Management Strategy, we have been successful in getting in front of this trend and in achieving significant workforce renewal. In 2018, we had apprentices in



the pipeline in all trades required for our operations and the percentage of employees eligible to retire began to decrease. Our partnership with Algonquin College to replenish the Powerline Technician Trade remained strong, and the College recognized Hydro Ottawa with an Employer of the Year Award for our commitment to training and hiring its alumni.

Contained operating costs through productivity

Facilities renewal neared completion

Further strengthened cybersecurity

Our summer and co-op student programs continued, as did our retiree and older-worker engagement programs, and our second diversity and inclusion plan progressed well. Inaugural celebrations of International Women's Day and Lineworker Appreciation Day were part of a much broader suite of initiatives aimed at advancing workforce diversity, inclusion, engagement and appreciation.

Productivity and performance improvement remained a focal point. Significant initiatives in 2018 included new vegetation management service contracts that reduced tree trimming costs; and digitization of our distribution system design, review and

sign off processes. Technology also continued to play a key role in our efforts to enhance performance and productivity, as well as customer service. In 2018, we invested \$10.2 million in next generation technology to support customer service, operational efficiency, grid modernization and cybersecurity.

The construction phase of our Facilities Renewal Program neared completion in 2018. In 2019 we will dispose of two facilities – inherited from pre-amalgamation utilities – and relocate into modern operations centres and administrative office, which have been designed and located to match the current scale and configuration of our service territory.



Corporate Citizenship

Strategic Objective: We will contribute to the well-being of the community...by acting at all times as a responsible and engaged corporate citizen

**Raised >\$370K
through charitable
fundraising**

**Educated
>18,000 students on
electrical safety**

In 2018, Hydro Ottawa remained true to its heritage as a responsible company – one that is well-governed, open and engaged with our stakeholders, environmentally responsible, and an active contributor to community well-being.

We were highly visible to and engaged with our stakeholders, while also providing high-impact support in diverse and carefully chosen ways within our service territory. And we took steps to further reduce our own environmental footprint, while contributing to the wider transition to a greener economy and lifestyles in our service territory.

We communicated regularly in 2018 with the City of Ottawa [and its mayor and councillors] as our sole shareholder, as well as with community associations and business improvement areas, and with Ottawa residents generally. We hosted open houses to discuss our planned work projects and their community impacts, sponsored or participated in more than 400 community events, and educated more than 18,000 local students about electrical safety. And we maintained a high profile on both traditional and social media channels.





**Sponsored Special
Needs Day at the
Capital Fair**

**Named one of
Canada's Best
Diversity Employers**

**Diverted 91% of
non-hazardous waste
away from landfill**

Our Community Investment Program continued to be a leading source of targeted charitable contributions in Ottawa. We raised over \$370,000 as part of our 2018 employee driven charitable fundraising campaign, with funds directed to a five-year, \$1 million arrangement with The Ottawa Hospital to help build the Breast Health Centre as well as to the United Way, including their mental health programs.

Special Needs Day continued to be one of the year's employee volunteer highlights making it possible for children and adults with intellectual and/or physical disabilities to experience a day at the Capital Fair. We also maintained our long-standing corporate support for Christie Lake Kids, whose programming benefits economically disadvantaged youth. Numerous additional smaller scale community-partnership investments were directed primarily to youth-focused organizations, and to initiatives ranging from the Help Santa Toy Parade to the Capital Pride Community Fair.

Strong waste diversion, local purchasing, and installation of solar arrays at our new operating facilities were among the practices that reduced our own environmental footprint. In combination with the important role we play in green-energy generation and in facilitating broader electrification, this helped earn us recognition in 2018 as one of Canada's Greenest Employers for the seventh time.



We were once again pleased to have earned third-party recognition in 2018 for the quality of our performance in relation to best employer, corporate social responsibility, leading safety and customer programs, and human resources innovation. [See the inside back cover for full list.] Consistent with our ongoing focus on diversity and inclusion, we were recognized for the first time in 2018 as one of Canada's Best Diversity Employers.

Management's Discussion and Analysis

INTRODUCTION

The Management's Discussion and Analysis ['MD&A'] reviews Hydro Ottawa Holding Inc.'s operational performance and financial results, and should be read in conjunction with the audited consolidated financial statements and accompanying notes for the year ended December 31, 2018. On January 1, 2015, Hydro Ottawa Holding Inc. adopted International Financial Reporting Standards ['IFRS'] including early adoption of *IFRS 14 Regulatory Deferral Accounts* ['IFRS 14']. The accompanying consolidated

financial statements are prepared in accordance with IFRS, as issued by the International Accounting Standards Board ['IASB'], and are expressed in thousands of Canadian dollars.

The MD&A contains forward-looking statements, including, but not limited to, statements as to future operating results and plans. These statements reflect management's expectations as of the date of approval of the consolidated financial statements. The impacts of risks and uncertainties may cause actual results, performance or achievements to differ materially from those projected here.





CORE BUSINESS AND STRATEGY

Company Profile

Hydro Ottawa Holding Inc. [‘Hydro Ottawa’, ‘the Company’ or ‘the Corporation’] is 100 percent owned by the City of Ottawa.

It is a private company, registered under the *Ontario Business Corporations Act*, and overseen by an independent Board of Directors consisting of the President and Chief Executive Officer and 10 members appointed by City Council. The core businesses of the Corporation are electricity distribution, renewable energy generation, and energy and utility services. Hydro Ottawa owns and operates three primary subsidiary companies.

Hydro Ottawa Limited, the first of these subsidiaries, is a regulated electricity local distribution company [‘LDC’] operating in the City of Ottawa and the Village of Casselman. As the third-largest municipally owned electrical utility in Ontario, Hydro Ottawa Limited maintains one of the safest, most reliable and cost-effective electricity distribution systems in the province, serving approximately 335,000 residential and commercial customers across 1,116 square kilometres. As a condition of its distribution licence, the Company is required to meet conservation and demand management [‘CDM’] targets established by the Ontario Energy Board [‘OEB’]. The Company’s customer base grows by an average of one percent per year.

Energy Ottawa Inc. [‘Energy Ottawa’], the second of these subsidiaries, is the largest Ontario-based municipally owned producer of green power. Energy Ottawa owns and operates six run-of-the-river hydroelectric generation plants at Chaudière Falls near Ottawa’s core, along with the historic Ottawa River Ring Dam, and 10 other run-of-the-river facilities in Ontario

and New York. It also holds majority interests in two landfill gas-to-energy joint ventures, which produce clean, renewable energy from landfill gas at the Trail Road and Laflèche landfill sites in Ottawa and in Moose Creek, Ontario; and has 14 solar installations across the City of Ottawa. In total, Energy Ottawa has over 128 megawatts of installed green generation capacity – enough to power 107,000 homes.

Enviri Holding Inc. [‘Enviri’], the third of these subsidiaries, sells energy solutions to municipalities, to industrial and commercial clients, and to various LDCs. Enviri manages large energy transformation projects on behalf of its clients, offers a portfolio of energy efficient and environmentally friendly products and services, and provides operations and maintenance capabilities to its customer base. These activities were previously under Energy Ottawa until December 31, 2018.

For a list of the significant operating subsidiaries and joint ventures included in Hydro Ottawa’s consolidated financial results, refer to Note 1 [Description of Business and Corporate Information] in the consolidated financial statements included in this report.

Our Strategic Direction

In 2016, Hydro Ottawa issued a new strategic plan [2016–2020 Strategic Direction], outlining the Company's business strategy and financial projections for the next five years. This strategy retains the core elements of the previous strategic plan [2012–2016 Strategic Direction], while responding to an altered strategic context and reflecting important changes to the Company itself – including the scale of its renewable generation business. It also outlines a new Vision for Hydro Ottawa: to be a *leading partner in a smart energy future*.

Strategy

The essence of Hydro Ottawa's strategy is to put the customer at the centre of everything we do. Reorienting our business around the customer was the primary goal of our 2012–2016 Strategic Direction, and customer centrality continues to drive our business strategy. We believe that a sharp focus on the value we provide to our customers will generate positive results in all areas of performance – our financial strength and business growth, our operational efficiency and effectiveness, and our contributions to the well-being of our community.

A core premise of our 2016–2020 Strategic Direction is that the electricity service model is in the midst of significant transformation – taking on a more decentralized, customer-centric, technologically advanced and environmentally sustainable form. The transition to a more customer-driven and customer-centric model of electricity will present opportunities for energy providers that are able to innovate, and challenges for those that fail to adapt. Our strategy for responding to this emerging landscape involves eight core elements:

- Taking customer experience to the next level;
- Continuing to achieve strategic growth, including continued growth in our renewable energy business, evaluating opportunities to grow our electricity distribution business, and expanding the range of services we provide;
- Ensuring access to capital for growth;
- Making sure we have the right skill sets and organizational capacity to deliver on existing and new business lines;

- Continuing to enhance operational performance, including productivity and safety;
- Delivering on critical projects such as the Chaudière expansion project;
- Continuing to build public confidence and trust; and
- Being ready to embrace change and disruption in our industry.

Our aim is to be the trusted energy advisor for our customers – large and small – and our community. As the energy needs and options of our customers and our community evolve, and as signature projects and developments proceed, Hydro Ottawa will play a leading role in helping our City to transition to a smart energy future.

We will also continue to grow shareholder value, maintaining a focus on strategic business growth within our core areas of strength. Our growth agenda involves four basic components:

- **Electricity Distribution:** continuing to evaluate opportunities to increase our distribution service territory;
- **Renewable Generation:** increasing the supply of clean energy for customers and earnings for our shareholder by making smart investments in renewable generation;
- **Energy Services:** providing innovative solutions to help consumers, businesses and communities meet their energy objectives, through energy management, conservation, efficient street lighting, energy generation, energy storage, district energy, and demand response opportunities, among others; and
- **Utility Services:** leveraging our assets and expertise to help other utilities to enhance the value they provide, creating new revenue streams and economies of scale.

Taken as a whole, we believe this strategy for the Company's future presents a balanced program for solid performance, adaptation to a changing business environment, and sustainable and profitable business growth.

Mission, Vision & Guiding Principles

OUR MISSION – *To create long-term value for our shareholder, benefitting our customers and the communities we serve*

Hydro Ottawa is both a community asset and an investment for our shareholder, the City of Ottawa. As a community asset, our purpose is to provide efficient and reliable services and a first-class customer experience to our customers, and to continue to be a strong strategic partner with the City, helping to deliver on its economic development and environmental agendas. As an investment, our purpose is to provide stable, reliable and growing returns, and to increase shareholder value both in the short- and long-term.

OUR VISION – *Hydro Ottawa – a leading partner in a smart energy future*

OUR GUIDING PRINCIPLES

Hydro Ottawa is committed to creating long-term value in a manner that will withstand the test of public scrutiny and inspire confidence and trust. To that end, we strive to achieve excellent operating and financial results while abiding by professional standards of conduct. We are guided not only by legal obligations, but also by best governance and business practices, and standards established by independent agencies. These expectations provide the foundation for our commitment to all of our stakeholders, and are reflected in our organizational values, our Code of Business Conduct, and our operating policies and procedures.

OUR ORGANIZATIONAL VALUES

At Hydro Ottawa we are committed to an organizational environment that fosters and demonstrates ethical business conduct at all levels and reflects our shared values of teamwork, integrity, excellence and service. Every employee must lead by example in this endeavour.

OUR COMMITMENTS TO OUR STAKEHOLDERS

Hydro Ottawa takes into account the interests of all our stakeholders including employees, customers, suppliers, our shareholder, and the communities and environment in which we operate.

Employees

The quality of our workforce is our strength and we will strive to hire and retain the best-qualified people available and maximize their opportunities for success. We are committed to maintaining a safe, secure and healthy work environment enriched by diversity and characterized by open communication, trust, and fair treatment.

Customers

Our continued success depends on the quality of our customer interactions, and we are committed to delivering value across the entire customer experience. We are honest and fair in our relationships with our customers, and provide reliable, responsive and innovative products and services in compliance with legislated rights and standards for access, safety, health and environmental protection.

Suppliers and Contractors

We are honest and fair in our relationships with our suppliers and contractors and purchase equipment, supplies and services on the basis of merit, with a preference for local procurement. We pay suppliers and contractors in accordance with agreed terms, encourage them to adopt responsible business practices, and require them to adhere to our health, safety and environment standards when working for Hydro Ottawa.

Community and the Environment

We are committed to being a responsible corporate citizen and will contribute to making the communities in which we operate better places to live and do business. We are sensitive to the community's needs, and dedicated to protecting and preserving the environment where we operate.

Shareholder and Other Suppliers of Finance

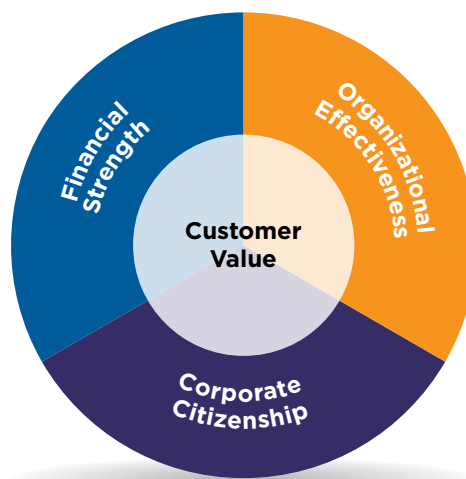
We are financially accountable to our shareholder and to the institutions that underwrite our operations, and communicate to them all matters material to our organization. We protect our shareholder's investment, and manage risks effectively. We communicate to our shareholder all matters that are material to an understanding of our corporate governance.

Four Key Areas of Focus

Hydro Ottawa's success in the past has been achieved by focusing on four critical areas of performance – our four Key Areas of Focus. In each of these areas, we have set one overarching objective:

- **CUSTOMER VALUE:** We will deliver value across the entire customer experience by providing reliable, responsive and innovative services at competitive rates;
- **FINANCIAL STRENGTH:** We will create sustainable growth in our business and our earnings by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people;
- **ORGANIZATIONAL EFFECTIVENESS:** We will achieve performance excellence by cultivating a culture of innovation and continuous improvement; and
- **CORPORATE CITIZENSHIP:** We will contribute to the well-being of the community by acting at all times as a responsible and engaged corporate citizen.

These four areas of focus and strategic objectives will continue to guide our activities through the current plan. As before, the area of Customer Value takes on central importance as the most important driver of our business strategy.



Electricity Industry Overview

Within the broader electricity sector, different entities are responsible for generating electricity, transmitting it, and delivering it to customers' homes and businesses; as well as for directing grid and market operations, and overseeing and regulating the system as a whole. These entities are different in the three markets where Hydro Ottawa operates: Ontario, Québec and New York.

Electricity Generation

Electricity is created at generating stations — hydroelectric, nuclear, fossil-fueled, wind, biomass and biogas, and solar – as well as at small-scale “distributed energy” installations [mainly renewables] at or near end-use locations. Facilities such as nuclear and large hydroelectric stations operate continuously, while wind and solar operate intermittently, and others such as natural gas stations can start up or slow down as required to follow demand fluctuations. Hydro Ottawa, through its subsidiary, Energy Ottawa, has a fleet of hydroelectric, landfill gas-to-energy and solar generating stations, and is the largest Ontario-based municipally owned producer of green power.

Electricity Transmission

Electricity is transmitted from generating stations to large industrial customers and local distribution companies through a high-voltage network of transformer stations, transmission towers and wires. In Ontario, the transmission network is primarily operated by Hydro One, while in Québec it is operated by Hydro-Québec TransÉnergie. In New York State, the transmission system is operated by a number of private and public entities such as National Grid and the New York Power Authority, which are collectively referred to as New York Transmission Owners.

Electricity Distribution

After transmission, electricity in Ontario is distributed at lower voltages to homes, businesses, hospitals, schools, factories, and farms by LDCs such as Hydro Ottawa Limited. LDCs deal directly with electricity customers, maintain their communities' systems of electricity wires, and create and implement electricity conservation programs for customers. LDCs are the primary electricity-billing agent collecting all electricity charges. Hydro

Ottawa Limited is a municipally owned LDC that operates in the City of Ottawa and the Village of Casselman.

While it is always an LDC that delivers electricity through its distribution lines to a home or business, electricity customers have the choice of buying their electricity from their local LDC or an electricity retailer. Most Ontario customers choose to buy from their LDC. Hydro Ottawa is not engaged in electricity distribution in markets outside Ontario.

System Operators

The Independent Electricity System Operator ['IESO'] connects all participants in Ontario's power system — generators that produce electricity, transmitters that send it across the province, retailers that buy and sell it, industries that use it in large quantities, and LDCs that deliver it to homes and businesses. The IESO forecasts electricity demand throughout the province in continuously updated five-minute intervals and collects offers from generators to provide the required amount. Customers buying directly from the provincial market can therefore see prices fluctuate based on current supply and demand, and can respond accordingly. The IESO monitors the system, identifies what is required to maintain reliability in the future, and publishes its findings in regular reports. It also coordinates emergency preparedness for the province's electricity system.

The New York Independent System Operator ['NYISO'] is at the heart of New York's electricity system, monitoring the grid and power infrastructure, administering and monitoring the wholesale electricity markets, and planning for the state's energy future. The NYISO was created to provide fair and open access to the electrical grid. New York is divided into 11 electricity zones and, within each, the NYISO is responsible for scheduling generation and load, contracting for the services necessary to maintain grid reliability, and scheduling imports and exports. The NYISO is also responsible for publishing current demand or load in real time. Hydro Ottawa's New York State assets are located in the NYISO Zone E – Mohawk Valley.

Hydro-Québec operates the entire electricity system in Québec through various divisions; the division that performs the system operator role is Hydro-Québec TransÉnergie.

Regulatory Framework

In Ontario, the Ministry of Energy ['the Ministry'] sets the overall policy for the energy sector, guided by relevant laws and regulations. The Ministry oversees the IESO and the Ontario Energy Board [OEB], which regulate the energy sector as set out primarily in three statutes — the *Ontario Energy Board Act, 1998* ['OEB Act']; the *Electricity Act, 1998*; and the *Energy Consumer Protection Act, 2010*. The OEB Act establishes the authority of the OEB to approve and fix all rates for the transmission and distribution of electricity in Ontario, and to set standards of service, conduct and reporting that must be adhered to as a condition of being licensed.

In the United States, electrical utilities and independent power producers are regulated at both the federal and state levels. Under the *Federal Power Act*, the Federal Energy Regulatory Commission ['FERC'], an independent agency within the U.S. Department of Energy, regulates the transmission and wholesale sale of electricity in interstate commerce. Unless otherwise exempt, any entity that owns or operates facilities used for the wholesale transmission or sale of electricity in interstate commerce is a public utility subject to FERC's jurisdiction. Also under the oversight of FERC are regional system operators like NYISO, as well as privately-owned hydroelectric stations, whose operating licenses are issued by FERC.

In Québec, the electricity sector is regulated by La Régie de l'énergie ['the Régie'], an independent agency. The *Act Respecting the Régie de l'énergie* grants the Régie exclusive authority to determine or modify the rates and conditions under which electricity is transmitted and distributed by Hydro-Québec.

Rates

Hydro Ottawa Limited recovers its costs from customers through electricity distribution rates. These include the costs to:

- design, build, and maintain overhead and underground distribution lines, poles, stations and local transformers;
- operate local distribution systems, including smart meters; and
- provide customer service and emergency response.

Costs and rates vary from one distributor to another, depending on factors such as the age and condition of assets, geographic terrain and distances served, population density and growth, and the proportion of residential to commercial and industrial consumers.

Hydro Ottawa Limited's distribution charge represents just over 20 percent of a customer's total electricity bill. Hydro Ottawa Limited collects the whole amount, but keeps only this portion. The remainder is passed on, without mark-up, to regulators, the provincial government, and the other companies responsible for generating and transmitting electricity.

Hydro Ottawa Limited's distribution rates are set by the OEB, based on rate-change applications. For more information on the rate-setting framework and Hydro Ottawa Limited's rates, see Note 3[d] [Significant Accounting Policies - Regulation] to the consolidated financial statements included in this report.

Energy Ottawa's hydroelectric generation rates are set through facility-specific contracts. For hydroelectric facilities delivering power to Ontario and Québec, Energy Ottawa operates under agreements with the IESO and Hydro-Québec respectively, whereby a "base contractual rate" is determined at the outset of each agreement. In Ontario, an indexing factor is applied on an annual basis until the completion of the contract term; while in Québec the rate is locked in for the first two years after which it fluctuates based on applicable market rates. In July 2018, the Corporation suspended operations at its two generating stations in Québec in order to commence significant refurbishments – once this is completed in 2020, the Corporation will sell its electricity from these stations to the Province of Ontario under a contract with the IESO. For hydroelectric stations located in upstate New York, Energy Ottawa's power purchase agreements – all of which are with the Niagara Mohawk Power Corporation, a subsidiary of National Grid plc – are currently market-based. As a result, the rates that determine generation revenues from these stations fluctuate.

CAPABILITY TO DELIVER RESULTS

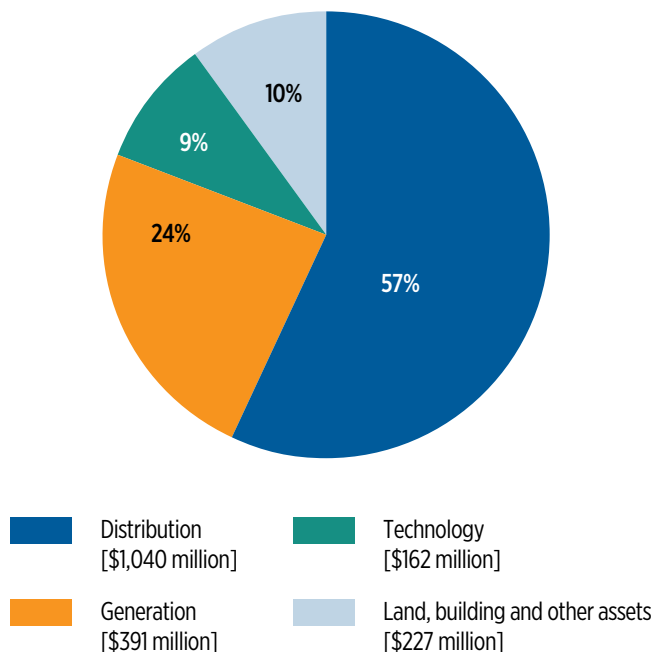
Hydro Ottawa's capability to achieve the objectives set out in its strategic direction is a function of its tangible and intangible assets, expertise, systems, and capital resources across the following areas.

Assets

Hydro Ottawa's gross asset base is \$1.82 billion, with significant ongoing investments in distribution and generation infrastructure and technology systems. Like all utilities, Hydro Ottawa is affected by the reality of aging infrastructure, and continues to manage this through increased infrastructure investments and a detailed Distribution System Plan to target spending where it will have the most benefit. In 2018, the Corporation invested \$85 million to maintain its distribution system and a further \$41 million to expand the system to meet customer needs [see 'Investing Activities' for more details]. These investments are having the desired impact, with electricity service reliability remaining strong system-wide despite the occurrence of major-weather-event days in 2018. Hydro Ottawa has also recognized the need to replace core work and operational centres that are at the end of their useful life. In 2018, work progressed on its facilities renewal project, including construction and preparations for the move in 2019. Hydro Ottawa also continues to grow its renewable generation infrastructure with \$49 million invested in 2018.

- **Electricity Distribution Assets** – For more than 100 years, Hydro Ottawa and its predecessor companies have delivered a reliable supply of electricity to homes and businesses.
 - › Service Area – 1,116 square kilometers
 - › Circuitry – 5,767 kilometers
 - › Substations – 88
 - › Transformers – 46,536
 - › Poles – 48,514
- **Renewable Generation Assets** – Largest Ontario-based municipally owned producer of green power with 128 megawatts of installed generation capacity, enough to power 107,000 homes.
 - › Run-of-the-River Hydroelectric Generating Stations – 16
 - › Landfill Gas-to-Energy Plants – 2
 - › Solar Installations – 14

Gross Tangible and Intangible Assets



Workforce

A highly skilled, properly trained and knowledgeable workforce – and a safe and healthy work environment – are essential to Hydro Ottawa's continued success. The company's strategic objectives will only be achieved through the efforts of an effective and constantly learning organization, with the right skill sets to deliver on existing and new business lines.

Hydro Ottawa employed approximately 750 people at the end of 2018 across the enterprise, with Hydro Ottawa Limited accounting for 87 percent of this workforce.

Like many other utilities, Hydro Ottawa continues to face challenging workforce demographics that require a concerted response. The Company has put in place a comprehensive and integrated talent management strategy. It is anticipating and meeting talent needs through planning, talent attraction and acquisition, effective deployment of resources, and performance management and development. More specifically this includes:

- **Training:** Our in-house apprenticeship and engineering internship programs continued to grow in 2018 with 15 new apprentices hired [bringing the total to 45, or 25 percent of our trades workforce]. Seven apprentices reached journeyman status in 2018.
- **Succession:** Succession planning and management programs ensure that there are qualified employees in the talent pipeline for key positions.
- **Knowledge Management & Transfer:** A proactive approach for key positions includes an older worker and retiree engagement strategy to help seamlessly transition work from our veteran workforce to the next generation.
- **Diversity & Inclusion:** A plan fosters an inclusive culture that leverages diversity and enhances employee engagement and innovation.
- **Partnerships:** These include, most notably, collaborations with Algonquin College to deliver the College's Powerline Technician programs in the eastern Ontario region, and with Carleton University's Sustainable and Renewable Energy Engineering Department for the establishment of a smart grid laboratory. The latter fosters innovative research on electrical power systems and promotes the training of engineers in the smart grid environment.

Employee compensation programs continued to support a high-performance culture, and include market-driven and performance-based components to attract and retain key employees.

As our business changes, so too does the profile of our workforce. It is increasingly diverse in age, skills, background, belief, ethnicity, sexual orientation, and in many other ways. We aim to create a thriving and respectful workplace for all.

A fundamental component of Hydro Ottawa's commitment to operating efficiently and effectively is the very high priority we place on protecting the health and safety of our employees and our community. Hydro Ottawa has established an integrated health, safety and environment management system that has maintained certification to Occupational Health and Safety Assessment Series 18001, and to International Organization for Standardization 14001, since November 2007.

Systems and Processes

Hydro Ottawa has made significant investments in technology systems to enhance the Company's effectiveness. These include customer information and billing systems, advanced metering, and information and operational technologies such as geographic information systems, system control, outage management, and mobile workforce management systems. We take the security of our critical infrastructure against cyber threats seriously, and collaborate proactively with government, regulators and private sector partners across North America to manage this risk. And our technology decisions continue to be based on three basic criteria: enhancing service to our customers; creating efficiencies that will increase our competitiveness; and improving functionality to be more agile and resilient in the face of industry disruption.

Hydro Ottawa is also focused on maximizing the efficiency and effectiveness of our operations by optimizing productivity at every opportunity.

Examples of initiatives undertaken in 2018 include:

- implemented a new SCADA [Supervisory Control and Data Acquisition] System providing enhanced visibility for system control personnel, field crews and management into the state of the electrical grid;

- expanded outage reporting to enable customers to report a power outage via the Hydro Ottawa MyAccount [web portal] and our mobile app;
- continued to digitize processes and to reduce overall paper footprint by leveraging various technologies such as Blue Beam and DocuSign; and
- became the first utility in Canada to launch a smart audio skill to allow customer inquiries and conservation through Alexa and Google Home devices.

Capital Resources

Liquidity and Capital Resources

The Corporation's primary sources of liquidity and capital resources are operating activities, banking facilities, and proceeds from bond issuances as and when required. Liquidity and capital resource requirements are primarily for maintenance of the Hydro Ottawa Limited electricity distribution system; investments in generation assets; and cost of power, interest expense, and prudential requirements.

On August 10, 2018, the Corporation renewed its credit facility for \$340 million. The Corporation may use up to \$190 million of the facility for general operating requirements and annual capital expenditures. The remaining \$150 million provides short-term bridge financing for large capital projects and acquisitions.

Capital expenditure requirements in excess of the credit facility, if any, will be funded through future bond issuances. The utility sector continues to be a very attractive investment in the capital markets with strong demand across all bond tenures. This provides the Corporation access to significant market capacity to support its ongoing investment requirements. The Corporation's existing corporate bond profile is very strong with a weighted average maturity of 19 years at an average weighted cost of 3.49 percent. A \$204 million, 40-year non-recourse project bond was issued in 2016 for the hydroelectric generation expansion at Chaudière Falls at a rate of 4.08 percent. For additional details regarding the Corporation's sources of liquidity and capital resources, see Notes 13, 17 and 18 to the consolidated financial statements.



Credit Ratings

On July 31, 2018, Dominion Bond Rating Service Inc. ['DBRS'] reaffirmed Hydro Ottawa's rating at 'A' with a stable trend during the year. While Hydro Ottawa's portfolio of generation assets have long-term power purchase agreements with creditworthy counterparties, DBRS noted that Hydro Ottawa's business risk profile may be negatively affected if earnings from the non-regulated segment exceed 20 percent. On November 7, 2018, Standard & Poor's ['S&P'] confirmed its rating at 'BBB+' with a stable outlook. S&P noted that Hydro Ottawa continues to have an excellent business risk profile due to its operation under a transparent, consistent, and predictable regulatory framework for electricity distribution; its large and diverse customer base; and the quality of its government-backed power purchase agreements for the majority of the generation assets, which provide steady, predictable and stable cash flows.

RESULTS – PROGRESS AGAINST PLAN

To ensure Hydro Ottawa makes steady progress towards achieving the corporate strategy set out in our 2016–2020 Strategic Direction, the Company has set enterprise-wide strategic

objectives in each of its four key areas of focus, and established Board-approved performance goals. The table below summarizes performance in relation to its goals for 2018.

KEY AREAS OF FOCUS	ENTERPRISE STRATEGIC OBJECTIVES	2018 PERFORMANCE GOALS	2018 PERFORMANCE HIGHLIGHTS
CUSTOMER VALUE	We will deliver value across the entire customer experience <i>by providing reliable, responsive and innovative services at competitive rates</i>	<p>Assist customers in managing their energy consumption and electricity costs</p> <p>Deliver on customer expectations for service quality and responsiveness</p> <p>Maintain overall distribution system reliability</p>	<ul style="list-style-type: none"> Reliability remained strong excluding three major weather events – an ice storm [April], a wind storm [May] and tornadoes [September] that severely impacted our distribution system – the tornadoes more so than any other event in the last 20 years Invested \$84.7M to keep our distribution system safe and reliable Achieved 94% customer satisfaction rate, and accolades for our response and customer service during the tornadoes Ranked second for operating efficiency [lowest costs per customer] among large distributors in Ontario Expanded outage reporting to include customer reporting via the web and our mobile App Achieved highest e-billing participation rate among Ontario LDCs [48% of customers], saving \$1.6M per year Became the first utility in Canada to enable customer inquiries and conservation through Alexa and Google Home devices
FINANCIAL STRENGTH	We will create sustainable growth in our business and our earnings <i>by improving productivity and pursuing business growth opportunities that leverage our strengths – our core capabilities, our assets and our people</i>	<p>Grow revenues from new sources</p> <p>Enhance / protect revenues from existing business lines</p>	<ul style="list-style-type: none"> Achieved consolidated net income of \$42.1M, surpassing the 2016–2020 Strategic Direction commitment by \$4.1M; attributable in large part to a mid-term incentive of \$4.1M for successful Conservation and Demand Management efforts On track for completion in 2020 of remaining refurbishments at our Chaudière Falls generating stations in Quebec. Once operational, these stations will sell power under 40-year agreements into the Ontario grid alleviating the forecast shortage in Ottawa's downtown core Continued to diversify our revenue streams with the launch of the Enviri brand in 2018 <ul style="list-style-type: none"> Converted 14,260 City of Ottawa street lights to LED for a cumulative total of 35,787 – over 60% savings in kWh Completed energy retrofit projects for industrial and commercial clients Increased revenues and expanded customer base for Cable Q [a subsidiary of Enviri that offers non-destructive cable testing]

KEY AREAS OF FOCUS	ENTERPRISE STRATEGIC OBJECTIVES	2018 PERFORMANCE GOALS	2018 PERFORMANCE HIGHLIGHTS
ORGANIZATIONAL EFFECTIVENESS	We will achieve performance excellence <i>by cultivating a culture of innovation and continuous improvement</i>	<p>Continue to enhance operational performance and productivity</p> <p>Maintain leading health and safety record</p> <p>Enhance organizational and employee capability</p>	<ul style="list-style-type: none"> • Maintained safety as our top priority, providing an average of 20 hours of safe work practices training for all employees, and reached one million hours worked with no new lost time injury • Continued our focus on productivity and continuous improvement • Invested \$10.2M in next-generation technology to support customer service, operational efficiency, grid modernization, and cybersecurity • Maintained certifications for our Occupational Health, Safety and Environment Management System to internationally recognized standards • Advanced the final construction stages of the facilities renewal project and prepared for occupancy in 2019 • Continued to renew our workforce through apprentice and journey person hiring [without increasing total positions], and through implementation of comprehensive talent management programs
CORPORATE CITIZENSHIP	We will contribute to the well-being of the community <i>by acting at all times as a responsible and engaged corporate citizen</i>	<p>Enhance our brand image in the community and the industry</p> <p>Continue to improve our environmental performance and reduce our impact on the environment</p>	<ul style="list-style-type: none"> • Supported our communities through employee volunteer efforts, our Community Investment Program, and local delivery of provincial financial assistance programs • Raised over \$370K as part of our 2018 Employee Charitable Fundraising campaign • Increased our engagement with the community: <ul style="list-style-type: none"> › Attended more than 400 community events › Educated almost 18,000 students [K-12] about electricity safety and conservation and renewable energy › Hosted nine Open Houses for planned work › Increased social media engagements by 344%, and grew followers across all platforms [Twitter, Facebook and LinkedIn] • Continued our participation in the North Atlantic Mutual Assistance Group [NAMAG], which facilitates not-for-profit assistance among utilities during times of crisis • Diverted more than 91% of our non-hazardous solid and liquid waste away from landfill • Received 13 awards for performance excellence, including: <ul style="list-style-type: none"> › Canada's Best Diversity Employers [1st year] › Canada's Top Employer's for Young People [5th year] › One of the National Capital Region's Top Employers [10th year] and › Chartwell Best Practices Award for Outage Communications

FINANCIAL RESULTS

The selected consolidated financial results of the Corporation presented below should be viewed in conjunction with the audited consolidated financial statements and accompanying notes for the year ended December 31, 2018.

Consolidated Statement of Income [Summary]

With the adoption of IFRS in 2015 – including the early adoption of IFRS 14 – several of the Corporation's line items in its audited consolidated statement of income are subject to high volatility. Specifically, IFRS 14 requires a one-line separate presentation of the net movement within the Corporation's regulatory deferral accounts related to income [i.e. the debit and credit balances, net of taxes] within its consolidated statement of

income. This net movement of regulatory balances primarily arises when there is a timing difference between the cost of power purchased and the cost of power recovered. This difference is recorded as a settlement variance, representing future amounts to be recovered from or refunded to customers through future billing rates approved by the OEB. Consequently, the Corporation's power recovery and purchased power line items can be significantly impacted by these timing differences. For the purposes of the analysis and interpretation of financial variances presented below, management has identified and excluded impacts resulting from the adoption of IFRS 14, and used pre-IFRS 14 results as the basis for its discussion unless otherwise noted. Management believes this more accurately represents the true financial performance of the Corporation, given its rate-regulated environment as prescribed by the OEB.

[in thousands of Canadian dollars]

	2018	IFRS 14 Impact	2018 (Pre- IFRS 14) ⁽¹⁾	2017	IFRS 14 Impact	2017 (Pre- IFRS 14) ⁽¹⁾	Change (Pre- IFRS 14) ⁽¹⁾
Revenue and other income							
Power recovery	857,383	(5,434)	851,949	896,528	(10,849)	885,679	(33,730)
Distribution	181,050	(834)	180,216	171,400	(418)	170,982	9,234
Generation	32,325	-	32,325	22,898	-	22,898	9,427
Commercial services	28,998	-	28,998	26,960	-	26,960	2,038
Conservation and demand management	24,865	-	24,865	23,976	-	23,976	889
Net gain from insurance proceeds	6,865	-	6,865	2,939	-	2,939	3,926
Other	7,076	-	7,076	6,753	-	6,753	323
	1,138,562	(6,268)	1,132,294	1,151,454	(11,267)	1,140,187	(7,893)
Expenses							
Purchased power	857,877	(12,493)	845,384	908,649	(25,131)	883,518	(38,134)
Operating costs	145,694	162	145,856	139,797	(307)	139,490	6,366
Depreciation and amortization	62,180	-	62,180	54,800	-	54,800	7,380
	1,065,751	(12,331)	1,053,420	1,103,246	(25,438)	1,077,808	(24,388)
Income before undernoted items	72,811	6,063	78,874	48,208	14,171	62,379	16,495
Financing costs, interest income and taxes	45,986	(8,629)	37,357	36,838	(9,342)	27,496	9,861
Share of profit from joint ventures	(621)	-	(621)	(1,092)	-	(1,092)	471
	45,365	(8,629)	36,736	35,746	(9,342)	26,404	10,332
Net income	27,446	14,692	42,138	12,462	23,513	35,975	6,163
Net movements in regulatory balances, net of tax	14,692	(14,692)	-	23,513	(23,513)	-	-
Net income after net movements in regulatory balances	42,138	-	42,138	35,975	-	35,975	6,163

(1) Non-GAAP financial measure

Net Income

Net income increased by approximately \$6.2 million or 17 percent in 2018. This increase was primarily due to a \$9.2 million increase in distribution sales, an \$11.5 million increase in generation and commercial services revenue, the realization of a \$4.1 million CDM mid-term incentive, and continuing recognition of insurance proceeds for lost revenue of \$3.9 million. The increase in net income is further supported by a \$4.4 million decrease in purchased power costs [net of power recovery]. These positive variances were partially offset by increases in operating costs excluding CDM costs of \$9.7 million, in depreciation and amortization of \$7.4 million, and in financing costs [net of interest income] and taxes of \$9.8 million.

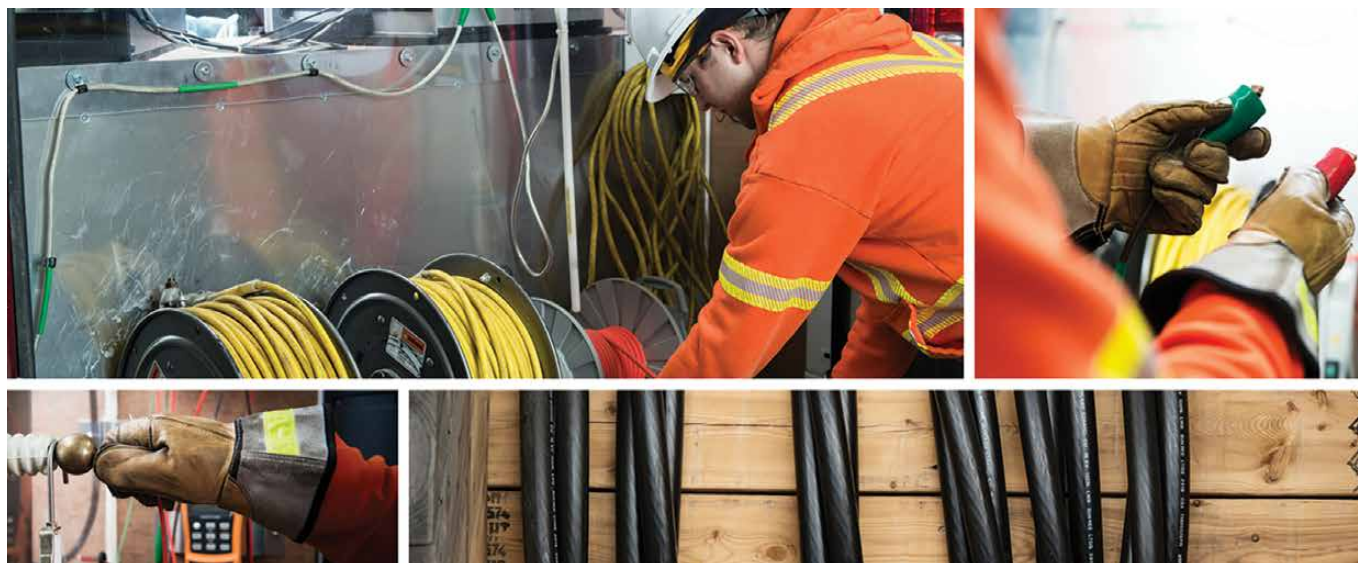
Revenue and Other Income

Revenue and other income are earned from electricity distribution, renewable energy generation, energy management and utility services, as well as from CDM programs and sundry activities. In 2018, Hydro Ottawa's total revenue amounted to approximately \$1.1 billion, which is on par with 2017.

The largest component of Hydro Ottawa's total revenue is the cost of power recovered from customers through provincially established rates. The cost of power is a flow-through amount, which poses limited risk to Hydro Ottawa's financial

performance. However, variances arise between the cost of power purchased and the cost of power recovered, due to timing differences in invoicing from the IESO for the former, and receipt of payment from customers for the latter. This difference is recorded as a settlement variance. Hydro Ottawa Limited's power recovery revenue decreased by \$33.7 million, mainly due to decreased global adjustment rates included in purchased power costs.

Distribution sales are recorded based on OEB-approved distribution rates, set at a level intended to recover the costs incurred by Hydro Ottawa Limited in delivering electricity to customers, and they include revenue related to the collection of OEB-approved rate riders. 2018 marks the third year of rates approved under Hydro Ottawa Limited's 2016-2020 custom incentive rate application. Distribution sales revenue increased \$9.2 million or five percent from 2017 largely due to higher 2018 electricity distribution rates and higher electricity consumption resulting from warmer weather relative to 2017. The Ontario Fair Hydro Plan does not have any effect on Hydro Ottawa's distribution sales.



Energy Ottawa's generation revenues grew by \$9.4 million in 2018. The increase was largely due to the expanded Chaudière facility, which commenced commercial operations on August 18, 2017. Despite the fact that one of its four generating units was out-of-service throughout 2018 – due to a manufacturer's defect and resulting mechanical failure upon start up in 2017 – production exceeded budgeted expectations. The affected unit is expected to be in service in 2019. The Corporation continues to receive compensation from its insurers to mitigate lost revenues from this unit. In July 2018, the Corporation suspended operations at its two generating stations in Québec [acquired from Hydro Québec in 2016 and Domtar in 2012] in order to commence significant refurbishments. Once this is completed in 2020, the Corporation will sell its electricity from these stations to the Province of Ontario under a 40-year Hydroelectric Standard Offer Program [Municipal Steam] contract with the IESO.

In 2018, commercial services revenue increased by \$2.0 million largely due to service work related to distribution operations. During the year, the Ontario government repealed the province's cap-and-trade program – which funded rebates for energy-efficient renovations and other initiatives – impacting the sales of energy services and infrastructure products to external clients, and limiting other commercial services revenue. The City of Ottawa street light conversion project, through which a cumulative total of 35,787 LED streetlights have been installed since 2016, progressed as planned. New endeavors gained momentum, including non-destructive cable testing services provided through an exclusive license with the National Research Council of Canada. The CDM program successfully achieved its mid-term conservation target triggering an incentive payment of \$4.1 million to the Corporation from the IESO.

In 2018, the Corporation recognized a net gain of \$6.9 million from insurance proceeds. The gain related to lost-revenue compensation resulting from the mechanical failure of a unit at the expanded Chaudière facility that occurred in August 2017. In 2017, the Corporation recognized \$1.6 million in lost revenue compensation from the mechanical failure, and a further \$1.3 million relating to business interruption and property

damages arising from the shutdown of the facilities at Chaudière Falls, Rideau Falls and Kingston Mills due to a once-in-one-hundred-year flood event, for a total net gain from insurance proceeds of \$2.9 million.

Expenses

Purchased Power and Operating Costs

Purchased power represents the cost of electricity delivered to customers within Hydro Ottawa Limited's distribution service territory. These costs consist of the commodity, wholesale market service charges, transmission charges and the global adjustment. The cost of purchased power decreased by \$38.1 million in 2018, mainly due to decreased global adjustment rates.

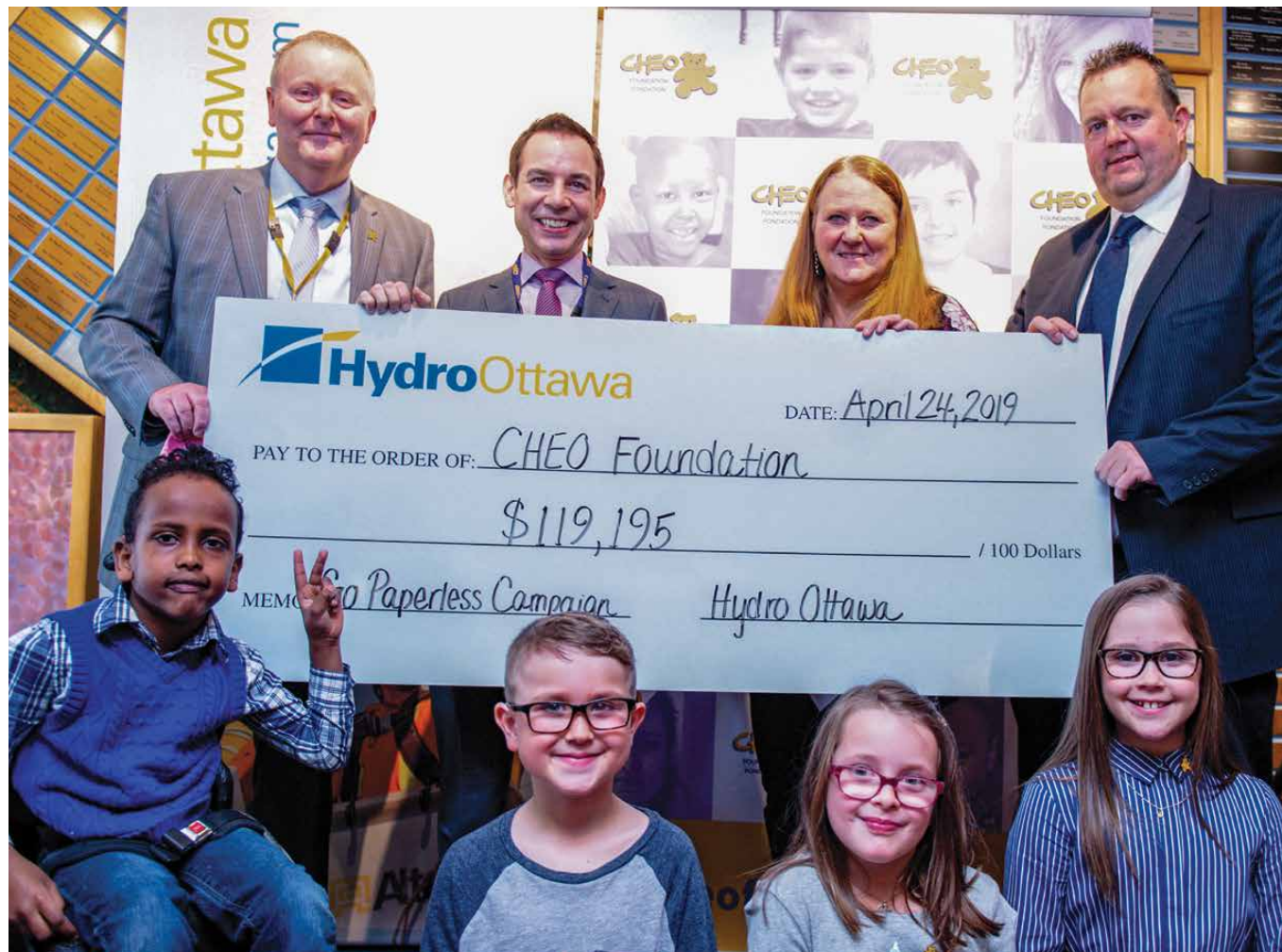
Operating costs in 2018 of \$145.9 million were up by \$6.4 million due in part to an increase in costs arising from a full year's operation at the newly expanded Chaudière facility. In addition, there were operating expenses related to emergency power restoration due to three major weather events in 2018, including most significantly the tornadoes that touched down in the City of Ottawa in September 2018.

Depreciation and Amortization

Depreciation and amortization on Hydro Ottawa's property, plant and equipment, and intangible assets increased in 2018 by \$7.4 million primarily due to the ongoing investment in the Corporation's electricity distribution infrastructure and the expansion of its generation assets.

Share of Profit from Joint Ventures

Share of profit from joint ventures represents the Corporation's share of net income from the continuing operations of Moose Creek Energy LP [50.05 percent] and of PowerTrail Inc. [60.00 percent]. In 2018, the Corporation entered into a partnership with Windmill Dream Limited Partnership to form Zibi Community Utility LP [50.00 percent] – established to build, own and operate a utility for the Zibi development in downtown Ottawa and Gatineau. For more information regarding the Corporation's joint ventures, see Note 10 to the consolidated financial statements.



Financing Costs [net of Interest Income] and Taxes

Financing costs [net of interest income] increased by \$6.8 million due to borrowings to finance general operating requirements and annual capital expenditures, and the recognition of interest costs related to the Chaudière Falls expansion project, which had been capitalized during the construction phase.

The Corporation's effective tax rate slightly decreased from 29.15 percent in 2017, to 28.92 percent in 2018, as a result of permanent and temporary differences between the accounting treatment and tax basis of assets and liabilities that arose during the year. The \$3.1 million increase in income tax expense is largely the result of an increase in pre-tax income and taxable income. For more information regarding income taxes, see Note 24 to the consolidated financial statements.

Net Movement in Regulatory Balances [Net of Tax]

In accordance with IFRS 14, the Corporation has separately presented the net movement in regulatory balances in the consolidated statements of income and comprehensive income. The changes in the regulatory debit and credit balances for the year [\$9.2 million and \$4.8 million respectively] on the consolidated balance sheet, equal the net movement in regulatory balances, net of tax, on the consolidated statements of income and comprehensive income [increase of \$14.7 million and a decrease of \$0.7 million respectively]. The impact of the IFRS 14 adjustments of \$14.7 million is shown on the Consolidated Statement of Income [Summary]. As Hydro Ottawa Limited passes on the benefit of deferred income taxes through annual distribution rate adjustments approved by the OEB, it records a regulatory deferral account credit [or debit] balance for the amounts of deferred income taxes expected to be refunded to [or recovered from] customers in future rates.

Consolidated Balance Sheet [Summary]

[in thousands of Canadian dollars]

	2018	2017	Change
Current assets	208,337	284,005	(75,668)
Non-current assets	1,612,612	1,422,863	189,749
Total assets	1,820,949	1,706,868	114,081
Regulatory account balances	34,667	25,466	9,201
Total assets and regulatory account balances	1,855,616	1,732,334	123,282
Current liabilities	404,994	328,462	76,532
Non-current liabilities	968,048	941,222	26,826
Total liabilities	1,373,042	1,269,684	103,358
Shareholder's equity	462,882	438,141	24,741
Total liabilities and shareholder's equity	1,835,924	1,707,825	128,099
Regulatory account balances	19,692	24,509	(4,817)
Total liabilities, shareholder's equity and regulatory account balances	1,855,616	1,732,334	123,282

Assets

Total assets increased by approximately \$114 million in 2018. This increase is largely attributable to property, plant and equipment, and to intangible assets – which have collectively increased by \$182 million. This collective increase is a result of the refurbishment of the Chaudiere Hydro North LP and Hull Energy LP generating stations, the facilities renewal project, and continuing investments in electrical distribution and generation infrastructure. The increase in assets was partially offset by a \$64 million decrease in restricted cash arising out of the project financing arrangement for the Chaudière Falls expansion project. The restricted cash was released upon final completion as per the terms of the trust indenture. The proceeds from the distribution were ultimately used to fund the capital program and other growth initiatives.

Liabilities

Total liabilities increased by \$103 million in 2018. The Corporation's current liabilities increased by \$77 million largely because of an increase in bank indebtedness of \$69 million, and an increase in accounts payable and accrued liabilities and income taxes payable of \$8 million. The Corporation also saw a \$20 million increase in deferred revenue due to capital contributions received in 2018, net of amortization and of an increase of \$15 million in deferred income taxes, offset by a decrease of \$5 million in customer deposits. The higher level of customer deposits in the prior year stems from the \$14.6 million asset transfer with Public Services and Procurement Canada that occurred in December 2017.



Regulatory Account Balances

IFRS 14 defines a regulatory account balance as the balance of any expense or [income] account that would not be recognized as an asset or liability in accordance with other IFRS standards, but that qualifies for deferral because it is included, or is expected to be included, by the regulator in establishing the rate[s] that can be charged to customers. As at December 31, 2018, Hydro Ottawa Limited has recognized \$34.7 million in regulatory account debit balances [assets] and \$19.7 million in regulatory account credit balances [liabilities].

The \$9.2 million increase in regulatory account debit balances is largely due to a \$9.0 million increase in the regulatory asset for deferred income taxes; and to a \$0.5 million increase in the Lost Revenue Adjustment Mechanism, which tracks and disposes of lost electricity distribution revenues that result from approved CDM programs.

The \$4.8 million decrease in regulatory account credit balances is largely due to a \$7.3 million decrease in the settlement of electricity and global adjustment pass-through-cost credit balances. Offsetting this decrease is a \$2.0 million increase in the Earnings Sharing Mechanism variance account, which captures 50 percent of any regulated earnings above Hydro Ottawa's approved return on equity for years 2016 to 2020, and an increase of \$0.5 million in other variances and deferred costs.

Consolidated Statement of Cash Flows [Summary]

[in thousands of Canadian dollars]

	2018	2017	Change
Bank indebtedness, beginning of year	(144,490)	(67,769)	(76,721)
Cash provided by Operating Activities	138,979	91,962	47,017
Cash used in Investing Activities	(182,747)	(148,074)	(34,673)
Cash provided by Financing Activities	(21,900)	(20,600)	(1,300)
Foreign exchange impact on cash held in US dollars	52	(9)	61
Bank indebtedness, end of year	(210,106)	(144,490)	(65,616)

Cash (bank indebtedness) consists of:

Cash	16,737	13,570	3,167
Bank indebtedness	(226,843)	(158,060)	(68,783)
	(210,106)	(144,490)	(65,616)

Operating Activities

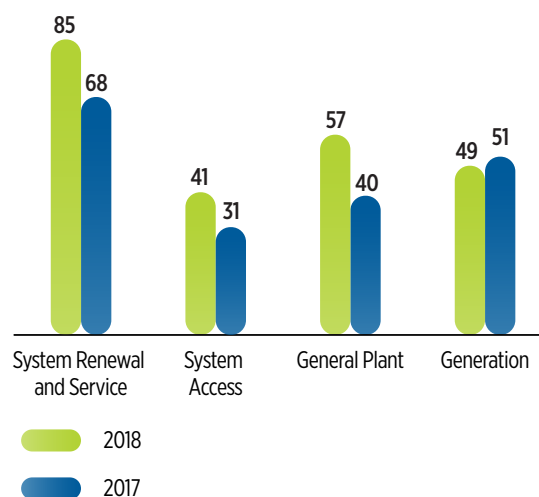
Cash generated by operating activities increased by \$47.0 million in 2018. The majority of this increase relates to the change in customer deposits and the net movement in regulatory balances, which in turn is primarily due to changes impacting settlement variance balances. In addition, the Corporation saw an improvement in net income adjusted for non-cash charges, and a decrease in income taxes paid [net of refunds received].

Investing Activities

Cash used in investing activities increased by \$34.7 million in 2018. The increase is due to the refurbishment of the Chaudière Hydro North LP and Hull Energy LP generating stations, to the facilities renewal project, and to our continuing investment in electrical distribution and generation infrastructure. The increase was partially offset by the release of restricted cash held in-trust, in accordance with the Chaudière expansion project financing trust indenture. Total investment in property, plant and equipment and in intangible assets was \$231.5 million in 2018. The chart to the right shows Hydro Ottawa's capital investments by category for both 2018 and 2017.

Capital investments in 2018 included: \$85 million on system renewal and service capital to replace aging infrastructure and to modify the existing distribution system; \$41 million on system access projects, including third-party-driven growth projects such as new residential or commercial installations,

Gross Capital Expenditures [\$ millions]



and municipal improvement projects such as the City of Ottawa's Light Rail Transit project; \$57 million on general plant, including the facilities renewal project, information technology infrastructure, fleet, and other sundry items; and \$49 million on generating plants, of which 75 percent relates to the refurbishment of the Chaudière Hydro North LP and Hull Energy LP generating stations.

Financing Activities

Financing activities include dividends paid to the shareholder, the City of Ottawa, as well as proceeds from the issuance of long-term debt.

Dividends were paid to the Shareholder in 2018 in accordance with the approved dividend policy. The 2018 payment totaled \$21.9 million based on 2017 results, and the 2017 payment totaled \$20.6 million based on 2016 results. The policy sets dividends at the greater of 60 percent of Hydro Ottawa Limited's net income, or \$20 million.

Accounting Matters

Significant Accounting Estimates and Judgments

The preparation of consolidated financial statements, in conformity with IFRS, requires management to make estimates, judgments and assumptions that affect the reported amounts of consolidated revenues, expenses, assets and liabilities; and requires disclosure of commitments and contingencies as of the date of the consolidated financial statements.

These estimates and judgments are based on historical experience, current conditions and various other assumptions believed to be reasonable under the circumstances. Because they involve varying degrees of uncertainty, the amounts currently reported in the consolidated financial statements could prove to be inaccurate in the future.

Significant areas where estimates and judgments are made in the application of IFRS are as follows [as discussed in note 2[d] to the consolidated financial statements]:

- Accounts receivable
- Regulatory balances
- Revenue recognition
- Useful lives of depreciable assets
- Impairment of non-financial assets
- Employee future benefits
- Capital contributions
- Deferred Income taxes
- Indicator of asset impairment

New Accounting Pronouncements

A number of new standards, amendments and interpretations have either been adopted for the year ended December 31, 2018, or, have been issued but are not yet effective and have therefore not been applied in preparing the accompanying consolidated financial statements.

Recently adopted accounting standards

- **Revenue from contracts with customers:** On January 1, 2018, the Corporation adopted IFRS 15 – *Revenue from Contracts with Customers* ['IFRS 15'] by applying the modified retrospective approach where prior periods are not restated. The Corporation elected a practical expedient, as allowed under IFRS 15, which permitted it to apply the new standard solely to contracts which were in-progress as of January 1, 2018, and all contracts initiated thereafter.

IFRS 15 supersedes previous revenue recognition guidance including IAS 18 – Revenue, IAS 11 – *Construction Contracts* and related interpretations. IFRS 15 provides a standardized five-step model: identify contract, identify performance obligations, determine transaction price, allocate transaction price and recognize revenue. Depending on whether certain criteria are met revenue is recognized over time, in a manner that best reflects the Corporation's performance or at a point in time, when control of the goods or services is transferred to the customer. IFRS 15 applies to all contracts with customers, unless covered by another standard [i.e. leases, financial instruments, insurance contracts], or those out of scope of IFRS 15.

The adoption of IFRS 15 did not have an impact on the Corporation's existing revenue recognition practices as reported in the comparative year. As a result, there have been no adjustments recognized upon the adoption of IFRS 15. The new standard did result in additional disclosures [see notes 15 and 21].

- **Financial instruments:** On January 1, 2018, the Corporation adopted IFRS 9 – *Financial Instruments* ['IFRS 9'] on a retrospective basis, which replaces IAS 39 – *Financial Instruments: Recognition and Measurement* ['IAS 39']. The Corporation has chosen not to restate comparative information with respect to classification and measurement requirements. Accordingly, the information presented for 2017 does not reflect the requirements of IFRS 9, but rather those of IAS 39.



IFRS 9 includes revised guidance on the classification and measurement of financial assets, including basing the classification of financial assets on their contractual cash flow characteristics and the entity's business model for managing financial assets, whereas IAS 39 based the classifications on specific definitions for each category. Moreover, IFRS 9 simplifies the former IAS 39 classifications into three main categories – amortized cost, fair value through other comprehensive income, and fair value through profit or loss – and introduces a new expected credit loss model for measuring impairment of financial assets. In addition, IFRS 9 contains consequential amendments to IFRS 7 – *Financial Instruments: Disclosures*, which has also been adopted by the Corporation.

On January 1, 2018, management assessed which business models apply to the financial assets held by the Corporation and has classified its financial instruments into the appropriate IFRS 9 categories. In addition, the Corporation revised its impairment methodology under IFRS 9 for each of its classes of financial assets. The Corporation's financial instruments will continue to be subsequently measured at amortized cost

[previously classified as loans and receivables for financial assets under IAS 39], and furthermore the new impairment methodology results in the same expected credit loss [allowance for doubtful accounts] as under the previous method used. The adoption of IFRS 9 by the Corporation did not result in any quantitative adjustments being recognized as at January 1, 2018.

The adoption of IFRS 9 has not had an effect on the Corporation's accounting policies related to financial liabilities.

Recently issued accounting guidance not yet adopted

- **Leases:** In January 2016, the IASB issued a new standard, *IFRS 16 – Leases* ['IFRS 16'] which will replace *IAS 17 – Leases*. IFRS 16 eliminates the current dual model [on and off balance sheet] and aims to provide greater comparability between companies who lease assets and companies who purchase assets, with a single on-balance sheet approach. Under IFRS 16, lessees will have to recognize all leases on the balance sheet, with related lease liabilities, subject to exemptions for short-term [< one year] and low-value leases.

The new standard becomes effective for reporting periods beginning on or after January 1, 2019. The Corporation plans to adopt IFRS 16 using the modified retrospective application method, as a result of which the 2018 comparatives will not be restated. In addition, the Corporation will apply the recognition exemptions in IFRS 16 for low-value leases, and for leases that end within 12 months of the date of initial application [which will be accounted for as short-term leases]. The Corporation continues to analyze IFRS 16 and the potential impact on its consolidated financial statements.

- **Uncertain tax positions:** On June 7, 2017, the IASB, through the International Financial Reporting Interpretations Committee, issued *Interpretation 23 Uncertainty over Income Tax Treatments* ['IFRIC 23']. IFRIC 23 requires an entity to contemplate whether uncertain tax treatments should be considered separately or together as a group, to determine if it is probable that the tax authorities will accept the uncertain tax treatment, and to measure the tax uncertainty based on the most likely amount or expected value. IFRIC 23 is applicable for annual periods beginning on or after January 1, 2019. The Corporation is currently evaluating IFRIC 23, however management does not expect it to have a material impact on the Corporation's consolidated financial statements.

RISKS AND UNCERTAINTIES

Hydro Ottawa has adopted a systematic approach to the management of risks and uncertainties, integrated into business processes and the periodic reporting of organizational performance. Capabilities and processes have been built organization-wide for the effective identification of, and timely responses to, events likely to impede the achievement of corporate objectives.

The Corporation's Enterprise Risk Management [ERM] framework, established by the Board in 2006 and renewed annually, consolidates quarterly risk reporting to the President and Chief Executive Officer, and to the Board. Reporting highlights potential risk factors that may have an impact upon Hydro Ottawa's near-term business objectives and strategic direction. The ERM framework supports and complements the Corporation's strategic planning and annual business planning cycles, through updated environment scans and periodic review of planning assumptions.

Hydro Ottawa monitors sources of risk that are structural to the industry and to the Corporation's lines of business. These include, but are not restricted to: the weather; the policy and regulatory environment; the state of the economy and macro-economic trends; the state of financial markets and of investment in the utilities space; government policies relating to the production and procurement of renewable and clean energy, as well as carbon emissions and conservation; the convergence of information technology and operational technology; cybersecurity; labour force demographics, with a particular emphasis on the renewal of human resources in the trades; and the impact of fiscal policies on customers. In combination, these sources of risk will shape the evolution of the industry, which could in turn present new and emerging risks that need to be managed effectively.

Policy and Regulatory Environment

Long-term policy direction for the electricity sector

Since assuming office in June 2018, Ontario's new provincial government has made a number of policy announcements that could significantly affect the long-term evolution of the province's electricity sector. These include the cancellation of

numerous contracts for procurement of renewable energy, followed by the repeal of the *Green Energy Act of 2009*; the repeal of Ontario's Climate Change Action Plan, including the cap-and-trade program; and the discontinuation of CDM programs in their current form.

The Independent Electricity System Operator [IESO], through its Market Renewal initiative, proposes to move away from long-term purchase agreements and adopt instead a competitive auction mechanism for procuring additional electricity. Slated to start in the mid-2020s, this change has the potential to introduce additional complexity into the marketplace.

Collectively, these policy initiatives create considerable uncertainty with respect to future investment in renewable energy generation, emerging grid technologies, refurbishment of energy infrastructure, and energy management services – all key pillars of growth identified by the Corporation in its Strategic Direction.

The Government's stated commitment to make electricity "more affordable" could result in significant changes in the business environment for rate-regulated LDCs such as Hydro Ottawa Limited. Regulatory support for investment in the renewal of aging distribution infrastructure could be materially lower than in previous rate cycles. Policy and regulatory guidance and support may also be less forthcoming for LDCs seeking to adapt their assets and operations to the requirements of a distributed energy-resources environment.

Actual performance versus forecasts in electricity distribution

Hydro Ottawa Limited expects to be able to carry out its planned capital programs, provide safe and reliable electricity to its customers, and earn the allowed rate of return, in accordance with the approval it has obtained from the OEB for a re-basing of its distribution rates for 2016–2020. However, results may be affected if actual loads and energy consumption vary substantially from forecast; or if actual costs of operations, maintenance, administration, capital and financing materially exceed projections included in the approved revenue requirements.

Market Prices for Electricity

Market prices for electricity fluctuate due to a number of factors, including: the amount of excess generating capacity relative to load in the market; the structure of the market; weather conditions that impact electrical load; growth in demand for electricity; absolute and relative prices for energy; and developments in CDM and government policy direction.

Approximately 18 percent of the Corporation's installed generation capacity is directly linked to the market price for electricity in the state of New York. In the absence of a fixed rate power purchase agreement, the Corporation may explore a number of options to reduce its exposure to market fluctuations.

Major Project Execution

The successful and timely completion of major projects is critical to the Corporation's long-term strategic direction, in particular its projected growth in generation revenue.

There are inherent risk factors in such projects, including: construction delays; cost overruns; equipment performance not in accordance with expectations; delays in permissions and clearances from all levels of government and their agencies; and technical issues in connecting to the grid.

Distribution & Generation Infrastructure

Hydro Ottawa has developed a long-term Distribution System Plan to phase in the investments required to replace its aging distribution infrastructure, and to maintain high standards of reliability and operability, while keeping pace with the growth of its service territory. The plan also takes climate change impacts into account, such as changes in the frequency, severity and pattern of occurrence of extreme weather events.

Aging electricity assets pose a dual risk to LDCs. In addition to being more prone to failure – during extreme weather events, for example – they make restoration of the distribution system more complex and financially onerous.

Equipment failure could also adversely impact electricity generation at any of the Company's various facilities.

Exchange Rate Fluctuations

The Corporation's functional currency is the Canadian dollar. A significant depreciation of the value of the U.S. dollar relative to the Canadian dollar may adversely affect the value of the Corporation's U.S.-based assets and related revenues. Conversely, a significant depreciation of the Canadian dollar relative to the U.S. dollar may affect the Corporation's capacity to finance additional growth in the U.S. market.

Economy

The state of the local, national and international economies could have a significant impact on the Corporation's business performance through factors such as inflation, customer credit risk, weakening demand for electricity and/or value-added services, and availability of market capital to fund growth. The economic climate could also have an effect on the stability and performance of some of Hydro Ottawa's key business partners.

Credit Ratings and Interest Rates

The Corporation continues to maintain strong investment grade credit ratings, however the Corporation's continued growth in unregulated businesses may negatively affect future ratings.

Around 80 percent of the Corporation's debt is subject to a fixed rate of interest, and is accordingly insulated from the impact of upward revision of interest rates. A rise in interest rates would affect the Corporation's credit facility, though its impact is not expected to be material.

Technology Infrastructure

The Corporation's business performance is dependent upon complex information systems, covering frontline operations [e.g. geographic information system, outage management system, electricity system supervisory control and data acquisition system] as well as back office processes [e.g. customer information and billing systems, and ERP system]. The failure of one or more of these key systems, or a failure of the Corporation to either plan effectively for future technology needs or to transition effectively to new technology systems, could adversely impact business operations.

Many of these key systems also draw upon data and signals from several hundred thousand smart devices [chiefly smart meters], as well as the related systems and web interfaces. The processing of data in many cases entails a number of automated interfaces, as well as multiple internal and external dependencies, including Ontario's Smart Metering Entity. Risks arising from the reliability and performance of any single component of this integrated network, or of the system as a whole, could lead to a disruption of key business processes.

There is growing convergence of core operational systems with enterprise information systems, along with increasing automation, and extensive use of common technology in facilitating such integration and connectivity. The complexity of this technology infrastructure, together with its interconnected nature, has the potential to heighten existing risks as well as to create new ones.

Cybersecurity

The Corporation's reliance on information systems and expanded data transmission and exchange networks, in conjunction with the growing extent of systems and data integration within the electricity sector, increases its exposure to information security threats, including cybersecurity risks. Hydro Ottawa's information systems and information assets could be put at risk by a security breach, data corruption or system failure at a shared resource or common service provider.

Customer and Media Perceptions

Electrical utilities across Ontario are confronted with risks arising from negative customer and media perceptions, typically owing to high commodity prices, which are outside of the Company's control.

Pension Plans

The Corporation provides a defined benefit pension plan for the majority of its employees through the Ontario Municipal Employees Retirement System ['OMERS']. As OMERS is a multi-employer, contributory, defined benefit pension plan, it is not practicable to determine the Corporation's portion of pension obligations or the fair value of plan assets. Future funding shortfalls and net losses at OMERS, if any, are subject to the OMERS Sponsors Corporation Funding Management Strategy, which outlines how benefits and contributions will be modified as the OMERS Primary Plan cycles through periods of funding deficit and surplus.

Hydro Ottawa has also established a separate defined benefit pension plan and a separate defined contribution pension plan for a small number of employees, with appropriate financial and investment procedures and oversight, as required by law. Pension benefit obligations and related net pension cost can be affected by volatility in the global financial and capital markets. There is no assurance that pension plan assets will earn the assumed long-term rates of return. Market-driven changes impacting the performance of the pension plan assets may result in material variations in actual returns on pension plan assets.

Labour Force Demographics

Across the electricity sector, retirements are outpacing new entrants to the workforce, which could have an adverse impact on the ability of the Corporation to build a sustainable workforce and achieve its business objectives. Hydro Ottawa's investments in apprenticeships, internships, diversity, knowledge management, succession planning and retiree and older worker engagement programs are designed to manage risks relating to workforce demographics.

Consolidation of Labour Bargaining Power

Following structural changes in the ownership of several of Ontario's electrical utilities, there has been a degree of consolidation of labour bargaining power within the province's electricity sector. Whether and how this consolidation might grow is difficult to determine at this stage, as is its potential impact on labour relations and service delivery.

Weather and Hydrology

Severe weather can significantly impact financial results, in part through increased capital and maintenance costs to repair or replace damaged equipment and infrastructure and through reduced revenue. Distribution revenues in turn tend to increase with severe weather and decrease with moderate weather.

Weather is also of potential direct relevance to Energy Ottawa's renewables generation portfolio, in particular its solar and hydroelectric assets. Hydroelectric generation depends on weather-sensitive water flows, which have both seasonal and annual variations, and which may be further impacted by either natural disaster or government policy and controls.



OUTLOOK

In 2019, Hydro Ottawa expects to continue to earn stable returns and to pursue significant capital expenditures as set out in its current five-year rate structure and capital investment plan. This will be the penultimate year in the period covered by that plan, and by the current corporate Strategic Direction. These frameworks will continue to help ensure Hydro Ottawa can provide safe, reliable and competitively priced electricity throughout its service territory, despite what may be a sustained increase in extreme weather events. Hydro Ottawa will continue to leverage the commercial advantages associated with its extensive non-regulated business, while applying innovation to future-proof the competitiveness of all business lines during a period of ongoing industry transformation.

As is typical following a change in government, wide-reaching electricity policy reform is underway in Ontario, and the implications for Hydro Ottawa's business lines cannot yet be precisely foreseen as evidenced by the government's announcements with respect to CDM and OEB reform in March 2019. Hydro Ottawa will proceed in 2019 with preparation of its 2021-25 rate application, which it expects to publicly file at year-end. Hydro Ottawa – while incorporating sufficient capital investment and responsiveness to customer needs into its application – will at the same time take due account of the heightened importance of affordability among provincial government priorities. Electricity procurement policy is also undergoing significant transformation, although Hydro Ottawa has the benefit of long-term power purchase agreements for all of its generated electricity sold onto the Ontario grid.

The Corporation will maintain the resiliency of the local distribution grid in 2019, and continue to expand it [and its connectivity with the provincial transmission network] in tandem with local demand. Productivity and cost efficiency

will be further advanced in 2019 by – among other initiatives – relocation to modern and purpose-designed operational and administrative facilities. Beyond these foundational focal points, Hydro Ottawa will continue to carefully select investments in response to emerging needs and opportunities in areas such as electric vehicle use and demand response; and will continuously refine its risk-management readiness relative to cybersecurity threats.

Acquisitions and expansions in recent years have increased the scope of revenues derived from electricity generation, and further momentum is foreseen in 2019. The expanded Chaudière facility performed well even at a reduced capacity in 2018 and in 2019 is expected to achieve full-capacity operation when a fourth generating unit is brought online. Progress towards 2020 completion of the refurbishment of two generating stations located in Québec will continue. In energy and utility services, Envari will move forward with a strategy to significantly expand its scope of business across diverse client segments, service offerings and geographies. Hydro Ottawa will also advance partnerships such as the one entered into in 2018 for development of a community utility at the Zibi development in central Ottawa-Gatineau – a project representative of the highly tailored, collaborative and sustainable approaches that are likely to increasingly characterize its business in 2019 and beyond.



Hydro Ottawa Holding Inc.

Consolidated Financial Statements

December 31, 2018

Report of Management

Management is responsible for the integrity of the financial data reported by Hydro Ottawa Holding Inc. [the 'Corporation']. Fulfilling this responsibility requires the preparation and presentation of consolidated financial statements and other data using management's best judgment and estimates, as well as International Financial Reporting Standards as issued by the International Accounting Standards Board.

Management maintains appropriate systems of internal control and corporate-wide policies and procedures, which provide reasonable assurance that the Corporation's assets are safeguarded and that financial records are relevant and reliable.

The Board of Directors, through the Audit Committee, ensures that management fulfills its responsibility for financial reporting and internal control. The Audit Committee consists of outside directors and, at regular meetings, reviews audit, internal control and financial reporting matters with management and external auditors. The Audit Committee has reviewed the consolidated financial statements and submitted its report to the Board of Directors.

On behalf of Management,

A handwritten signature in black ink, appearing to read 'B. Conrad', written over a horizontal line.

Bryce Conrad
President and Chief Executive Officer

A handwritten signature in black ink, appearing to read 'Geoff Simpson', written over a horizontal line.

Geoff Simpson
Chief Financial Officer



KPMG LLP
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INDEPENDENT AUDITORS' REPORT

To the Shareholder of Hydro Ottawa Holding Inc.

Opinion

We have audited the consolidated financial statements of Hydro Ottawa Holding Inc. (the Entity), which comprise:

- the consolidated balance sheet as at December 31, 2018
- the consolidated statement of income for the year then ended
- the consolidated statement of comprehensive income for the year then ended
- the consolidated statement of changes in equity for the year then ended
- the consolidated statement of cash flows for the year then ended
- and notes to the consolidated financial statements, including a summary of significant accounting policies

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the consolidated financial position of the Entity as at end of December 31, 2018, and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRS).

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "**Auditors' Responsibilities for the Audit of the Financial Statements**" section of our auditors' report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other Information

Management is responsible for the other information. Other information comprises the information in Management's Discussion and Analysis.

Our opinion on the financial statements does not cover the other information and we do not and will not express any form of assurance conclusion thereon.



In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit and remain alert for indications that the other information appears to be materially misstated.

We obtained the Management's Discussion and Analysis as at the date of this auditors' report. If, based on the work we have performed on this other information, we conclude that there is a material misstatement of this other information, we are required to report that fact in the auditors' report.

We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with International Financial Reporting Standards (IFRS), and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Entity's financial reporting process.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.



The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Entity to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group Entity to express an opinion on the financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

A handwritten signature in black ink that reads "KPMG LLP" with a horizontal line underneath.

Chartered Professional Accountants, Licensed Public Accountants

Ottawa, Canada

April 16, 2019

Hydro Ottawa Holding Inc.

Consolidated Statement of Income

Year ended December 31, 2018

[in thousands of Canadian dollars]

	2018	2017
	\$	\$
Revenue and other income		
Power recovery revenue	857,383	896,528
Distribution revenue [Note 21]	181,050	171,400
Generation revenue	32,325	22,898
Commercial services revenue [Note 21]	28,998	26,960
Other revenue [Note 21]	7,076	6,753
Conservation and demand management income	24,865	23,976
Net gain from insurance proceeds [Note 11]	6,865	2,939
	1,138,562	1,151,454
Expenses		
Purchased power	857,877	908,649
Operating costs [Note 22]	145,694	139,797
Depreciation [Notes 7 and 9]	50,273	45,234
Amortization [Note 8]	11,907	9,566
	1,065,751	1,103,246
Income before the undernoted items	72,811	48,208
Financing costs [Note 23]	30,372	22,683
Interest income	(1,530)	(648)
Share of profit from joint ventures [Note 10(a)]	(577)	(1,063)
Income before income taxes	44,546	27,236
Income tax expense [Note 24]	17,144	14,803
Net income	27,402	12,433
Net movements in regulatory balances, net of tax [Note 6]	14,692	23,513
Net income after net movements in regulatory balances	42,094	35,946
Attributable to non-controlling interest	(44)	(29)
Net income after net movements in regulatory balances attributable to equity shareholder	42,138	35,975

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Statement of Comprehensive Income

Year ended December 31, 2018

[in thousands of Canadian dollars]

	2018 \$	2017 \$
Net income after net movements in regulatory balances attributable to equity shareholder	42,138	35,975
Other comprehensive income		
Items that may be subsequently reclassified to net income		
Exchange differences on translation of foreign operations, net of tax	4,415	(3,722)
Items that will not be subsequently reclassified to net income		
Actuarial gain (loss) on post-employment benefits, net of tax	806	(663)
Net movement in regulatory balances related to other comprehensive income, net of tax	(674)	405
Total comprehensive income	46,685	31,995

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Balance Sheet

As at December 31, 2018

[in thousands of Canadian dollars]

	2018 \$	2017 \$
Assets		
Current assets		
Cash	16,737	13,570
Accounts receivable [Note 5]	179,049	192,696
Income taxes receivable	147	1,448
Prepaid expenses	4,394	3,690
Inventory [Note 12(c)]	1,435	2,162
Current portion of notes receivable from related parties [Note 12]	6,575	4,641
Restricted cash [Note 17(b)]	-	65,798
	208,337	284,005
Non-current assets		
Property, plant and equipment [Note 7]	1,449,791	1,261,191
Intangible assets [Note 8]	123,870	130,165
Investment properties [Note 9]	2,482	2,602
Investments in joint ventures [Note 10(a)]	11,690	8,869
Other asset [Note 11(a)]	5,771	5,771
Notes receivable from related parties [Note 12]	9,386	8,767
Restricted cash [Note 17(b)]	1,350	-
Deferred income tax asset [Note 24]	8,272	5,498
Total assets	1,820,949	1,706,868
Regulatory balances [Note 6]	34,667	25,466
Total assets and regulatory balances	1,855,616	1,732,334
Liabilities and equity		
Current liabilities		
Bank indebtedness [Note 13]	226,843	158,060
Accounts payable and accrued liabilities [Note 14]	173,727	170,286
Income taxes payable	4,424	116
	404,994	328,462
Non-current liabilities		
Deferred revenue [Note 15]	108,395	88,570
Employee future benefits [Note 16]	13,412	14,439
Customer deposits	26,503	31,423
Long-term debt [Notes 17 and 26]	773,390	773,168
Deferred income tax liability [Note 24]	45,213	30,133
Other liabilities	1,135	3,489
Total liabilities	1,373,042	1,269,684
Equity		
Share capital [Note 19]	228,453	228,453
Accumulated other comprehensive income	5,204	657
Retained earnings	229,318	209,080
Non-controlling interest	(93)	(49)
Total liabilities and equity	1,835,924	1,707,825
Regulatory balances [Note 6]	19,692	24,509
Total liabilities, equity and regulatory balances	1,855,616	1,732,334

Contingent liabilities and commitments [Notes 27 and 28]

On behalf of the Board:


Director


Director

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Statement of Changes in Equity

Year ended December 31, 2018

[in thousands of Canadian dollars]

	Share capital	Accumulated other comprehensive income	Non- controlling interest	Retained earnings	Total
	\$	\$	\$	\$	\$
Balance at December 31, 2016	228,453	4,637	(20)	193,705	426,775
Net income after net movements in regulatory balances	-	-	(29)	35,975	35,946
Other comprehensive income	-	(3,980)	-	-	(3,980)
Dividends [Note 19(b)]	-	-	-	(20,600)	(20,600)
Balance at December 31, 2017	228,453	657	(49)	209,080	438,141
Net income after net movements in regulatory balances	-	-	(44)	42,138	42,094
Other comprehensive income	-	4,547	-	-	4,547
Dividends [Note 19(b)]	-	-	-	(21,900)	(21,900)
Balance at December 31, 2018	228,453	5,204	(93)	229,318	462,882

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Consolidated Statement of Cash Flows

Year ended December 31, 2018

[in thousands of Canadian dollars]

	2018	2017
	\$	\$
Net inflow (outflow) of cash related to the following activities:		
Operating		
Net income after net movements in regulatory balances	42,094	35,946
Adjustments for:		
Depreciation	50,273	45,234
Amortization	11,907	9,566
Loss on disposal of non-financial assets	131	581
Amortization of debt-issuance costs	222	165
Share of profit from joint ventures	(577)	(1,063)
Amortization of deferred revenue [Note 21]	(2,811)	(2,180)
Employee future benefits	205	280
Financing costs, net of interest income	28,842	22,035
Income tax expense	17,144	14,803
Other	(563)	(53)
Changes in non-cash working capital and other operating balances [Note 25]	2,000	(2,169)
Income taxes paid, net of refunds received	(2,929)	(6,045)
Financing costs paid, net of interest income received	(28,654)	(21,122)
Capital contributions from customers	10,985	10,964
Capital contributions from developers	11,651	8,578
Change in customer deposits	13,751	(45)
Net movements in regulatory balances	(14,692)	(23,513)
	138,979	91,962
Investing		
Acquisition of property, plant and equipment	(239,993)	(167,992)
Acquisition of intangible assets	(4,190)	(19,830)
Proceeds from disposal of property, plant and equipment	573	1,183
Payments relating to the acquisition of subsidiaries	-	(10,000)
Investment in joint venture [Note 10(a)]	(2,276)	-
Financing costs paid	(2,639)	(10,109)
Restricted cash held in-trust	64,448	58,288
Repayment of notes receivable from joint ventures	1,330	386
	(182,747)	(148,074)
Financing		
Dividends paid [Note 19(c)]	(21,900)	(20,600)
Effects of exchange rate changes on cash held in U.S. dollars	52	(9)
Net change in cash	(65,616)	(76,721)
Bank indebtedness, net of cash, beginning of year	(144,490)	(67,769)
Bank indebtedness, net of cash, end of year	(210,106)	(144,490)

The accompanying notes are an integral part of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

1. DESCRIPTION OF BUSINESS AND CORPORATE INFORMATION

Hydro Ottawa Holding Inc. ['HOHI' or the 'Corporation'] is a holding company incorporated on October 3, 2000 whose sole shareholder is the City of Ottawa. The Corporation's primary operations, as carried out by its subsidiaries and joint ventures below, are the distribution of electricity within the City of Ottawa, the generation of renewable energy, and the provision of distribution and energy related commercial services. The Corporation is domiciled in Canada with its registered head office located at 3025 Albion Road North, Ottawa, Ontario, K1G 3S4.

Significant subsidiaries, each of which is wholly-owned by the Corporation as at December 31, 2018, are as follows:

Subsidiary	Principal activity
Hydro Ottawa Limited ['Hydro Ottawa']	An electricity distribution company regulated by the Ontario Energy Board ['OEB'] that owns and operates electrical infrastructure in the City of Ottawa and the Village of Casselman. In addition to distribution services, Hydro Ottawa Limited invoices customers for amounts it is required to pay to other organizations in Ontario's electricity system for providing wholesale generation and transmission services.
Energy Ottawa Inc. ['Energy Ottawa']	Owns and operates 16 hydroelectric generating stations totalling 115MW located in Ontario and Québec [at Chaudière Falls] and New York state. Significant subsidiaries of Energy Ottawa include Chaudiere Hydro L.P. ['CHLP'], Hull Energy L.P. ['Hull Energy LP'], EONY Generation Limited ['EONY'], Chaudiere Hydro North L.P. ['CHLP North'], and EO Generation LP ['EO Gen'].
Envari Holding Inc. ['Envari']	Incorporated on November 29, 2018, Envari provides expert energy management and infrastructure services previously delivered by Energy Ottawa. These services primarily include energy turnkey solutions, streetlight design, conversion and maintenance services and proprietary non-destructive cable testing. Significant subsidiaries of Envari include Enviri Energy Solutions Inc. and Energy Ottawa Cable Testing Services Inc. ['Cable Q']

Joint ventures the Corporation is a party of as at December 31, 2018, are as follows:

Joint venture	Principal activity
PowerTrail Inc. ['PowerTrail'] [60% owned]	Owns and operates a 6MW landfill gas-to-energy plant at the Trail Road landfill site in Ottawa, Ontario.
Moose Creek Energy LP ['Moose Creek LP'] [50.05% owned]	Owns and operates a 4MW landfill gas-to-energy plant at the Lafèche landfill site in Moose Creek, Ontario.
Zibi Community Utility LP ['ZCU'] [50% owned]	Currently in the development stage to build, own and operate a utility for the Zibi development in downtown Ottawa and Gatineau.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

2. BASIS OF PRESENTATION

(a) Statement of compliance

These consolidated financial statements have been prepared by management on a going-concern basis in accordance with International Financial Reporting Standards [IFRS] and have been approved and authorized by the Corporation's Board of Directors for issue on April 16, 2019.

(b) Basis of measurement

The Corporation's consolidated financial statements are prepared on a historical cost basis, except for employee future benefits as disclosed in Note 3(p).

(c) Functional and presentation currency

These consolidated financial statements are presented in Canadian dollars, which is the Corporation's functional currency.

(d) Use of estimates and judgments

The preparation of consolidated financial statements in conformity with IFRS requires management to make estimates, judgments and assumptions that affect the reported amounts of revenues, expenses, assets, liabilities and the disclosure of contingent assets and liabilities at the date of the consolidated financial statements.

Due to the inherent uncertainty involved in making estimates, actual results could differ from estimates recorded in preparing these consolidated financial statements, including changes as a result of future decisions made by regulators and governments. Management reviews its estimates and judgments on an ongoing basis using the most current information available. These consolidated financial statements have, in management's opinion, been properly prepared using careful judgment and reasonable limits of materiality within the framework of the significant accounting policies. Significant areas where estimates and judgments are made in the application of IFRS are as follows:

(i) Accounts receivable

Accounts receivable, which include unbilled revenue, are reported based on the amounts expected to be recovered less a loss allowance for expected credit losses. Management utilizes historical loss experience and forward-looking information in conjunction with the aging and arrears status of accounts receivable at year-end in the determination of the allowance.

(ii) Regulatory balances

The recognition and measurement of regulatory balances is subject to certain estimates, judgements and assumptions, including assumptions made in the interpretation of the OEB's regulations and decisions.

(iii) Revenue recognition

The Corporation uses the percentage-of-completion method in accounting for its fixed-price contracts to deliver certain products and services. The use of the percentage-of-completion method requires the Corporation to estimate the work performed to date as a proportion of the total work to be performed. Management conducts periodic reviews of its estimated costs to complete, percentage-of-completion estimates and revenues and margins recognized, on a contract-by-contract basis. The impact of any revisions in cost and earnings estimates is reflected in the period in which the need for a revision becomes known.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

2. BASIS OF PRESENTATION [CONTINUED]

(d) Use of estimates and judgments [continued]

(iv) Useful lives of depreciable assets

Depreciation and amortization expense is calculated based on estimates of the useful lives of property, plant and equipment, intangible assets and investment properties. Management estimates the useful lives of the various types of assets using assumptions and estimates of life characteristics of similar assets based on a long history of electricity distribution and generation industry experience.

(v) Impairment of non-financial assets

Non-financial assets are reviewed by management for impairment using the future cash flows method as outlined in Note 3(o). By their nature, estimates of future cash flows, including estimates of future capital expenditures, revenue, operating expenses, discount rates, generation production, inflation, terminal capitalization rates and forecasted market pricing are subject to measurement uncertainty. Management factors in current economic conditions, past experience and obtains third party consultations to support its estimates when necessary.

(vi) Employee future benefits

The measurement of employee future benefits involves the use of numerous estimates and assumptions. Actuaries make assumptions for items such as discount rates, future salary increases and mortality rates in the determination of benefits expenses and defined benefit obligations.

(vii) Capital contributions

The timing of the satisfaction of performance obligations for capital contributions from customers is subject to certain estimates and assumptions.

(viii) Deferred income taxes

Tax interpretations, regulations and legislation in the various jurisdictions in which the Corporation and its subsidiaries operate are subject to change. Deferred income tax assets are assessed by management at the end of each reporting period to determine the likelihood that they will be realized from future taxable income. Deferred tax assets are recognized to the extent that it is probable that taxable profit will be available against which the deductible temporary differences and the carry-forward of unused tax assets and unused tax losses can be utilized.

(ix) Indicator of asset impairment

At the end of each reporting period, or earlier if required, management uses its judgment to assess whether there is an indication that the carrying amount of a non-financial asset [or cash-generating unit, 'CGU'] exceeds its recoverable amount. This assessment involves the consideration of whether any events or changes in circumstances could have affected the recoverability of the carrying amount of a non-financial asset or CGU. Management considers various indicators including, but not limited to, adverse changes in the industry or economic conditions, changes in the degree or method of use of an asset, a lower-than-expected economic performance of an asset or a significant change in market or interest rates.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

2. BASIS OF PRESENTATION [CONTINUED]

(d) Use of estimates and judgments [continued]

(ix) Indicator of asset impairment [continued]

Based on management's judgment, an indicator of impairment [under International Accounting Standards 36 Impairment of Assets [IAS 36]] existed within EONY at December 31, 2018 pertaining to the energy market prices in New York State. However, management's discounted cash flow analysis under the value-in-use method [as prescribed by IAS 36] resulted in no impairment to be recognized in the 2018 fiscal year. Assumptions with respect to these cash flows are sensitive to the various inputs into the value-in-use calculation, and thus are subject to measurement uncertainty [Note 2(d)(v)].

3. SIGNIFICANT ACCOUNTING POLICIES

(a) Basis of consolidation

The consolidated financial statements include the accounts of the Corporation and its subsidiaries including those described in Note 1 of these consolidated financial statements. Subsidiaries are entities controlled by the Corporation. The Corporation controls an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns by directing and controlling the activities of the entity. Subsidiaries are fully consolidated from the date on which the Corporation obtains control, and continue to be consolidated until the date that control ceases to exist. All intercompany balances and transactions have been eliminated in these consolidated financial statements. The financial statements of the subsidiaries are prepared for the same reporting period as the Corporation using consistent accounting policies.

One subsidiary has a non-controlling interest which is presented as part of equity.

(b) Joint ventures

All joint arrangements are either classified as joint ventures or joint operations in accordance with *IFRS 11 – Joint Arrangements*. The Corporation is party to three joint ventures as described in Note 1 of these consolidated financial statements whereby control is shared with third parties via a contractual agreement. Joint ventures are accounted for using the equity method. Under this method, the Corporation's interests in joint ventures are initially recorded at cost, and subsequently adjusted to recognize the Corporation's share of post-acquisition profits or losses, movements in other comprehensive income [OCI] and dividends or distributions received.

(c) Foreign currency translation

Transactions denominated in foreign currencies are translated at exchange rates in effect at the transaction date. At each reporting date, monetary assets and liabilities denominated in foreign currencies are translated into Canadian dollars at the exchange rate in effect at the end of the reporting period. Non-monetary assets and liabilities carried at historical cost are not re-translated; they remain at the exchange rate in effect at the date of the original transaction. Non-monetary assets and liabilities carried at fair value are translated at the exchange rate in effect at the date the fair value was measured. Any resulting exchange gains or losses are included in net income for the year.

The assets and liabilities of EONY are translated into Canadian dollars at the exchange rate in effect at the end of the reporting period. Revenue and expenses are translated into Canadian dollars at the average exchange rate in effect during the reporting period. Any resulting exchange gains and losses arising from the translation are included in OCI for the year.

Fair value adjustments to identifiable assets acquired and liabilities assumed through acquisition of a foreign operation are treated as assets and liabilities of the foreign operation and translated at the rate of exchange prevailing at the end of each reporting period. Exchange differences are recognized in OCI.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(d) Regulation – Hydro Ottawa

Hydro Ottawa is regulated by the OEB under the authority of the *Ontario Energy Board Act, 1998*. The OEB is charged with the responsibilities of approving or setting rates for the transmission and distribution of electricity, and ensuring that distribution companies fulfill obligations to connect and service customers.

For fiscal year ended December 31, 2018, Hydro Ottawa continued to operate under a custom incentive rate-setting application ['Custom IR'] prescribed by the OEB. The Custom IR is one of the rate setting options contained in the *Renewed Regulatory Framework for Electricity Distributors: A Performance-Based Approach* policy. Hydro Ottawa filed a custom incentive rate-setting application with the OEB on April 29, 2015 seeking approval to change the rates that Hydro Ottawa charges for electricity delivery, retail services, allowances, loss factor and specific services charges for a period of five years, to be effective January 1, 2016 to December 31, 2020. This application requested a revenue requirement to recover costs, and provide a rate of return on a deemed capital structure applied to rate base assets. The key components of Hydro Ottawa's Custom IR framework included the establishment of several regulatory accounts, namely: an asymmetrical earnings sharing mechanism variance account, revenue requirement differential variance account related to capital additions, new facilities deferral account, connection cost recovery agreement deferral account, and the efficiency adjustment mechanism deferral account. An annual IR application is required to set rates each year for 2017 to 2020. 2018 rates were set based on Hydro Ottawa's Year 3 IR annual update.

Hydro Ottawa applies for distribution rates based on estimated costs. Once rates are approved, they are not adjusted as a result of actual costs being different from those that were estimated, other than for certain prescribed costs that are eligible for deferral treatment and are either collected or refunded in future rates. The OEB has the general power to include or exclude costs and revenue in the rates of a specific period.

In January 2014, the International Accounting Standards Board ['IASB'] issued IFRS 14 – *Regulatory Deferral Accounts* ['IFRS 14'], which permits rate-regulated entities to use its existing rate-regulated activities practices if and only if, in its first IFRS financial statements, it recognized regulatory deferral account balances by electing to apply the requirements of IFRS 14.

Hydro Ottawa has determined that certain debit and credit balances arising from rate-regulated activities qualify for the application of regulatory accounting treatment in accordance with IFRS 14 and the accounting principles prescribed by the OEB in the *Accounting Procedures Handbook for Electricity Distributors*. Regulatory debit and credit balances primarily represent costs that have been deferred because it is probable that they will be recovered in future rates, revenues that are required to be returned or collected to/from customers or balances that arise from differences in amounts billed to customers for electricity services and the costs that Hydro Ottawa incurs to purchase these services.

Regulatory balances principally comprise of the following:

- Regulatory asset/liability refund account ['RARA'/ 'RLRA'] consists of balances of regulatory assets or regulatory liabilities approved for disposition by the OEB through temporary additional rates referred to as rate riders.
- Settlement variances relate primarily to the charges Hydro Ottawa incurred for transmission services, commodity, wholesale market operations and global adjustment in comparison to those settled with customers during the year. The nature of the settlement variances is such that the balance can fluctuate between assets and liabilities over time, and they are reported at year-end dates in accordance with rules prescribed by the OEB.
- Lost Revenue Adjustment Mechanism ['LRAM'] account tracks and disposes of lost electricity distribution revenues that result from Conservation and Demand Management ['CDM'] programs.
- Earnings Sharing Mechanism ['ESM'] variance account captures 50% of any regulated earnings above Hydro Ottawa's approved return on equity for years 2016 to 2020.
- Other Post-employment Benefits deferral account ['OPEB deferral account'] was authorized by the OEB in 2011 to record the adjustment to employee future benefits other than pension relating to the cumulative actuarial gains or losses. This account is adjusted annually to record any changes in the cumulative actuarial gains or losses. No interest charges are recorded on this account as instructed by the OEB.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(d) Regulation – Hydro Ottawa [continued]

Other variances and deferred costs include the following:

- the difference between low voltage charges paid to Hydro One Networks Inc. ['HONI'] and those charged to customers.
- the difference between actual amount of gain/loss from disposal of fixed assets and the forecasted gain/loss.
- the difference between the 2014 starting point and current year ending point stretch factor as multiplied by the rate year plan revenue requirement for the relevant rate year, referred to as the Efficiency Adjustment Mechanism ['EAM'].

Hydro Ottawa accrues interest on the regulatory balances as directed by the OEB.

Hydro Ottawa continues to assess the likelihood of recovery of all regulatory debit balances subject to recovery through a future rate filing. The absence of OEB approval is a consideration in this evaluation. If the requirement for a provision becomes more likely than not, Hydro Ottawa will recognize the provision in operating costs for the year.

(e) Revenue recognition

Effective January 1, 2018, the Corporation has adopted *IFRS 15 - Revenue from Contracts with Customers* ['IFRS 15'] as described in Note 4(a)(i) of these consolidated financial statements.

Depending on whether certain criteria are met, the Corporation recognizes revenue from contracts with customers when it transfers control over a product or service to a customer either over time or at a point in time. For revenue from other sources, the Corporation recognizes revenue over time taking into consideration the facts and circumstances of the arrangement.

Revenue is measured at the consideration received or receivable, excluding any discounts, rebates and sales taxes and other amounts collected on behalf of third parties in the following revenue arrangements.

(i) Power recovery

Power recovery revenue represents the flow-through of the cost of power to the consumer as purchased by the Corporation and is recognized over time as electricity is delivered to the customer, as measured by meter readings or usage estimates. Power recovery revenue is regulated by the OEB and includes charges to customers for the electricity commodity, the transmission of electricity and the administration of the wholesale electricity system. The Corporation has determined that it acts as a principal in this revenue arrangement and therefore has presented it on a gross basis.

(ii) Distribution

The Corporation charges customers for the delivery of electricity, based on rates established by the OEB. The rates are intended to allow the Corporation to recover its prudently-incurred costs and earn a fair return on invested capital. Distribution revenue is recognized over time as electricity is delivered to the customer, as measured by meter readings or usage estimates.

(iii) Generation

Generation revenue is recognized over time upon the delivery of generated electricity to the customer, as measured by meter readings in accordance with the applicable contractual arrangement.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(e) Revenue recognition [continued]

(iv) Commercial services

Commercial services revenue comprise revenue earned under contracts for service work related to distribution operations, energy-related turnkey projects, the provision of streetlight installation and maintenance services, pole attachment and duct rental services and non-destructive cable testing.

Certain commercial services [distribution projects, turnkey projects and street light installation services] are accounted for using the percentage-of-completion method, whereby revenue and the corresponding costs are recognized over time proportionately with the degree of completion of the services under contract. Losses on such contracts are fully recognized when they become evident. Other commercial service revenues are recognized over time as services are rendered, or on a straight-line basis over the period of the contract if the services performed consist of an indeterminate number of acts over a specified period of time.

(v) Other

Other revenue consists primarily of investment property rentals, capital contributions received from customers amortized to revenue, and other account-related charges such as account set-up and late payment fees.

Investment property rentals are recognized over time as services are rendered, while other account-related charges are recognized at a point in time. In certain situations, capital contributions are required from customers to finance additions to property, plant and equipment when the estimated revenue resulting from the addition to property, plant and equipment is less than the cost of providing the service or where special equipment is needed to supply the customers' specific requirements. Since the contributions will provide current and future customers with ongoing access to the supply of electricity, these contributions are classified as deferred revenue and amortized into revenue on a straight-line basis over time [the period a customer will receive services], which is typically equivalent to the rate used for the depreciation of the related property, plant and equipment [service life of the related assets].

Capital contributions received from developers to construct or acquire property, plant and equipment for the purpose of connecting future customers to the Corporation's distribution network are considered out of scope of IFRS 15. Capital contributions received from developers are recognized as deferred revenue and amortized into revenue from other sources at an equivalent rate to that used for the depreciation of the related property, plant and equipment.

Revenue from investment property is considered out of scope of IFRS 15, and accordingly classified as revenue from other sources. Rental income from investment property is recognized as revenue on a straight-line basis over the term of the lease.

(f) Interest income and financing costs

Interest income is recognized as it accrues under the effective interest method and comprises interest earned on cash and notes receivable from related parties.

Financing costs are calculated using the effective interest rate method and are recognized as an expense unless they are capitalized as part of the cost of a qualifying asset.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(g) Government grant income

CDM income stems from the delivery of provincial government programs that promote conservation. Government grants under CDM programs are recognized when there is reasonable assurance that the grant will be received and all related conditions have been met. Grants under full cost recovery funding are recognized as income on a systematic basis over the period to match the costs they are intended to compensate. CDM performance incentives are recognized when it is probable that future economic benefits will flow to the Corporation, and the amount can be measured reliably.

(h) Income taxes

The Corporation, Hydro Ottawa, Energy Ottawa and Envari are considered to be a Municipal Electric Utility ['MEU'] and are required to make payments in lieu of corporate income taxes ['PILS'] as contained in the *Electricity Act, 1998*, as all of their share capital is indirectly owned by the City of Ottawa and not more than 10% of its income is derived from activities carried on outside the municipal boundaries of the City of Ottawa. The *Electricity Act, 1998* provides that a MEU that is exempt from tax under the *Income Tax Act (Canada)* ['ITA'] and the *Taxation Act, Ontario* ['TAO'] is required to make, for each taxation year, a PILs payment to the Ontario Electricity Financial Corporation in an amount equal to the tax that it would be liable to pay under the ITA and the TAO if it were not exempt from tax.

The Corporation, Hydro Ottawa and Energy Ottawa follow the liability method for recording income taxes. Under the liability method, current income taxes payable are recorded based on taxable income. Deferred income taxes arising from temporary differences in the accounting and tax basis of assets and liabilities are provided based on substantively enacted tax rates that will be in effect when the differences are expected to reverse.

Hydro Ottawa recognizes regulatory balances for the amounts of future income taxes expected to be refunded to or recovered from customers in future electricity rates as prescribed by the OEB.

EONY is subject to the income tax regime in the United States [the 'Internal Revenue Service'], as more than 10% of its income is derived from activities carried on outside the municipal boundaries of the City of Ottawa. PowerTrail is taxable under the ITA and TAO as less than 90% of each company's capital is owned by the City of Ottawa through Energy Ottawa and the Corporation. Corporate income taxes are accounted for using the liability method as described above.

Moose Creek LP, CHLP, EO Gen, CHLP North and Hull Energy LP are not taxable entities for federal and provincial income tax purposes. Tax on the net income (loss) is borne by the individual partners through the allocation of taxable income.

(i) Restricted cash

Cash and cash equivalents [highly-liquid temporary investments with a maturity date between three months and one year] that are restricted as to withdrawal or use under the terms of certain contractual agreements are classified as restricted cash.

(j) Bank indebtedness

Bank indebtedness includes short-term advances and/or bankers' acceptances drawn on the Corporation's credit facility with a maturity date of three months or less, and outstanding cheques. Cash and bank indebtedness are offset and the net amount is presented on the consolidated balance sheet when, and only when, the Corporation has a legal right to offset the amounts and intends either to settle on a net basis or to realize the asset and settle the liability simultaneously. At December 31, 2017, \$12,637 of cash previously netted against bank indebtedness has been reclassified to cash as there is no legal right to offset against the Corporation's credit facility.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(k) Financial instruments

Effective January 1, 2018, the Corporation has adopted *IFRS 9 - Financial Instruments* ['IFRS 9'] as described in Note 4(a)(ii) of these consolidated financial statements.

Financial instruments are initially measured at the fair value of the consideration given or received plus transaction costs that are directly attributable to the acquisition or issue of the financial instrument.

The Corporation's financial assets, upon initial recognition, are classified as amortized cost or fair value [whereby subsequent changes in fair value are recognized either through OCI ['FVOCI'] or through profit and loss ['FVTPL'] as unrealized market adjustments]. Financial assets are classified based on the Corporation's business model for managing such assets and the contractual terms of the related cash flows.

The Corporation's financial liabilities, upon initial recognition, are classified as amortized cost or FVTPL. A financial liability is classified as FVTPL if it is classified as held-for-trading, it is a derivative or it is designated as such on initial recognition.

The Corporation classifies and subsequently measures its financial instruments as follows:

- Cash, restricted cash, accounts receivable and notes receivable from related parties are financial assets classified and measured at amortized cost using the effective interest method, less any impairment if applicable.
- Bank indebtedness, accounts payable and accrued liabilities, customer deposits and long-term debt are financial liabilities classified and measured at amortized cost using the effective interest rate method.

The fair value of a financial instrument is the amount of consideration that would be agreed upon in an arm's-length transaction between willing parties. The Corporation's own credit risk and the credit risk of the counterparty are taken into account in determining the fair value of financial assets and liabilities. Financial instruments are classified using a three level hierarchy. The levels reflect the inputs used to measure the fair values of financial assets and financial liabilities, and are as follows:

- Level 1: inputs are unadjusted quoted prices of identical instruments in active markets;
- Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly; and
- Level 3: inputs for the liabilities that are not based on observable market data [unobservable inputs].

All financial assets except for those classified as FVTPL or FVOCI are subject to review for impairment at least at each reporting date. Impairment losses, if any, are recognized in net income. An impairment loss is reversed if the reversal can be related objectively to an event occurring after the impairment loss was recognized.

As of January 1, 2018, the Corporation recognizes loss allowances for expected credit losses ['ECL's] on financial assets measured at amortized cost. The Corporation measures loss allowances for electricity receivables, unbilled revenue and trade receivables via a simplified approach as permitted by IFRS 9, at an amount equal to lifetime ECL.

When determining whether the credit risk of a financial asset has increased, the Corporation performs a quantitative and qualitative analysis based on the Corporation's historical experience and forward-looking information. The Corporation assumes that the credit risk on a financial asset has increased significantly if it is more than 30 days past due. The Corporation considers a financial asset to be in default when the borrower is unlikely to pay its credit obligations to the Corporation in full, without recourse by the Corporation to actions such as realizing security.

Loss allowances for financial assets measured at amortized cost are deducted from the gross carrying amount of the assets. The gross carrying amount of a financial asset is written off to the extent that there is no realistic prospect of recovery.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(I) Property, plant and equipment

Property, plant and equipment consist principally of land, buildings and fixtures, electricity distribution and infrastructure, furniture and equipment, rolling stock, generating equipment, reservoirs, dams and waterways, civil structures and assets under construction.

Property, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment losses, if any. Self-constructed asset costs comprise all directly attributable expenditures to bring the asset into operation including labour, materials, employee benefits, transportation, contracted services and borrowing costs. Where parts of an item in property, plant and equipment are significant and have different estimated economic useful lives, they are accounted for as separate items [major components] of property, plant and equipment. Certain assets may be acquired or constructed with financial assistance in the form of contributions from customers and developers. Such contributions are treated as deferred revenue.

The cost of major inspections and maintenance is recognized in the carrying value of an asset provided that the Corporation will derive future economic benefits from the expenditure. The carrying amount of a replaced part is derecognized. The costs of day-to-day servicing, repairs, and maintenance, are expensed as incurred.

Depreciation is recorded on a straight-line basis over the estimated service life of each component of property, plant and equipment. Emergency capital spare parts that are expected to be used for more than one year are considered to be assets under construction and are depreciated only once they are put into service.

Gains and losses on disposal of retired, sold or otherwise derecognized property, plant and equipment are recognized in income and are calculated as the difference between net proceeds from disposal and the carrying amount of the asset. Compensation from third parties for property, plant and equipment lost, impaired or given up is measured at fair value and recognized when the compensation becomes receivable.

The estimated useful lives, residual values and depreciation methods are reviewed at each year-end with the effect of any changes in estimate being accounted for on a prospective basis.

Estimated service lives for property, plant and equipment classes are as follows:

Land, buildings and structures	
Land	Indefinite
Buildings and fixtures	20 to 100 years
Civil structures	100 years
Electricity distribution infrastructure	10 to 60 years
Generation and other	
Generating equipment	10 to 50 years
Reservoirs, dams and waterways	100 to 125 years
Furniture and equipment	5 to 10 years
Rolling stock	7 to 15 years

Assets under construction and land are not subject to depreciation.

Borrowing costs are capitalized as a component of the cost of self-constructed property, plant and equipment assets that take a substantial period of time to get ready for their intended use. The capitalization rate is the Corporation's weighted average cost of borrowing.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(m) Intangible assets

Intangible assets include land and water rights, computer software, capital contributions, power purchase agreements, deferred contract costs and assets under development. Water rights represent the inherent value of the right to draw water from government-owned rivers and lakes for purposes of generating electricity.

Intangible assets with finite lives are measured at cost less accumulated amortization and accumulated impairment losses, if any. Intangible assets with finite lives are amortized on a straight-line basis over the estimated service lives of the related assets while those with indefinite lives are not amortized.

Intangible assets are derecognized on disposal or when no further future economic benefits are expected from their use. Gains or losses on disposal of intangible assets are recognized in income and are calculated as the difference between net proceeds from disposal and the carrying amount of the asset.

The estimated useful lives and amortization methods are reviewed at each year-end with the effect of any changes in estimate being accounted for on a prospective basis.

Estimated service lives for intangible assets with finite lives are as follows:

Land rights	50 years
Water rights with a definite useful life	7 to 100 years
Computer software	5 to 10 years
Other contractual rights	
Capital contribution agreements	45 years
Power purchase agreements ['PPA']	15 years
Deferred contract costs	15 years

(n) Investment properties

Investment property is land and/or buildings held for purposes other than for use in the Corporation's operating activities. The Corporation holds investment properties either for potential expansion of the service delivery network or as excess administrative property. Investment properties are measured at cost plus transaction costs, and have estimated service lives ranging between 25 and 50 years. Any gain or loss arising from the sale of an investment property is immediately recognized in the consolidated statement of income.

(o) Impairment of non-financial assets

At the end of each reporting period, or earlier if required, the Corporation assesses whether there is an indication that a non-financial asset [or CGU] may be impaired. A CGU is the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets. If any indication exists, the Corporation estimates the asset's recoverable amount, which is the higher of an asset or CGU's fair value less costs of disposal and its value in use. If the carrying value of a non-financial asset exceeds its recoverable amount, the difference is immediately recognized as an impairment loss in the consolidated statement of income.

Intangible assets with indefinite useful lives [i.e. certain water rights] and assets under development are tested for impairment [within their respective CGUs] at least annually, and whenever there is an indication that the asset may be impaired.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(o) Impairment of non-financial assets [continued]

When determining the recoverable amount, the Corporation determines its value-in-use by discounting estimated future cash flows to their present value using a discount rate that reflects changes in the time value of money and the risks specific to the asset of the CGU. The discount rate estimated and used by management represents the weighted average cost of capital determined for the CGU being tested. Terminal values are included in the determination of management's value-in-use calculations and are based on an earnings multiple approach via a terminal capitalization rate.

Where the assets and liabilities of a CGU containing water rights with indefinite useful lives have not changed significantly; the CGU is not impacted by events or circumstances that would cause its value in use ['VIU'] calculation to significantly change; and the most recent VIU calculation resulted in an amount that exceeded the CGUs' carrying amount by a substantial margin; the most recently performed VIU calculation will continue to be used in the Corporation's evaluation of impairment in the current year.

At the end of a reporting period, if there is any indication that an impairment loss recognized in a prior period no longer exists or has decreased, the loss is reversed up to its recoverable amount. The carrying amount following the reversal must not be higher than the carrying amount that would have prevailed [net of amortization] had the original impairment not been recognized in prior periods.

Compensation for impairment of non-financial assets, such as insurance recoveries, is included in determining profit or loss when it becomes receivable and is not offset against the cost of restoring, purchasing or constructing replacement assets.

(p) Employee future benefits

(i) Pension plans

The Corporation provides pension benefits for its employees through the Ontario Municipal Employees Retirement System ['OMERS'] Fund [the 'Fund']. OMERS is a multi-employer pension plan that provides pensions for employees of Ontario municipalities, local boards, public utilities and school boards. The Fund is a defined benefit pension plan, which is financed by equal contributions from participating employers and employees and by the investment earnings of the Fund.

Although the plan is a defined benefit plan, sufficient information is not available to the Corporation to account for it as such because it is not possible to attribute the fund assets and liabilities between the various employers who contribute to the Fund. As a result, the Corporation accounts for the plan as a defined contribution plan, and contributions payable as a result of employee service are expensed as incurred as part of operating costs. The Corporation shares in the actuarial risks of the other participating entities in the plan, and its future contributions may therefore be increased due to actuarial losses relating to the other participating entities. In addition, the Corporation's contributions could be increased if other entities withdraw from the plan.

CHLP is the sponsoring employer of the Pension Plan for Employees of Chaudiere Hydro L.P. and Participating Employers ['Chaudiere Hydro Pension Plan' or 'CHPP'] which provides pension benefits for certain of the Corporation's employees and is accounted for as follows:

- CHPP assets are held by an insurance corporation and are measured at fair value, which are determined as follows: bond, equity and other investment funds are valued using the unit values supplied by the fund manager, which reflects the fund's proportionate share of underlying net assets at fair values determined using closing quotations from Canadian investment dealers, and short-term investments are valued at cost, including accrued interest, which due to their short-term maturity approximates fair value.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(p) Employee future benefits [continued]

(i) Pension plans [continued]

- Defined benefit obligations of the CHPP are determined based on the expected future benefit payments discounted using market interest rates on high-quality debt instruments that match the timing and amount of expected benefit payments.
- The cost of pension earned by employees is actuarially determined using the projected benefit method prorated on services, and management's best estimate of salary escalation, retirement ages and life expectancy.
- The defined benefit expense is presented in employee benefits in net income on the consolidated statement of income and includes, as applicable, the estimated cost of employee benefits for the current year service, interest cost, interest income on CHPP's assets, plan amendments, curtailments, other administration costs of the pension plans and any gain or loss on settlement. Current service cost, interest income on CHPP's assets and interest costs are computed by applying the discount rate used to measure the plan obligation at the beginning of the annual period.
- Remeasurements arising on CHPP's assets and defined benefit obligation are presented in OCI on the consolidated statement of comprehensive income and arise from actuarial gains and losses on defined benefit obligations, the difference between the actual return [net of costs of managing CHPP's assets] and interest income on plan assets, if applicable. CHPP's significant assumptions are assessed and revised, as appropriate.
- Past service costs are included in the cost of the CHPP for the year when they arise.

The fair value of the CHPP assets is offset against the defined benefit obligation. The net amount is recognized as a retirement benefit asset or retirement benefit liability.

(ii) Other post-employment benefits

Other post-employment benefits provided by the Corporation include life insurance, a retirement grant and other benefits. These plans provide benefits to certain employees when they are no longer providing active service.

Employee future benefits expense is recognized in the period during which the employees render services.

Employee future benefits are recorded on an accrual basis. The defined benefit obligation and current service costs are calculated using the projected benefit method prorated on service and based on assumptions that reflect management's best estimates. The current service cost for a period is equal to the actuarial present value of benefits attributed to employees' services rendered in the period. Actuarial gains and losses resulting from experience different from that assumed or from changes in actuarial assumptions are recognized in OCI. However, for Hydro Ottawa, these amounts are reclassified to a regulatory debit balance as prescribed by the OEB.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(p) Employee future benefits [continued]

(iii) Employee benefits

The Corporation provides short-term employee benefits such as salaries, employment insurance, short-term compensated absences, sick leave and health and dental care. These benefits are recognized as the related service is rendered and are measured on an undiscounted basis. Short-term employee benefits are recognized as an expense unless they qualify for capitalization as part of the cost of an item of property, plant and equipment or intangible assets. A liability is recognized in respect of any unpaid short-term employee benefits for services rendered in the reporting period.

The Corporation recognizes a liability for the expected cost of accumulated non-vested sick leave benefits at the end of the reporting period. The Corporation presents its non-vested sick leave obligation as a non-current liability since it does not expect to settle all of its sick leave benefits within twelve months from the balance sheet date.

(q) Customer deposits

Customer deposits are cash collections from non-residential customers to guarantee the payment of future energy bills and fulfillment of construction obligations. Deposits from customers to guarantee the payment of energy bills includes related interest amounts owed to the customers. Deposits estimated to be refundable to customers within the next fiscal year are classified as current liabilities and included in accounts payable and accrued liabilities.

(r) Provisions and contingencies

The Corporation recognizes provisions when there is a present legal or constructive obligation as a result of a past event, it is probable that an outflow of economic benefits will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation. If the effect is material, provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and, where appropriate, the risks specific to the liability.

The evaluation of the likelihood of the contingent events requires judgment by management as to the probability of exposure to potential loss. Actual results could differ from these estimates.

A contingent asset is not recognized in the consolidated financial statements. However, a contingent asset is disclosed where an inflow of economic benefits is probable.

(s) Deferred revenue

In certain situations, financial assistance in the form of contributions is required from customers and developers to finance additions to property, plant and equipment. This occurs when the estimated revenue resulting from the addition to property, plant and equipment is less than the cost of providing the service or where special equipment is needed to supply the customers' specific requirements. Since the contributions will provide customers with ongoing access to the supply of electricity, these contributions are classified as deferred revenue, and recognized in revenue in accordance with Note 3(f)(v).

(t) Debt-issuance costs

The Corporation incurs debt-issuance costs that are external, direct and incremental in nature arising from its debenture and bond offerings. Debt-issuance costs associated with its debenture and bond offerings are netted against the proceeds of the debt and amortized using the effective interest method.

Hydro Ottawa Holding Inc.

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3. SIGNIFICANT ACCOUNTING POLICIES [CONTINUED]

(u) Leases

Leases in which the Corporation assumes all of the risks and rewards of ownership are classified as finance leases. Upon initial recognition, the leased asset is measured at an amount equal to the lower of its fair value and the present value of the minimum lease payments. Subsequent to initial recognition, the asset is accounted for in accordance with the accounting policy applicable to the asset. Payments under finance leases are apportioned between interest expense and a reduction of the outstanding liability.

All other leases are classified as operating leases and the leased assets are not recognized on the Corporation's consolidated balance sheets. Payments made under operating leases are recognized in the consolidated statement of income on a straight-line basis over the term of the lease.

(v) Inventory

Inventory consists of work-in-process and finished goods used in the installation and maintenance of streetlights as part of the Corporation's commercial services. Inventory is measured at the lower of weighted average variable costs and net realizable value. The cost of inventory is based on the first-in, first-out cost formula based on standard costs. Net realizable value is the estimated selling price in the ordinary course of business less any applicable selling expenses.

4. NEW ACCOUNTING PRONOUNCEMENTS

A number of new standards, amendments and interpretations relevant to the Corporation have either been adopted for the year ended December 31, 2018, or, are not yet effective and have not been applied in preparing these consolidated financial statements.

(a) Recently adopted accounting standards

(i) Revenue from contracts with customers

On January 1, 2018, the Corporation adopted IFRS 15 – *Revenue from Contracts with Customers* ['IFRS 15'] by applying the modified retrospective approach where prior periods are not restated. The Corporation elected a practical expedient, as allowed under IFRS 15, which permitted it to apply the new standard solely to contracts which were in-progress as of January 1, 2018, and all contracts initiated thereafter.

IFRS 15 supersedes previous revenue recognition guidance including IAS 18 – *Revenue*, IAS 11 – *Construction Contracts* and related interpretations. IFRS 15 provides a standardized five step model [identify contract, identify performance obligations, determine transaction price, allocate transaction price and recognize revenue] to recognize revenue. Depending on whether certain criteria are met revenue is recognized over time, in a manner that best reflects the Corporation's performance or at a point in time, when control of the goods or services is transferred to the customer. IFRS 15 applies to nearly all contracts with customers, unless covered by another standard [i.e. leases, financial instruments, insurance contracts], or those out of scope of IFRS 15.

The adoption of IFRS 15 did not have an impact on the Corporation's existing revenue recognition practices as reported in the comparative year. As a result, there have been no adjustments recognized upon the adoption of IFRS 15. The new standard did result in additional disclosures, see Notes 15 and 21.

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4. NEW ACCOUNTING PRONOUNCEMENTS [CONTINUED]

(a) Recently adopted accounting standards [continued]

(ii) Financial instruments

On January 1, 2018, the Corporation adopted IFRS 9 – *Financial Instruments* ['IFRS 9'] on a retrospective basis, which replaces International Accounting Standard 39 – *Financial Instruments: Recognition and Measurement* ['IAS 39']. The Corporation has chosen not to restate comparative information with respect to classification and measurement requirements. Accordingly, the information presented for 2017 does not reflect the requirements of IFRS 9, but rather those of IAS 39.

IFRS 9 includes revised guidance on the classification and measurement of financial assets, including basing the classification of financial assets on their contractual cash flow characteristics and the entity's business model for managing financial assets, whereas IAS 39 based the classifications on specific definitions for each category. Moreover, IFRS 9 simplifies the former IAS 39 classifications into three main categories [amortized cost, fair value through other comprehensive income and fair value through profit or loss], and introduces a new expected credit loss model for measuring impairment of financial assets. In addition, IFRS 9 contains consequential amendments to IFRS 7 – *Financial Instruments: Disclosures* which has also been adopted by the Corporation.

On January 1, 2018, management assessed which business models apply to the financial assets held by the Corporation and has classified its financial instruments into the appropriate IFRS 9 categories. In addition, the Corporation revised its impairment methodology under IFRS 9 for each of its classes of financial assets. The Corporation's financial instruments will continue to be subsequently measured at amortized cost [previously classified as loans and receivables for financial assets under IAS 39], and furthermore the new impairment methodology results in the same expected credit loss [allowance for doubtful accounts] as under the previous method used. The adoption of IFRS 9 by the Corporation did not result in any quantitative adjustments being recognized as at January 1, 2018.

The adoption of IFRS 9 has not had an effect on the Corporation's accounting policies related to financial liabilities.

(b) Recently issued accounting guidance not yet adopted

(i) Leases

In January 2016, the IASB issued a new standard, IFRS 16 – *Leases* ['IFRS 16'] which will replace IAS 17 – *Leases*. IFRS 16 eliminates the current dual model [on and off balance sheet] and aims to provide greater comparability between companies who lease assets and those who purchase assets with a single on-balance sheet approach. Under IFRS 16, all leases from the lessee's perspective will have to be recognized on the balance sheet, with related lease liabilities, with exemptions for short-term [< 1 year] and low value leases.

The new standard becomes effective for reporting periods beginning on or after January 1, 2019. The Corporation plans on adopting IFRS 16 using the modified retrospective application method, where the 2018 comparatives will not be restated. In addition, the Corporation will apply the recognition exemptions in IFRS 16 for 'low value' leases and leases that end within 12 months of the date of initial application and account for them as short-term leases. The Corporation continues to analyze IFRS 16 and the potential impact on its consolidated financial statements.

Hydro Ottawa Holding Inc.

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4. NEW ACCOUNTING PRONOUNCEMENTS [CONTINUED]

(b) Recently issued accounting guidance not yet adopted [continued]

(ii) Uncertain tax positions

On June 7, 2017, the IASB issued International Financial Reporting Interpretations Committee 23 – Uncertainty over Income Tax Treatments ['IFRIC 23']. IFRIC 23 requires an entity to contemplate whether uncertain tax treatments should be considered separately or together as a group, to determine if it is probable that the tax authorities will accept the uncertain tax treatment, and to measure the tax uncertainty based on the most likely amount or expected value. IFRIC 23 is applicable for annual periods beginning on or after January 1, 2019. The Corporation continues to evaluate IFRIC 23 and the potential impact on its consolidated financial statements.

5. ACCOUNTS RECEIVABLE

	2018 \$	2017 \$
Receivables from contracts with customers		
Electricity receivable	59,933	54,056
Unbilled revenue related to electricity	80,180	84,963
Trade and other receivables	18,801	44,124
Amounts due from related parties [Note 29]	15,009	9,031
Less: loss allowance [Note 20(c)]	(2,541)	(2,512)
	171,382	189,662
Receivables from other sources		
Conservation and demand management	1,503	1,813
Sales tax receivable	6,164	1,221
	179,049	192,696

Hydro Ottawa Holding Inc.

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6. REGULATORY BALANCES

Information about the Corporation's regulatory balances is as follows:

	Remaining recovery/ reversal [years]	2017 \$	Balances arising in the year \$	Recovery/ reversal \$	Other movements ⁽¹⁾ \$	2018 \$
Regulatory debit balances						
RARA	1	438	196	(241)	-	393
Settlement variances	1 - 5	2,508	(505)	-	-	2,003
OPEB deferral account	1 - 5	782	-	-	(782)	-
LRAM	1 - 5	2,571	529	-	-	3,100
Regulatory asset for deferred income taxes	(2)	16,797	9,009	-	-	25,806
Other variances and deferred costs	1 - 5	2,370	995	-	-	3,365
		25,466	10,224	(241)	(782)	34,667
Regulatory credit balances						
RLRA	1	1,464	13,214	(13,056)	-	1,622
Settlement variances	1 - 5	20,761	(7,325)	-	-	13,436
ESM	1 - 5	1,385	2,002	-	-	3,387
OPEB deferral account	1 - 5	-	1,054	-	(782)	272
Other variances and deferred costs	1 - 5	899	76	-	-	975
		24,509	9,021	(13,056)	(782)	19,692

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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6. REGULATORY BALANCES [CONTINUED]

	Remaining recovery/ reversal [years]	2016 \$	Balances arising in the year \$	Recovery/ reversal \$	Other movements ⁽¹⁾ \$	2017 \$
Regulatory debit balances						
RARA	1	274	(5,679)	4,868	975	438
Settlement variances	1 - 5	2,496	(805)	-	817	2,508
OPEB deferral account	1 - 5	147	635	-	-	782
LRAM	1 - 5	1,469	1,102	-	-	2,571
Regulatory asset for deferred income taxes	(2)	7,684	9,113	-	-	16,797
Other variances and deferred costs	1 - 5	1,674	682	13	1	2,370
		13,744	5,048	4,881	1,793	25,466
Regulatory credit balances						
RLRA	1	409	15,162	(15,083)	976	1,464
Settlement variances	1 - 5	36,137	(16,193)	-	817	20,761
ESM	1 - 5	-	1,385	-	-	1,385
Other variances and deferred costs	1 - 5	159	740	-	-	899
		36,705	1,094	(15,083)	1,793	24,509

⁽¹⁾ Other movements represent reclassifications of balances.

⁽²⁾ The balance is being reversed through timing differences in the recognition of deferred income tax assets.

The following regulatory balances include accrued interest which is presented in net movements in regulatory balances:

- The RARA/RLRA includes accrued interest costs of \$145 [2017 – \$129].
- Settlement variances include accrued interest costs of \$52 [2017 – \$137].
- Other variance and deferred costs include accrued interest earned of \$36 [2017 – \$37].

Details and descriptions pertaining to the above regulatory debit and credit accounts are disclosed in Note 3(d)(i) and 3(d)(ii) of these consolidated financial statements.

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7. PROPERTY, PLANT AND EQUIPMENT

	Land, buildings and structures \$	Distribution \$	Generation and other and other \$	Assets under construction \$	Total \$
Cost					
Balance as at December 31, 2016	126,127	803,916	161,759	163,073	1,254,875
Additions, net of transfers	71,053	97,518	85,471	(82,835)	171,207
Disposals	-	(2,602)	(8,762)	-	(11,364)
Exchange differences	(1,186)	-	(2,443)	(102)	(3,731)
Balance as at December 31, 2017	195,994	898,832	236,025	80,136	1,410,987
Additions, net of transfers	8,662	110,378	13,666	102,560	235,266
Disposals	-	(563)	(617)	(290)	(1,470)
Exchange differences	1,476	-	3,186	76	4,738
Balance as at December 31, 2018	206,132	1,008,647	252,260	182,482	1,649,521
Accumulated depreciation					
Balance as at December 31, 2016	(9,415)	(75,550)	(23,740)	-	(108,705)
Depreciation	(3,962)	(30,277)	(10,883)	-	(45,122)
Disposals	-	1,206	2,619	-	3,825
Exchange differences	55	-	151	-	206
Balance as at December 31, 2017	(13,322)	(104,621)	(31,853)	-	(149,796)
Depreciation	(4,878)	(33,221)	(12,054)	-	(50,153)
Disposals	-	383	230	-	613
Exchange differences	(19)	-	(375)	-	(394)
Balance as at December 31, 2018	(18,219)	(137,459)	(44,052)	-	(199,730)
Net book value					
As at December 31, 2017	182,672	794,211	204,172	80,136	1,261,191
As at December 31, 2018	187,913	871,188	208,208	182,482	1,449,791

At December 31, 2018, assets under construction include expenditures towards the ongoing construction of the Corporation's new administration and operational facilities, and towards significant refurbishments of the generation facilities held by Hull Energy LP and CHLP North [the 'refurbishment projects']. Upon completion of the refurbishment projects, Hull Energy LP and CHLP North will sell electricity to the Province of Ontario under two separate forty-year Hydroelectric Standard Offer Program – Municipal Steam Contracts with the Independent Electrical System Operator [IESO].

On October 20, 2017, the Corporation substantially completed a significant expansion of a generating facility at Chaudière Falls. This resulted in the componentization of significant assets previously under construction; the commencement of depreciation thereon; and the ceasing of borrowing cost capitalization. Amounts componentized to land, buildings and structures in 2017 included \$56,514 in civil structures pertaining to this expansion.

During the year, the Corporation capitalized borrowing costs of \$2,639 [2017 – \$6,676] to property, plant and equipment. The average annual interest rate for 2018 was 3.4% [2017 – 4.0%].

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8. INTANGIBLE ASSETS

	Land rights and water rights \$	Computer software \$	Other contractual rights \$	Assets under development \$	Total \$
Cost					
Balance as at December 31, 2016	62,039	52,451	22,228	9,909	146,627
Additions, net of transfers	11	14,202	2,218	3,102	19,533
Exchange differences	(1,704)	(26)	-	-	(1,730)
Disposals	-	(1,063)	-	-	(1,063)
Balance as at December 31, 2017	60,346	65,564	24,446	13,011	163,367
Additions, net of transfers	(5)	1,743	1,851	613	4,202
Exchange differences	2,119	33	-	12	2,164
Disposals	-	-	-	(252)	(252)
Balance as at December 31, 2018	62,460	67,340	26,297	13,384	169,481
Accumulated amortization					
Balance as at December 31, 2016	(3,432)	(20,650)	(877)	-	(24,959)
Amortization	(2,258)	(6,763)	(545)	-	(9,566)
Exchange differences	250	10	-	-	260
Disposals	-	1,063	-	-	1,063
Balance as at December 31, 2017	(5,440)	(26,340)	(1,422)	-	(33,202)
Amortization	(2,136)	(9,104)	(667)	-	(11,907)
Exchange differences	(482)	(20)	-	-	(502)
Disposals	-	-	-	-	-
Balance as at December 31, 2018	(8,058)	(35,464)	(2,089)	-	(45,611)
Net book value					
As at December 31, 2017	54,906	39,224	23,024	13,011	130,165
As at December 31, 2018	54,402	31,876	24,208	13,384	123,870

During the year, the Corporation capitalized borrowing costs of \$79 [2017 – \$900] to intangible assets. The average annual interest rate for 2018 was 3.4% [2017 – 3.9%].

Other contractual rights largely includes connection and cost recovery agreements ['capital contribution agreements'] that govern the construction by HONI of new or modified transformer stations for the purpose of serving Hydro Ottawa's customers. Each of Hydro Ottawa's capital contribution agreements has a term of 25 years.

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8. INTANGIBLE ASSETS [CONTINUED]

A significant portion of the Corporation's water rights with indefinite lives [70% or \$16,941] stems from a historical 1889 lease agreement with Public Services and Procurement Canada. This contract provides rights to waters on the Ottawa River at Chaudière Falls for two of the Corporation's CGUs – the CHLP CGU [water rights carrying value of \$9,575] and the CHLP North CGU [water rights carrying value of \$7,366] – and renews every 21 years into perpetuity. The Corporation also retains water rights with indefinite lives [30% or \$7,092 translated US to CAD] at two of its EONY generating stations which stem from historical agreements with the U.S. Federal Energy Regulatory Commission [‘FERC’]. These FERC licenses have an indefinite life as the Corporation is granted a legal exemption from re-qualifying for these licenses due to the size of the stations.

The Corporation's annual impairment tests with respect to the CHLP and CHLP North CGUs were based on value-in-use calculations and resulted in no impairment for the 2018 fiscal year [2017 – \$nil]. Management's VIU calculations – subject to certain estimates as described in Note 2(d)(v) – are based on discounted future cash inflows to be earned under each CGUs' 40-year HESOP contract, while the cash outflows are based on management's industry experience and third party input; taking into account the estimated cost of the refurbishment projects in the case of CHLP North. The key assumption in each VIU calculation was a weighted average cost of capital [‘WACC’] of 4.6% [2017 – 4.6%].

The Corporation's impairment test performed in light of the circumstances disclosed in Note 2(d)(ix) was based on a value-in-use calculation and resulted in no impairment for the 2018 fiscal year. Management's VIU calculation involved third-party consultation in the forecasting of New York energy prices specific to its operating zone over a 20-year timeframe [a typical period in the electricity industry]. Other key assumptions in the value-in-use calculation was a WACC of 6.9%, a US inflation rate of 2.2%, and a terminal capitalization rate of 6.7%.

9. INVESTMENT PROPERTIES

	2018 \$	2017 \$
Net book value, beginning of year	2,602	2,297
Additions	-	417
Depreciation	(120)	(112)
Net book value, end of year	2,482	2,602

The fair value of investment properties is \$5,220, which is based on the latest Municipal Property Assessment Corporation valuation dated May 17, 2018.

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10. INVESTMENTS IN JOINT VENTURES**(a) Investment in joint ventures summary**

	2018 \$	2017 \$
Moose Creek LP [50.05%]		
Investment in joint venture, beginning of year	4,503	4,055
Share of profit	231	448
Investment in joint venture, end of year	4,734	4,503
PowerTrail [60%]		
Investment in joint venture, beginning of year	4,366	3,820
Share of profit, net of tax	382	594
Other adjusting items related to profit	21	21
Non-cash (distribution) contribution	(32)	(69)
Investment in joint venture, end of year	4,737	4,366
Zibi Community Utility LP [50%]		
Investment in joint venture, beginning of year	-	-
Capital investments	2,276	-
Share of loss	(57)	-
Investment in joint venture, end of year	2,219	-
Total investments in joint ventures	11,690	8,869

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10. INVESTMENTS IN JOINT VENTURES [CONTINUED]

(b) Balance sheet and statement of income summary

	2018 \$	2017 \$
Moose Creek LP		
Current assets	946	1,306
Non-current assets	12,625	13,269
Total assets	13,571	14,575
Current liabilities	2,271	2,016
Non-current liabilities	1,600	3,320
Total liabilities	3,871	5,336
Revenue	3,590	2,739
Net income	461	895
PowerTrail		
Current assets	1,192	1,182
Non-current assets	11,134	11,167
Total assets	12,326	12,349
Current liabilities	1,557	859
Non-current liabilities	2,523	3,826
Total liabilities	4,080	4,685
Revenue	3,638	3,682
Net income	636	990

Assets, liabilities, revenues and net income pertaining to the Zibi Community Utility LP joint venture are not considered to be significant to the Corporation as at December 31, 2018.

(c) Credit facility

PowerTrail maintains an operating revolving line of credit of \$1,000 for general business purposes that bears annual interest at the prime rate. PowerTrail continues to also maintain a credit facility of \$200 [2017 – \$200] to provide standby letters of credit to the IESO. As at December 31, 2018, PowerTrail had drawn an amount of \$133 [December 31, 2017 – \$133] in standby letters of credit and had no outstanding balances drawn against its operating revolving line of credit [December 31, 2017 – \$nil]. Both facilities contain customary covenants and events of default, including a covenant to maintain a tangible net worth of \$1,000.

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11. NET GAIN FROM INSURANCE PROCEEDS

	2018	2017
	\$	\$
Unit 1 Event	6,865	1,600
Flood Event	-	1,339
	6,865	2,939

(a) Unit 1 Event and other long-term asset

On August 19, 2017, the Unit 1 turbine-generator [of 4 Units] of CHLP experienced a mechanical failure while in operation due to a manufacturer defect and sustained significant damage, requiring a complete overhaul [the 'Unit 1 Event']. Pursuant to the contractual warranty provisions, the subcontractor is responsible for, and has agreed to, reconstruct Unit 1. As a result, the various asset components relating to Unit 1, totaling \$5,771, were derecognized in the previous year from property, plant and equipment and the Corporation recognized an asset under warranty of the same amount on its consolidated balance sheet at December 31, 2017 and 2018. Construction with respect to Unit 1 is expected to be fully complete in 2019, at which point the warranty asset shall be reclassified to property, plant and equipment.

The Corporation's contract with said subcontractor and its insurance policy relating to the construction of the new generating facility at CHLP provides business interruption compensation in circumstances such as the Unit 1 Event. Consequently, the Corporation has recognized a gain on insurance proceeds of \$6,865 [2017 – \$1,600] which compensates the Corporation for lost generation revenues. The Corporation has received \$8,000 in cash proceeds pertaining to the Unit 1 Event claims through December 31, 2018. The Corporation will continue to make claims for lost revenues going forward to the maximum allowable amount under this contract and its insurance policy until such time Unit 1 is back in service in 2019.

(b) Flood Event

In May 2017, spring melt and heavy rain led to a flooding of the Ottawa River system [the 'Flood Event'] – resulting in a shut-down of several of the Corporation's generating stations, predominately at Chaudière Falls. Remediation efforts commenced as soon as water levels permitted and the affected stations came back into operation between October and November 2017. As a result, the Corporation recorded a net gain on insurance proceeds of \$1,339 in 2017 and the insurance proceeds were received by the Corporation in the current year.

12. NOTES RECEIVABLE FROM RELATED PARTIES

	2018	2017
	\$	\$
Moose Creek LP promissory note, 6.0%, due January 1, 2025	1,653	2,324
PowerTrail promissory notes, non-interest bearing	798	1,338
City of Ottawa note, 3.0%	13,510	9,746
	15,961	13,408
Less: current portion	(6,575)	(4,641)
	9,386	8,767

Hydro Ottawa Holding Inc.

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12. NOTES RECEIVABLE FROM RELATED PARTIES [CONTINUED]

(a) Moose Creek LP

The note receivable is an unsecured ten-year promissory note with quarterly blended repayments. As approved by the Board of Directors of Moose Creek LP in 2018, accelerated principal payments in the aggregate of \$500 are to be made to the Corporation in addition to the regular quarterly blended payments in 2019. Future principal and interest payments on the notes receivable are therefore as follows: 2019 – \$943, 2020 – \$442, and 2021 – \$405.

(b) PowerTrail

To fund the construction of its gas generation plant at the Trail Road landfill site, between 2005 and 2007, the Corporation provided unsecured, non-interest bearing grid promissory notes to PowerTrail totaling \$4,860. Pursuant to the Shareholder Agreement, loans from the Corporation to PowerTrail are made on a pro rata basis – based upon its share of contributions of capital in the Corporation [60%]. Repayments on the grid promissory notes are made when possible as agreed to by the shareholders. The initial fair value of each advance was calculated using discount rates ranging between 7.6% and 8.0%. Future cash repayments on the notes receivable are estimated to be as follows: 2019 – \$660 and 2020 – \$180 while the remaining imputed interest to be earned by the Corporation over the next two years is \$42.

(c) City of Ottawa

The Corporation is party to two agreements with the City of Ottawa [the 'City']. Over a span of an estimated six years from the contract signing date in February 2016, the Corporation is engaged to convert legacy street lights to LED [S/L conversion contract] and to provide maintenance services to all legacy and converted LED street lights [S/L maintenance contract].

While payment terms under the S/L maintenance contract are in accordance with the Corporation's usual credit terms, the Corporation and the City have negotiated a 3% interest bearing note, calculated on a quarterly basis with open repayment terms, for the S/L conversion contract. Under such terms, the City is to pay the Corporation on a quarterly basis an amount calculated based on the City's electricity, maintenance and capital expenditure savings resulting from the LED street light conversions. Of the total \$13,510 outstanding at December 31, 2018, \$2,412 represents accrued work billed in early 2019. The Corporation estimates that \$5,064 will be repaid in 2019.

The Corporation carries inventory of \$1,435 [December 31, 2017 – \$2,162] relating to City of Ottawa street light conversion and maintenance endeavours at December 31, 2018. During the year, the Corporation expensed \$5,423 of inventory as cost of goods sold which is included in operating costs [2017 – \$4,826].

13. CREDIT FACILITY

The Corporation maintains a credit facility for an amount of \$340,750 and US\$200 [December 31, 2017 – \$340,750 and US\$200]. The facility consists of a \$190,000 [2017 – \$190,000] revolving operating line maturing on August 1, 2021, a \$150,000 [2017 – \$150,000] 364 day revolving operating term line which may be used to assist with refinancing debt and support day to day operations and a \$750 and US\$200 [2017 – \$750 and US\$200] commercial card facility – all of which matures on August 1, 2021. The revolving operating lines can be used by way of direct advances, bankers' acceptances, and/or by way of letters of credit and other guarantees.

The credit facility is unsecured and has customary covenants including a maximum debt to total capitalization of 75% and a negative pledge not to encumber the assets of the Corporation, Hydro Ottawa, or Energy Ottawa Inc., other than those permitted in the credit facility.

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13. CREDIT FACILITY [CONTINUED]

At December 31, 2018, the Corporation had drawn \$33,400 in direct advances against the revolving operating line of credit [2017 – \$28,400], \$42,000 in bankers' acceptances against the \$190,000 revolving operating line [2017 – \$nil] and \$150,000 in bankers' acceptances against the \$150,000 revolving operating term line [2017 – \$129,000].

At December 31, 2018, the Corporation has drawn \$14,738 [2017 – \$24,771] against its facilities in standby letters of credit. Drawings include a \$10,000 [December 31, 2017 – \$10,000] letter of credit to cover its prudential support obligation as described in Note 27; a letter of credit to the Receiver General of Canada on behalf of Fisheries and Oceans Canada of \$538 [December 31, 2017 – \$538] in connection with its completed expansion of a generating facility at Chaudiere Falls; and a letter of credit to BNY Trust Company of Canada of \$4,200 [December 31, 2017 – \$12,900] in connection with the Trust Indenture dated September 7, 2016 as described in Note 17. No amounts have been drawn on any of these letters of credit.

14. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

	2018 \$	2017 \$
Purchased power payable	74,747	79,120
Trade accounts payable and accrued liabilities	60,061	56,081
Customer deposits	20,092	16,017
Customer credit balances	10,964	11,203
Accrued interest on long-term debt	7,809	7,812
Due to related parties [Note 29]	54	53
	173,727	170,286

15. DEFERRED REVENUE

	2018 \$	2017 \$
Capital contributions from customers	53,771	44,202
Capital contributions from developers	54,624	44,368
	108,395	88,570

16. EMPLOYEE FUTURE BENEFITS

(a) Pension plans

The Corporation contributes to two defined benefit plans covering substantially all of its employees.

The Corporation's participating employer contributions under OMERS for the year ended December 31, 2018 amounted to \$6,726 [2017 – \$6,434]. The Corporation also provides retirement benefits to certain employees through the Chaudiere Hydro Pension Plan. As at December 31, 2018, CWPI and Chaudiere Hydro North L.P. are the only two entities with employees who are part of the CHPP.

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16. EMPLOYEE FUTURE BENEFITS [CONTINUED]

(a) Pension plans [continued]

(i) Defined benefit obligation

	2018 \$	2017 \$
Balance, beginning of year	6,549	5,753
Current service cost	222	196
Interest cost	222	221
Benefits paid	(279)	(111)
Employee contributions	59	75
Actuarial (gain) loss	(480)	415
Balance, end of year	6,293	6,549

(ii) Plan assets

	2018 \$	2017 \$
Fair value, beginning of year	6,432	5,914
Interest credit	221	231
Employer contributions	209	199
Benefits paid	(279)	(111)
Non-investment expenses	(40)	(40)
Employee contributions	59	75
Actuarial (loss) gain	(382)	164
Fair value, end of year	6,220	6,432

(iii) Funded status

	2018 \$	2017 \$
Retirement benefit asset, beginning of year	(117)	161
Change in retirement benefit asset	44	(278)
Retirement benefit (liability) asset, end of year	(73)	(117)

Hydro Ottawa Holding Inc.

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16. EMPLOYEE FUTURE BENEFITS [CONTINUED]

(a) Pension plans [continued]

The assets of the Chaudiere Hydro Pension Plan are held and managed by an independent custodian and accounted for separately in the Corporation's pension plan. The asset allocation structure is subject to diversification requirements and constraints which reduce risk by limiting exposure to individual equity investments, credit rating categories and foreign currency exposures. Based on the fair value of assets held as at December 31, 2018, the Chaudiere Hydro Pension Plan's assets were comprised of 90.5% [2017 – 89.8%] fixed income Canadian bonds, 5.9% [2017 – 6.9%] Canadian and international equities and 3.6% [2017 – 3.3%] in alternative investments. The Chaudiere Hydro Pension Plan's investments are primarily held and managed in pooled funds, and thus do not have a quoted market price in an active market.

Employee future benefits under the Chaudiere Hydro Pension Plan are calculated using an annual compensation rate of 2.0% [2017 – 2.0%], an inflation rate of 2.0% [2017 – 2.0%] and a discount rate of 3.9% [2017 – 3.4%]. The valuations also include several other economic and demographic assumptions including mortality rates, which are based on the Canadian Pensioners' Mortality report published by the Canadian Institute of Actuaries in February 2014.

An actuarial extrapolation was performed at December 31, 2018 and no valuation allowance has been recorded by the Corporation as at December 31, 2018 and December 31, 2017 with respect to the retirement benefit liability [December 31, 2017 – actuarial extrapolation]. The last actuarial valuation was performed at January 1, 2018.

Significant actuarial assumptions for defined benefit obligation measurement purposes are discount rate and salary scale. The following sensitivities are based on reasonable changes of the assumptions, in isolation of one another, occurring at the end of the reporting period. A 1.0% decrease in discount rate would increase the defined benefit obligation by \$1,067 or 34.6% [2017 – \$1,216 or 37.7%], while a 1.0% increase in salary scale would increase the defined benefit obligation by \$187 or 6.6% [2017 – \$172 or 5.7%].

(b) Other post-employment and short-term employee benefits

The Corporation provides life, health and dental benefits to certain employees. Employee future benefits are calculated using an annual compensation rate increase of 2.0% [2017 – 2.0%] and a discount rate of 3.9% [2017 – 3.4%]. Cost trends for health are estimated to increase [at a declining rate from 7.5% to 5.0%] and dental benefits are estimated to increase by 5.0% per annum. The valuations also include several other economic and demographic assumptions including mortality rates, which are based on the Canadian Pensioners' Mortality report published by the Canadian Institute of Actuaries in February 2014.

Information about the Corporation's other post-employment benefits is as follows:

	2018 \$	2017 \$
Defined benefit obligation, beginning of year	14,322	13,335
Current service costs	392	341
Interest on defined benefit obligation	434	516
Benefits paid	(672)	(661)
Actuarial (gain) loss	(1,137)	791
Defined benefit obligation, end of year	13,339	14,322

An actuarial extrapolation was performed as at December 31, 2018 and December 31, 2017 and an actuarial valuation was last performed as at December 31, 2016.

Significant changes in actuarial assumptions related to discount rates, future health and dental costs, mortality rates and retirement age may affect the valuation of the defined benefit obligation.

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[in thousands of Canadian dollars]

17. LONG-TERM DEBT

	2018 \$	2017 \$
Senior unsecured debentures		
Series 2006-1, 4.97%, due December 19, 2036	50,000	50,000
Series 2013-1, 3.99%, due May 14, 2043	150,000	150,000
Series 2015-1, 2.61%, due February 3, 2025	200,000	200,000
Series 2015-2, 3.64%, due February 2, 2045	175,000	175,000
Senior secured amortizing bonds		
Series 2016-1, 4.08%, due March 31, 2057	203,802	203,802
	778,802	778,802
Less: unamortized debt-issuance costs	(5,412)	(5,634)
	773,390	773,168

(a) Senior unsecured debentures

Interest payments on each of the above debentures are payable semi-annually in arrears in equal installments. Each debenture contains customary covenants and events of default, including a covenant to ensure that the aggregate principal amount of the consolidated funded obligations does not exceed 75% of the total consolidated capitalization. Interest payments on these debentures over the next five years will be \$20,067 per year.

(b) Senior secured amortizing bonds

The Corporation's senior secured amortizing bonds [the 'bonds'] carry an interest rate of 4.08% and are due on March 31, 2057 [the 'maturity date']. Equal semi-annual interest-only payments are due and payable on March 31 and September 30 each year until and including March 31, 2022. Thereafter, semi-annual blended payments of principal and interest will be due and payable on March 31 and September 30 in each year commencing on September 30, 2022 until and including the maturity date. In addition, a balloon payment of \$30,570 [15% of the principal] will be due and payable on the maturity date. The bonds are secured by a first-charge interest on the assets of CHLP, and the Corporation is required to maintain a minimum debt-coverage service ratio ['DCSR']. The DCSR divides the sum of CHLP's net operating and investing cash flows [as defined by the Trust Indenture] by the current interest and principal repayments due within the next calendar year. The Corporation was in compliance with all financial covenants associated with the bonds at December 31, 2018 and 2017.

During the year, Final Completion [i.e. the approval of final non-generation construction costs and the expiration of all holdback periods under the *Lien Act* relating to construction] with respect to the Corporation's new generation facility at Chaudière Falls was achieved. This allowed the release of cash proceeds from the bonds to the Corporation that were previously restricted and held in-trust during the construction phase in accordance with the Trust Indenture. As required by the Trust Indenture, the Corporation must maintain, in a reserve account, an amount equal to the next six months of interest and principal; and in a major maintenance account, an amount that covers projected major maintenance in the coming three years.

Annual interest payments on the bonds over the next five years are expected to be \$8,315 from 2019 to 2022 and \$8,244 in 2023.

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18. CAPITAL DISCLOSURES

The Corporation's main objectives when managing capital are to:

- Ensure continued access to funding to maintain and improve the operations and infrastructure of the Corporation;
- Ensure compliance with covenants related to the credit facilities and its long-term debt; and
- Align the capital structure of the Corporation's regulated subsidiary, Hydro Ottawa, with the debt to equity structure recommended by the OEB.

The Corporation's capital consists of the following:

	2018 \$	2017 \$
Bank indebtedness, net of cash	210,106	144,490
Long-term debt	773,390	773,168
Total debt	983,496	917,658
Equity	462,882	438,141
Total capital	1,446,378	1,355,799

A subsidiary of the Corporation, Hydro Ottawa is deemed by the OEB to have a capital structure that is funded by 56% long-term debt, 4% short-term debt and 40% equity. The OEB uses this deemed structure only as a basis for setting distribution rates. As such, the Corporation's actual capital structure may differ from the OEB deemed structure.

At December 31, 2018, the Corporation's debt capitalization ratio, the calculation of which takes into account outstanding letters of credit, was 68.3% [December 31, 2017 – 68.3%]. The Corporation is in compliance with all financial covenants and limitations associated with its credit facilities and its long-term debt.

The Corporation met its capital management objectives, which have not changed during the year.

19. SHARE CAPITAL

(a) Authorized

Unlimited number of voting first preferred shares, redeemable at one dollar per share
 Unlimited number of non-voting second preferred shares, redeemable at ten dollars per share
 Unlimited number of non-voting third preferred shares, redeemable at one hundred dollars per share
 Unlimited number of voting fourth preferred shares [ten votes per share], redeemable at one hundred dollars per share
 Unlimited number of voting Class A common shares
 Unlimited number of non-voting Class B common shares
 Unlimited number of non-voting Class C common shares, redeemable at the price at which such shares are issued

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19. SHARE CAPITAL [CONTINUED]

(a) Authorized [continued]

The above shares are without nominal or par value.

Holders of second preferred shares, fourth preferred shares and common shares are entitled to receive dividends as and when declared by the Board of Directors at their discretion.

(b) Issued

	2018 \$	2017 \$
214,901,003 Class A common shares	228,453	228,453

Any invitation to the public to subscribe for shares of the Corporation is prohibited by shareholder resolution.

A shareholder's resolution directs the Corporation to target dividends at the greater of 60% of its subsidiary, Hydro Ottawa's net income or \$20,000, provided that the Corporation is in compliance with the *Business Corporations Act (Ontario)* and relevant OEB Guidelines; is not in breach of any covenants on its senior unsecured debentures or credit facility obligations; and the payment thereof does not negatively impact the Corporation's credit rating.

On April 19, 2018, the Board of Directors declared a \$21,900 dividend to the City of Ottawa, which was paid on April 26, 2018 [April 20, 2017 the Board of Directors declared a \$20,600 dividend to the City of Ottawa, which was paid on April 28, 2017].

20. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT

(a) Fair value disclosures

The carrying value of the Corporation's financial instruments, except for the instruments described below, approximate fair value because of the short maturity and nature of the instruments. The fair value measurement of the financial instrument for which the fair value has been disclosed is included in Level 2 of the fair value hierarchy [Note 3(k)].

The Corporation has estimated the fair value of notes receivable from joint ventures as at December 31, 2018 as amounting to \$2,488 [December 31, 2017 – \$3,745]. The fair value has been determined based on discounting all estimated future repayments of principal and imputed interest required to fully repay the loans at the estimated interest rate of 5.7% [December 31, 2017 – 5.7%] that would be available to PowerTrail and Moose Creek LP on December 31, 2018.

The Corporation has estimated the fair value of the senior unsecured debentures as at December 31, 2018 as amounting to \$575,912 [December 31, 2017 – \$574,693]. The fair value has been determined based on discounting all future repayments of principal and interest between February 3, 2025 and March 31, 2057 at the estimated interest rate of 3.7% [December 31, 2017 – 3.7%] that would be available to the Corporation on December 31, 2018.

The Corporation has estimated the fair value of its senior secured amortizing bonds as at December 31, 2018 as amounting to \$203,802 [December 31, 2017 – \$203,802]. The fair value has been determined based on discounting all estimated future repayments of principal and interest required to fully repay the loan at the estimated interest rate of 4.0% [December 31, 2017 – 4.0%] that would be available to the Corporation at December 31, 2018.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

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20. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(b) Market risk

The Corporation is exposed to market risk, which is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market prices. Market prices are comprised of three types of risks: interest rate risk, foreign exchange risk and commodity price risk. As the Corporation has not entered into significant hedging transactions or derivative contracts, there is no exposure to commodity price risk.

(i) Interest rate risk

The Corporation is exposed to interest rate risk on its borrowings. The Corporation mitigates exposure to interest rate risk by issuing long-term fixed-interest-rate debt. Under the Corporation's credit facility, advances on its credit lines expose it to fluctuations in short-term interest rates related to prime rate loans and bankers' acceptances. Given the fact that the borrowing requirements on the credit lines are typically for a short duration [i.e., to bridge gaps between the cash outflows related to the Corporation's monthly power bill and the inflows related to settlements with customers, or the cash outflows related to significant capital acquisitions and the inflows related to the issuance of additional long-term fixed-interest-rate debt], there is limited exposure to interest rate risk.

(ii) Foreign exchange risk

The Corporation's earnings from, and net investment in, its foreign operating subsidiary, EONY, are exposed to fluctuations in the U.S. dollar to Canadian dollar exchange rate. Also, the Corporation purchases a small proportion of goods and services that are denominated in foreign currencies, predominately the U.S. dollar. The Corporation monitors its exposure to foreign currency fluctuations on a regular basis, and has not used derivative instruments to hedge against these exposures to date. On an annual basis, it is estimated that a 5% increase or decrease in the U.S. dollar relative to the Canadian dollar exchange rate of U.S. \$1 = CDN \$0.73 as at December 31, 2018 would increase or decrease the equity of the Corporation by approximately \$2,979.

(c) Credit risk

Credit risk is the risk that a counterpart will default on its obligations, causing a financial loss to the Corporation. Concentration of credit risk associated with accounts receivable is limited due to the large number of customers the Corporation services. The Corporation has approximately 335,000 customers served by Hydro Ottawa, the majority of which are residential. As a result, the Corporation does not earn a significant amount of revenue and does not have a significant receivable from any individual customer.

The Corporation performs ongoing credit evaluations of customers serviced by Hydro Ottawa and requires collateral to support non-residential customer accounts receivable on specific accounts to mitigate significant losses in accordance with OEB legislation. As at December 31, 2018, the Corporation held security deposits related to power recovery and distribution revenue in the amount of \$16,009 [December 31, 2017 – \$15,121] with respect to these customers. The Corporation's other subsidiaries limit credit risk by dealing with customers that are considered to be of high credit quality. These customers include government agencies, utilities, municipalities, universities, school boards, hospitals, and customers with investment grade credit ratings.

The Corporation monitors and limits its exposure to credit risk on a continuous basis.

The Corporation applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade and other receivables. The expected loss rates for trade receivables are based on the payment profiles of sales over a period of 12 months before December 31, 2018 or January 1, 2018 respectively and the corresponding historical credit losses experienced within this period and other information. The historical loss rates are adjusted to reflect current and forward-looking information on macroeconomic factors affecting the ability of the customers to settle the receivables.

On that basis, the loss allowance as at December 31, 2018 and January 1, 2018 [on adoption of IFRS 9] was determined as follows for trade and other receivables.

Hydro Ottawa Holding Inc.

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20. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]

(c) Credit risk [continued]

	Gross carrying amount \$	Weighted average loss rate	Loss allowance \$	Net carrying amount \$
December 31, 2018				
Outstanding for 30 days or less	88,565	0.00 %	-	88,565
Outstanding for more than 30 days but no more than 120 days	8,319	8.80 %	736	7,583
Outstanding for more than 120 days	4,526	36.50 %	1,654	2,872
Unbilled revenue relating to electricity	80,180	0.19 %	151	80,029
	181,590		2,541	179,049
January 1, 2018				
Outstanding for 30 days or less	100,532	0.00 %	-	100,532
Outstanding for more than 30 days but no more than 120 days	6,881	8.30 %	573	6,308
Outstanding for more than 120 days	2,832	66.30 %	1,879	953
Unbilled revenue relating to electricity	84,963	0.07 %	60	84,903
	195,208		2,512	192,696

The following table reconciles the opening and closing loss allowance for trade and other receivables:

	2018 \$
Opening loss allowance at January 1, 2018 under IFRS 9	2,512
Net remeasurement of loss allowance	1,726
Write-offs	(2,023)
Recoveries of amounts previously written-off	326
Loss allowance at December 31, 2018	2,541

Impairment losses on trade and other receivables are presented as net impairment losses within the statement of income. When a receivable is deemed to be uncollectible, it is written off and the expected loss allowance is adjusted accordingly. Subsequent recoveries of receivables previously provisioned or written off result in a reduction of impairment losses included in operating costs in the statement of income.

As at December 31, 2018, there were no significant concentrations of credit risk with respect to any class of financial assets or counterparties and the Corporation's maximum exposure to credit risk is equal to the carrying value of accounts receivable less customer deposits held.

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20. FINANCIAL INSTRUMENTS AND RISK MANAGEMENT [CONTINUED]**(d) Liquidity risk**

Liquidity risk is the risk that the Corporation will not meet its financial obligations as they come due. The Corporation regularly monitors and manages its liquidity risk to ensure access to sufficient funds to meet operational and capital investment requirements. The Corporation achieves this objective by ensuring that sufficient facilities, as described in Note 13, are maintained to meet obligations as they come due while minimizing standby fees and interest.

Liquidity risks associated with financial commitments are as follows:

	2018		
	Due within one year	Due between one and five years	Due after five years
	\$	\$	\$
Accounts payable and accrued liabilities	165,918	-	-
Senior unsecured debentures			
Series 2006-1, 4.968%, due December 19, 2036	-	-	50,000
Series 2013-1, 3.991%, due May 14, 2043	-	-	150,000
Series 2015-1, 2.614% due February 3, 2025	-	-	200,000
Series 2015-2, 3.639%, due on February 2, 2045	-	-	175,000
Senior secured amortizing bonds			
Series 2016-1, 4.080%, due March 31, 2057	-	-	203,802
Interest to be paid on long-term debt	28,382	113,457	471,492
	194,300	113,457	1,250,294

Accounts payable and accrued liabilities in the above table exclude \$7,809 of accrued interest which is included in interest to be paid on long-term debt.

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21. REVENUE FROM CONTRACTS WITH CUSTOMERS AND OTHER SOURCES

The Corporation's revenue breakdown is as follows:

	2018	2017
	\$	\$
Revenue from contracts with customers		
Power recovery	857,383	896,528
Distribution revenue		
Residential service ⁽¹⁾	101,632	94,757
General service ⁽²⁾	72,847	70,531
Large users ⁽³⁾	6,571	6,112
Generation revenue	32,325	22,898
Commercial services revenue		
Streetlight installation and maintenance	12,565	12,632
Turnkey and energy management services	5,822	6,400
Service work related to distribution operations	6,171	3,612
Pole attachment and duct rental	4,440	4,316
Other		
Account-related charges	3,332	3,359
Capital contributions from customers amortized to revenue	1,416	1,053
	1,104,504	1,122,198
Revenue from other sources		
Other		
Investment property rentals	933	1,214
Capital contributions from developers amortized to revenue	1,395	1,127
	1,106,832	1,124,539

⁽¹⁾ Residential service means a service that is for domestic or household purposes, including single family or individually metered multifamily units and seasonal occupancy.

⁽²⁾ General service means a service supplied to premises other than those receiving Residential Service and Large Users and typically includes small businesses and bulk-metered multi-unit residential establishments. This service is provided to customers with a monthly peak demand of less than 5,000 kW averaged over a twelve-month period.

⁽³⁾ Large users means a service provided to a customer with a monthly peak demand of 5,000 kW or greater averaged over a twelve-month period.

Hydro Ottawa Holding Inc.

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22. OPERATING COSTS

	2018 \$	2017 \$
Salaries, wages and benefits	88,756	84,993
Contracted services - electricity distribution maintenance	10,828	10,115
Contracted services - customer owned plant	19,340	21,662
Contracted services - other	10,292	9,942
General and administrative	34,777	32,896
Other electricity distribution costs	8,331	7,945
Inventory expensed as cost of goods sold and other	5,504	5,252
Capital recovery	(32,134)	(33,008)
	145,694	139,797

23. FINANCING COSTS

	2018 \$	2017 \$
Interest on long-term debt	28,470	27,725
Short-term interest and fees relating to credit facility	4,541	2,534
Less: capitalized borrowing costs	(2,639)	(7,576)
	30,372	22,683

24. INCOME TAXES

Income tax expense recognized in net income comprises the following:

	2018 \$	2017 \$
Current tax expense		
Current income tax expense	6,102	4,120
Deferred tax expense		
Origination and reversal of temporary differences	11,042	10,683
Income tax expense recognized in net income	17,144	14,803

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24. INCOME TAXES [CONTINUED]

Income tax expense (recovery) recognized in OCI comprises the following:

	2018 \$	2017 \$
Income tax effect on exchange differences on translation of foreign subsidiary	1,983	(1,536)

The provision for income taxes differs from the amount that would have been recorded using the combined Canadian federal and Ontario statutory income tax rates. A reconciliation between the statutory and effective tax rates is provided as follows:

	2018 \$	2017 \$
Federal and Ontario statutory income tax rate	26.50 %	26.50 %
Income attributable to equity shareholder before income taxes	59,282	50,778
Income taxes at statutory rate	15,710	13,457
Increase (decrease) in income taxes resulting from:		
Permanent differences	4,603	30
Tax rate differential	(928)	-
Reverse tax reserve	(2,168)	-
Impact on foreign exchange translation on subsidiary	492	(407)
Impact from change in future U.S. tax rate	-	1,676
Foreign tax rate differential	14	14
Corporate minimum tax, net of tax credit	-	79
Unrecognized tax benefit	-	189
Tax impact on joint venture	(168)	(282)
Adjustment	-	(126)
Other	(411)	173
	17,144	14,803
Effective income tax rate	28.92 %	29.15 %

The Corporation's subsidiary Hydro Ottawa, as a rate-regulated enterprise, is required to recognize deferred income tax assets and liabilities and related regulatory deferral account credit and debit balances for the amount of deferred income taxes expected to be refunded to, or recovered from, customers in future electricity rates.

Significant components of the Corporation's net deferred income tax asset are as follows:

	2018 \$	2017 \$
Property, plant and equipment and intangible assets	2,009	(812)
Employee future benefits	95	-
Non-capital loss carryforwards	6,350	6,620
Other temporary differences	(182)	(310)
	8,272	5,498

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24. INCOME TAXES [CONTINUED]

Significant components of the Corporation's net deferred income tax liability are as follows:

	2018 \$	2017 \$
Property, plant and equipment and intangible assets	(47,306)	(34,988)
Tax recognized in OCI related to foreign subsidiary translation	(2,073)	(479)
Exchange differences and other	(586)	63
Non-capital loss carryforwards	183	-
Employee future benefits	4,561	4,934
Other	8	337
	(45,213)	(30,133)

Movements in the net deferred tax asset balances during the year were as follows:

	2018 \$	2017 \$
Deferred tax asset, beginning of year	5,498	5,645
Impact of foreign exchange rate change on opening deferred tax asset balance	1,859	(321)
Recognized in net income	466	260
Recognized in OCI	(9)	11
Other	458	(97)
Deferred tax asset, end of year	8,272	5,498

Movements in the net deferred tax liability balances during the year were as follows:

	2018 \$	2017 \$
Deferred tax liability, beginning of year	(30,133)	(20,936)
Recognized in net income	(13,106)	(10,819)
Recognized in OCI	(1,974)	1,525
Other	-	97
Deferred tax liability, end of year	(45,213)	(30,133)

The Corporation's regulatory deferral account credit balance for the amounts of deferred income taxes expected to be collected/ refunded to customers in future electricity rates is \$25,806 [2017 – \$16,798].

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24. INCOME TAXES [CONTINUED]

As at December 31, 2018, the Corporation had capital losses of \$708 [December 31, 2017 – \$708] and non-capital losses of \$1,052 [December 31, 2017 – \$1,069] for tax purposes, for which the tax benefit has not been recognized in the consolidated financial statements. The Corporation has U.S. losses carried forward of \$21,763, of which \$16,514 expires between 2035 and 2037. The remaining losses of \$5,249 can be carried forward indefinitely. All are considered more likely than not to be realized, resulting in a recognized deferred tax asset of \$5,688.

As at December 31, 2018, the Corporation's joint venture PowerTrail had corporate minimum tax credit carryforwards of \$nil [December 31, 2017 – \$19].

Deferred tax assets are recognized to the extent that it is probable that taxable profit will be available against which the deductible temporary differences and the carry-forward of unused tax assets and unused tax losses can be utilized. Net deferred tax assets of \$5,686 have been recognized in EONY as there is sufficient positive evidence to demonstrate that it is probable that a deferred tax asset will be realized. Factors considered include: historic and expected future taxable income and the nature, amount and expected timing of reversal of taxable temporary differences.

A deferred tax liability for all taxable temporary differences associated with investments in subsidiaries and investments in joint ventures has not been recognized as the Corporation is able to control the timing of the reversal of the temporary difference and it is probable that the temporary difference will not reverse in the foreseeable future.

25. CHANGES IN NON-CASH WORKING CAPITAL AND OTHER OPERATING BALANCES

	2018 \$	2017 \$
Accounts receivable	13,658	128
Prepaid expenses	(698)	732
Note receivable from parent	(3,764)	(6,125)
Accounts payable and accrued liabilities	3,175	(29,227)
Inventory	727	(585)
Customer deposits in accounts receivable	(18,671)	14,586
Net change in accruals related to property, plant and equipment	7,030	8,331
Net change in accruals related to intangible assets	543	(9)
Net change in accruals related to business combinations	-	10,000
	2,000	(2,169)

26. RECONCILIATION OF LIABILITIES ARISING FROM FINANCING ACTIVITIES

	2018 \$	2017 \$
Long-term debt, beginning of year	773,168	772,960
Amortization of debt-issuance costs expensed	222	165
Amortization of debt-issuance costs capitalized	-	43
Long-term debt, end of year	773,390	773,168

Hydro Ottawa Holding Inc.

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27. CONTINGENT LIABILITIES

Purchasers of electricity from the IESO are required to provide security to mitigate the risk of their default based on their expected activity in the market. The IESO could draw on these guarantees if the Corporation fails to make a payment required by a default notice issued by the IESO. A prudential support obligation is calculated based upon a default protection amount and the distributor's trading limit less a reduction for the distributor's credit rating. As at December 31, 2018, the Corporation had drawn standby letters of credit in the amount of \$10,000 [December 31, 2017 – \$10,000] against its credit facility to cover its prudential support obligation.

The Corporation participates with other electrical utilities in Ontario in an agreement to exchange reciprocal contracts of indemnity through the Municipal Electrical Association Reciprocal Insurance Exchange. The Corporation is liable for additional assessments to the extent premiums collected and reserves established are not sufficient to cover the cost of claims and costs incurred. If any additional assessments were required in the future, their cost would be charged to income in the year during which they occur.

The Corporation is party to connection and cost recovery agreements with HONI as described in Note 8 of these consolidated financial statements. To the extent that the cost of a project is not recoverable from future transformation connection revenues, the Corporation is obligated to pay a capital contribution equal to the difference between these revenues and the construction costs allocated to the Corporation.

Various lawsuits have been filed against the Corporation for incidents that arose in the ordinary course of business. In the opinion of management, the outcomes of the lawsuits, now pending, are neither determinable nor material. Should any loss result from the resolution of these claims, such losses would be claimed through the Corporation's insurance carrier, with any unrecoverable amounts charged to income in the year of resolution.

28. COMMITMENTS

As at December 31, 2018, the Corporation has \$141,435 in total open commitments spanning between 2019 and 2025. These include commitments relating to a call centre services agreement, distribution-related construction projects, facilities, overhead and underground services and other services relating to the Corporation's operations. In addition, the Corporation has \$59,109 in outstanding purchase commitments relating to the refurbishment projects at Chaudière Falls as described in Note 7 of these consolidated financial statements.

Energy Ottawa maintains leases with various entities for the rights to certain lands, waterways, buildings and other generating assets at its generating stations in Ontario, Québec and New York. These leases are in place through various dates, ranging between August 19, 2019 and December 13, 2116. Certain leases have annual payments which have a fixed and contingent portion, the latter of which is based on either annual gross revenues or power generation levels. During the 2018 fiscal year, the Corporation expensed lease payments of \$471 [2017 – \$400], which included \$110 [2017 – \$136] of contingent lease payments. The Corporation's future minimum lease payments, including those of a contingent nature, are expected to be: 2019 – \$168, 2020 to 2023 – \$1,134 and \$38,692 thereafter.

29. RELATED PARTY TRANSACTIONS

Transactions with related parties occur in the normal course of business, and are transacted at the amount of consideration determined and agreed to by the related parties. Trade amounts due from and to related parties are non-interest bearing, result from normal operations and are due within one year.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

[in thousands of Canadian dollars]

29. RELATED PARTY TRANSACTIONS [CONTINUED]

(a) Transactions and balances outstanding with parent

During the year, the Corporation earned power recovery and distribution revenue from the City of Ottawa and its other subsidiaries, which was billed at prices and terms approved by the OEB. In addition, the Corporation earned commercial services revenue from the City of Ottawa and its other subsidiaries totaling \$387 [2017 – \$744] via its regulated subsidiary, Hydro Ottawa, and \$15,997 [2017 – \$16,314] via Energy Ottawa. During the year, the Corporation also received \$3,580 [2017 – \$2,028] in contributions relating to the upgrade and/or expansion of the Corporation's existing electricity distribution infrastructure and earned \$310 [2017 – \$152] in interest revenue with respect to the note receivable from the City of Ottawa.

The Corporation incurred \$3,067 [2017 – \$2,875] of operating costs to the City of Ottawa. The Corporation also incurred \$269 [2017 – \$2,872] in building permit costs and development charges, which are included in property, plant and equipment.

As at December 31, 2018, the Corporation's accounts receivable and customer deposits include \$14,980 [December 31, 2017 – \$8,872] and \$652 [December 31, 2017 – \$2,129], respectively, while the Corporation's accounts payable and accrued liabilities include \$54 [December 31, 2017 – \$53] due to the City of Ottawa and its subsidiaries in respect of the transactions described above. In addition, the Corporation's note receivable from the City of Ottawa is disclosed in Note 12 of these consolidated financial statements.

(b) Transactions and balances outstanding with joint ventures

(i) Moose Creek LP

During the year, the Corporation earned interest income in the amount of \$112 [2017 – \$147] on its note receivable from the Moose Creek LP joint venture, as well as \$25 [2017 – \$34] in other revenue for the provision of administrative services. As at December 31, 2018, the Corporation's accounts receivable include \$27 [December 31, 2017 – \$142] due in respect of the transactions described for balances paid on behalf of Moose Creek LP.

The Corporation's note receivable from Moose Creek LP is disclosed in Note 12 of these consolidated financial statements.

(ii) PowerTrail

During the year, the Corporation earned imputed interest income in the amount of \$87 [2017 – \$90] on its note receivable from the PowerTrail joint venture, as well as \$25 [2017 – \$37] in other revenue for the provision of administrative services. As at December 31, 2018, the Corporation's accounts receivable include \$2 [December 31, 2017 – \$17] due in respect of the transactions described.

The Corporation's note receivable from PowerTrail is disclosed in Note 12 of these consolidated financial statements.

Hydro Ottawa Holding Inc.

Notes to the Consolidated Financial Statements

Year ended December 31, 2018

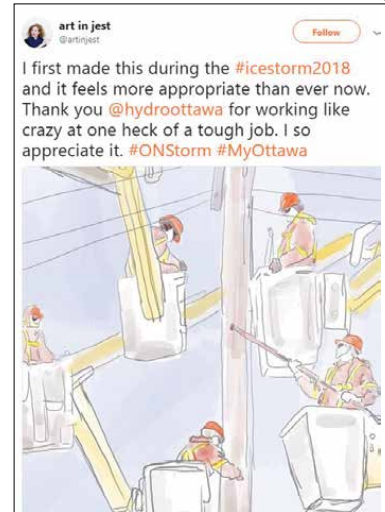
[in thousands of Canadian dollars]

29. RELATED PARTY TRANSACTIONS [CONTINUED]**(c) Compensation of key management personnel**

	2018	2017
	\$	\$
Salaries, director fees and other short-term benefits	1,545	1,401
Employee future benefits	181	160
Other long-term benefits	15	12
	1,741	1,573

30. COMPARATIVE INFORMATION

In certain instances, the 2017 information presented for comparative purposes has been reclassified to conform to the consolidated financial statement presentation adopted for the current year.



Statement of Executive Compensation

The Governance and Management Resources Committee of the Board is responsible for developing and recommending the approval of the compensation framework for the Corporation and each of its subsidiaries.

In developing the compensation framework, the Governance and Management Resources Committee is guided by two principles: the need to provide a total compensation package that will attract and retain qualified and experienced executives, and linking compensation to performance.

Executive compensation is reviewed by the Governance and Management Resources Committee and approved by the Board of Directors. In making its recommendations to the Board, the Committee examines the responsibilities and performance of individual executives, and considers the recommendations of the President and Chief Executive Officer.

In an effort to attract and retain qualified and experienced executives, the Corporation aims to offer a total compensation package that is competitive with other organizations of a similar size and scope. Executive compensation is reviewed on an annual basis and compared to market data, with the assistance of independent consultants, on an ad hoc basis to ensure competitiveness. In line with best practices for the sector, as identified by the Ontario Minister of Energy's Agency Review Panel in 2007, Hydro Ottawa applies a 50/50 weighting of market data from public and private comparators. The industry component of the market comparator group has a strong sector affiliation [e.g., Transportation and Utilities sector], and is assessed by revenue levels to ensure comparability.

Total cash compensation for Executives consists of two components*: base salary and an at risk performance incentive.

The at risk performance incentive component is paid on an annual basis, and is expressed as a percentage of base salary. It is designed to retain and motivate executives, to reward them for their performance during the preceding year, and to ensure alignment with shareholder objectives. Payments are based on the achievement of corporate and division objectives, both financial and non-financial, which are established each year by the Board of Directors. Non-financial targets are designed to achieve continuous improvement in relation to a number of strategic objectives including, but not limited to, customer service, operational and organizational efficiency and effectiveness, and service reliability.

Executives participate in a benefits program, which includes extended health care, dental care, basic and optional life insurance, and short-term and long-term disability insurance. This same program is available to all management group employees of the Corporation.

Executives also participate in the OMERS pension plan. This plan is a multi-employer, contributory, defined benefit pension plan established by the Province for employees of municipalities, local boards and school boards in Ontario. Pension benefits are determined by a formula based on the highest consecutive five-year average of contributory earnings and years of service. Pension benefits are indexed to increases in the Consumer Price Index subject to an annual maximum of 6 percent. Both participating employers and participating employees are required to make equal contributions to the plan based on the participating employees' contributory earnings. Earnings for pension purposes are capped by the plan.

* The total cash compensation for the President and Chief Executive Officer consists of a base salary only.

COMPENSATION OF OFFICERS AND BOARD MEMBERS

Officers

NAME AND PRINCIPAL POSITION ¹	YEAR	BASE SALARY (\$)	AT RISK PERFORMANCE INCENTIVE (\$) ²	OTHER COMPENSATION (\$) ³
Bryce Conrad	2018	387,037	N/A	44,843
President and Chief Executive Officer	2017	380,957	N/A	43,797
	2016	375,711	N/A	22,398
Geoff Simpson	2018	186,783	61,790	8,548
Chief Financial Officer	2017	183,839	61,842	8,491
	2016	180,783	67,711	8,479
Lance Jefferies	2018	165,273	53,698	9,387
Chief Electricity Distribution Officer	2017	162,668	54,720	8,412
	2016	159,830	34,798 ⁴	8,401
Gregory Clarke	2018	189,616	62,727	9,267
Chief Electricity Generation Officer	2017	186,627	62,780	8,501
	2016	183,525	66,484	8,798
Adnan Khokhar	2018	121,211 ⁵	N/A	15,550
Chief Energy and Infrastructure Services Officer				

1 Officers whose earnings are reported are those who occupied the position at December 31, 2018.

2 Amounts shown in this column reflect the at risk performance incentive for the executive in respect of the achievement of the performance objectives for the previous financial year, paid in the reporting year. These amounts have been rounded to the nearest dollar.

3 Amounts in this column include Board approved discretionary payments such as payments of earned and unused vacation credits, car allowance, computer allowance and employer's share of basic life insurance premiums. These amounts have been rounded to the nearest dollar.

4 Given that Mr. Jefferies assumed the position on January 1, 2016, the at risk performance incentive for 2015, paid in 2016, is based on his previous position with the Corporation.

5 Mr. Khokhar assumed the position of Chief Energy and Infrastructure Services Officer on May 7, 2018. Had Mr. Khokhar been employed in this position for the entire year, his base salary would have been \$191,000.

Board Members

The remuneration of the members of the Boards of Directors of Hydro Ottawa Holding Inc. and Hydro Ottawa Limited is as determined by the City of Ottawa and the Hydro Ottawa Holding Inc. Board respectively. In addition to reimbursement for reasonable out-of-pocket expenses incurred while performing their duties, directors receive an annual stipend and meeting fees for service:

- The Board Chair receives an annual stipend of \$40,000;
- All other Board members receive an annual stipend of \$7,000;
- The Board Chair receives \$600 for each Board or committee meeting chaired or attended;

- Committee Chairs receive \$800 for each meeting of the committee chaired; and
- All other Board members receive \$600 for each Board or committee meeting attended.

Only one annual stipend is paid where an individual is a director of both the Hydro Ottawa Holding Inc. and Hydro Ottawa Limited Boards of Directors. Members of the Council of the City of Ottawa, as well as the President and Chief Executive Officer, and the one member of management on the Hydro Ottawa Limited Board receive no remuneration in their capacity as directors of the boards.

Corporate Governance

Hydro Ottawa is committed to establishing and maintaining leading governance practices for a company of its size and mandate. Because governance standards and best practices are always evolving, the company seeks to continuously improve its governance practices.

Hydro Ottawa Holding Inc. is a private, for-profit company, incorporated under the *Business Corporations Act* [Ontario]. At the same time, the company is wholly owned by the City of Ottawa and fulfills a public mandate, and is therefore mindful of its responsibility to be accountable both to its shareholder and the public. The company's governance practices are guided not simply by legal obligations, but by best business practices and standards established by independent agencies.

While Hydro Ottawa is not a reporting issuer under the *Securities Act* and is therefore not subject to governance standards that apply to publicly-traded companies, the company is guided by these standards and seeks to meet or exceed them. In addition, Hydro Ottawa regularly compares its governance practices to those of private and public sector organizations, and to standards set by agencies such as the Canadian Securities Administrators and the Ontario Securities Commission.

GOVERNANCE STRUCTURE

Accountability for the effective oversight of the Corporation and its wholly-owned subsidiaries [Hydro Ottawa Limited, Energy Ottawa Inc. and Envari Holding Inc.] rests with an eleven-member Board of Directors, which provides direction to the Corporation on behalf of the shareholder, the City of Ottawa. The Board provides leadership within a framework of effective controls that enables risks to be assessed and managed, and is responsible for supervising the management of the business and affairs of the Corporation and its wholly-owned subsidiaries. In carrying out its oversight function, the Board of Directors is guided by a Shareholder Declaration issued by Ottawa City Council and revised from time to time. The Corporation's Code of Business Conduct, its Director Conflict of Interest and Conduct Guidelines and a Related Party Transaction Disclosure Policy and Process also govern the actions of the Board.

In 2006, a separate Board of Directors was established to oversee the operations of Hydro Ottawa Limited, in accordance with the Affiliate Relationships Code for Electricity Distributors and Transmitters issued by the Ontario Energy Board. The powers and functions of that Board are set out in a Shareholder Declaration issued by the Hydro Ottawa Holding Inc. Board of Directors. On a day-to-day basis, the Corporation is led by an Executive Management Team, comprising the Corporation's President and Chief Executive Officer, the Chief Financial Officer and the senior executives of the subsidiaries and critical functional areas. This team oversees the alignment of business practices and strategies with the goals of the Corporation, and drives performance by managing risks and opportunities. The Executive Management Team is accountable to the Corporation's Board of Directors through the President and Chief Executive Officer.

KEY GOVERNANCE PROCESSES AND CONTROLS

Hydro Ottawa has established a number of leading governance processes and controls to assist the Board and executive management in carrying out their oversight functions.

Risk Management: An extensive, corporate-wide risk management system has been established to track indicative and predictive measures of risk. Risk assessments are included with regular reporting to the Board on all areas of the Corporation's operations.

Internal Audit: Hydro Ottawa conducts a rigorous internal audit program to verify controls and maximize business efficiency and effectiveness. A number of business processes and functions are audited annually based on an audit plan approved by the Board. The use of experienced auditors both internal and external to the Corporation ensures rigour and objectivity.

Business Continuity Plans: Plans are in place to ensure the continuance of critical operations in the event of a major emergency such as a pandemic, and to return the Corporation to normal operations as quickly as possible after such an event. They include detailed strategies for the re-assignment of resources to critical processes, and redundant supply arrangements with critical external suppliers.

APPOINTMENTS TO THE BOARDS OF DIRECTORS

The governance structure for the Corporation [Hydro Ottawa Holding Inc.] and its wholly-owned subsidiaries [Hydro Ottawa Limited, Energy Ottawa Inc. and Envari Holding Inc.] includes two boards of directors – the Hydro Ottawa Holding Inc. Board and the Hydro Ottawa Limited Board.

In accordance with the terms of the Shareholder Declaration, the City of Ottawa appoints all Directors to the Boards except the President and Chief Executive Officer, and the one member of management on the Hydro Ottawa Limited Board. In doing so, the City considers candidates recommended by the Nominating Committee of the Board of Hydro Ottawa Holding Inc., but is not obliged to select these candidates. The Nominating Committee is assisted by outside consultants in its search for candidates for appointment to the Boards.

As set out in the Shareholder Declaration, all candidates for appointment to the Boards must meet certain requirements, including demonstrated integrity and high ethical standards, relevant career experience and expertise, and an understanding of the role of Hydro Ottawa both as a service to local ratepayers and an asset of taxpayers.

In addition, the nomination and selection process is designed to maintain a Board that includes the following overarching competencies among one or more directors: strong business background including competitive business experience and strategic planning; a strong financial background including financial accreditation and public or private market financing experience; industry sector experience in the areas of business of the subsidiary companies; board experience; and merger and acquisition experience.

COMMITTEES

The following committees were created to help the Boards of Directors carry out their duties. The committees meet regularly and provide feedback on their discussions to their respective Boards.

Hydro Ottawa Holding Inc.

Audit: The Audit Committee reviews financial statements, accounting practices and policies, auditing processes and the results of internal and external audits and related matters. It also oversees financial risk management and assesses internal controls.

Governance and Management Resources: The Governance and Management Resources Committee reviews the Corporation's governance structures and practices to ensure that the Board of Directors can fulfill its mandate. It reviews management resources and compensation practices to ensure systems are in place to attract, retain and motivate qualified management employees. It also reviews and assesses the performance of the President and Chief Executive Officer, oversees the Board Assessment process, and monitors compliance with codes of conduct.

Investment Review: The Investment Review Committee is responsible for assisting management and the Board of Directors in the review and pursuit of business development, acquisition and investment opportunities. In carrying out these functions, the Committee focuses on the consistency of opportunities with strategic plans and investment guidelines, the maximization of shareholder value and the management of risk.

Nominating: The Nominating Committee, with the assistance of outside consultants, identifies and evaluates potential candidates for appointment as Directors. The Nominating Committee makes recommendations to the shareholder [represented by Ottawa City Council] for the appointment of directors.

Strategic Initiatives Oversight: The Strategic Initiatives Oversight Committee is responsible for assisting the Board of Directors in guiding management and providing support and focus for large-scale capital project efforts as identified by the Board from time to time.

BOARD AND COMMITTEE MEETING ATTENDANCE

The following tables illustrate the attendance of members at meetings of the Boards of Directors and their committees.

HYDRO OTTAWA HOLDING INC.

DIRECTOR	BOARD MEETINGS	COMMITTEE MEETINGS
Jim Durrell, C.M., ICD.D [Chair]	5/5	15/15
Bryce Conrad [President and CEO]	5/5	N/A
Yaprak Baltacioglu ²	3/3	4/4
Kim Butler ²	3/3	2/2
Dale Craig	3/5	7/7
Matt Davies ²	3/3	2/2
Jan Harder	5/5	4/5
Andrea Johnson	5/5	6/6
Kalai Kalaichelvan ¹	2/2	5/5
Cyril Leeder	5/5	8/8
J. Douglas McLarty ¹	2/2	4/4
Philip Murray ¹	2/2	3/3
Lori O'Neill	5/5	7/7
Marianne Wilkinson	5/5	6/6

1 Depicts outgoing Board member whose term ended on June 30, 2018

2 Depicts incoming Board member whose term took effect July 1, 2018

HYDRO OTTAWA LIMITED

DIRECTOR	BOARD MEETINGS	COMMITTEE MEETINGS
Jim Durrell, C.M., ICD.D [Chair]	4/4	N/A
Bryce Conrad [President and CEO]	4/4	N/A
Lance Jefferies	4/4	N/A

Note: Kalai Kalaichelvan was first appointed to the Hydro Ottawa Holding Inc. Board of Directors effective December 1, 2014 and was previously a Director of the Hydro Ottawa Limited Board from July 1, 2013 to November 30, 2014. He was appointed to the Audit Committee on August 22, 2013 and the Investment Review Committee on September 18, 2015 and served on these Committees until the end of his term on June 30, 2018.

J. Douglas McLarty was first appointed to the Hydro Ottawa Holding Inc. Board of Directors effective July 1, 2012. He was appointed to the Audit Committee on July 17, 2012 and Strategic Initiatives Oversight Committee on November 14, 2013 and served on these Committees until the end of his term on June 30, 2018.

Philip Murray was first appointed to the Hydro Ottawa Holding Inc. Board of Directors effective December 1, 2014 and was previously a Director of the Hydro Ottawa Limited Board from July 1, 2012 to November 30, 2014. He was appointed to the Governance and Management Resources Committee on July 17, 2012 and Strategic Initiatives Oversight Committee on September 18, 2015 and served on these Committees until the end of his term on June 30, 2018.

We wish to convey our sincere appreciation to Kalai Kalaichelvan, J. Douglas McLarty and Philip Murray for their dedicated service.

Yaprak Baltacioglu, Kim Butler and Matt Davies were appointed to the Hydro Ottawa Holding Inc. Board of Directors effective July 1, 2018.

Members of the Boards of Directors

HYDRO OTTAWA HOLDING INC.



Jim Durrell, C.M., ICD.D [Chair]



Bryce Conrad



Yaprak Baltacioglu



Kim Butler



Dale Craig



Matt Davies



Jan Harder



Andrea Johnson



Kalai Kalaichelvan



Cyril Leeder



J. Douglas McLarty



Philip Murray



Lori O'Neill



Marianne Wilkinson

HYDRO OTTAWA LIMITED



Jim Durrell, C.M., ICD.D [Chair]



Bryce Conrad



Lance Jefferies



Corporate Citizen Award



Outage Communications Award



Stewardship Award



Employer of the Year Award



Performance Achievement Milestone Award



Innovation and Excellence Award



Innovation in HR Practices Award





Hydro Ottawa wishes to thank all the employees whose photos appear in this Annual Report.

La version française du présent rapport annuel est affichée sur le site hydroottawa.com.

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RATING AGENCY REPORTS

Attached to this Schedule are the following Rating Agency Reports issued in 2019 for Hydro Ottawa's parent company, Hydro Ottawa Holding Inc.:

- Attachment 1-3-4(A): Ratings Report for Hydro Ottawa Holding Inc. issued by Dominion Bond Rating Service; and
- Attachment 1-3-4(B): Ratings Report for Hydro Ottawa Holding Inc. issued by Standard and Poor's.

Rating Report

Hydro Ottawa Holding Inc.



Ratings

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Insight beyond the rating.

Debt	Rating	Rating Action	Trend
Issuer Rating	A	Trend Change	Negative
Senior Unsecured Debt	A	Trend Change	Negative

Rating Update

On August 26, 2019, DBRS Limited (DBRS) changed the trends on the above-noted ratings of Hydro Ottawa Holding Inc. (Hydro Ottawa or the Company) to Negative from Stable; the ratings were also confirmed at "A." The confirmations reflect the continued strength of the Company's regulated electricity distribution operations. The Negative trends reflect Hydro Ottawa's growing non-regulated electricity generation business (25.7% of 2018 EBIT) which DBRS considers higher risk than the regulated business. As EBIT from investments in the non-regulated segment has significantly exceeded the previously stated 20% threshold, DBRS introduced the *Rating Companies in the Independent Power Producer Industry* methodology in its assessment of Hydro Ottawa.

material and permanent shift in the business mix of the Company going forward, hence the introduction of the additional methodology. While Hydro Ottawa's generation assets are largely supported by long-term contracts with the Independent Electricity System Operator (IESO; rated A (high) with a Stable trend by DBRS), this business segment does involve higher volume and operational risk when compared with the incumbent regulated business and could potentially result in more volatile earnings and cash flows. DBRS will likely downgrade the ratings of Hydro Ottawa by one notch to A (low) and change the trends back to Stable from Negative following the completion of the Refurbishments in mid-2020 as non-regulated operations will then represent a significant portion of the Company's operations.

Hydro Ottawa's business risk profile continues to benefit from its stable regulated electricity distribution business in the City of Ottawa (the City; 100% owner of Hydro Ottawa). However, this is partly offset by the Company's growing portfolio of non-regulated electricity generation assets. Earnings from the non-regulated business increased significantly in 2018 with of a full year's contribution from the 29-megawatt (MW) facility at Chaudière Falls (the Chaudière Falls Expansion; completed in August 2017). While non-regulated earnings are expected to decrease for 2019 during the Chaudière Hydro North and Hull Energy Refurbishments (the Refurbishments; total of 39 MW), DBRS estimates that following the Refurbishments, non-regulated operations will, on average, contribute around 30% to 35% of total annual EBIT. DBRS considers this to be a

Hydro Ottawa's financial risk profile weakened in the last 12 months ending June 30, 2019 (LTM 2019), because of the large capex program for maintaining distribution infrastructure, connecting new customers and the Refurbishments. DBRS notes the Company issued around \$290.5 million of project-level debt in July 2019 to finance the Refurbishments. This project-level debt will become non-recourse to Hydro Ottawa once it reaches the recourse release dates (expected by year-end 2020) after the completion of each refurbishment. DBRS then expects the Company's key credit metrics to strengthen. However, should the Company's key credit metrics deteriorate to a level no longer commensurate with the current rating category, considering the mix of the regulated and non-regulated businesses, further negative rating actions may occur.

Financial Information

	12 mos. to June 30	For the year ended December 31				
(CAD millions where applicable)	2019	2018	2017	2016	2015	2014
Consolidated external debt 1	881	800	731	642	573	430
Total debt in capital structure 1, 2	65.9%	63.3%	62.5%	60.1%	58.1%	52.3%
Cash flow/Total debt 1, 2	11.4%	13.8%	11.2%	14.2%	16.0%	19.0%
EBIT gross interest coverage (times) 1, 2	3.18	3.40	2.22	2.96	2.82	2.91

1 Excludes non-recourse debt. **2** Includes operating leases.

Issuer Description

Hydro Ottawa is a holding company (wholly owned by the City) that owns the following subsidiaries: (1) Hydro Ottawa Limited, a regulated electricity distributor (Hydro Ottawa's primary business); (2) Energy Ottawa Inc., a non-regulated power generation company; and (3) Envari Holding Inc., which is involved in energy management services.

Rating Considerations

Strengths

1. Stability from regulated business

Approximately 74% of the Company's EBIT in 2018 was contributed by its low-risk regulated distribution business, which operates under a reasonable regulatory framework. Earnings and cash flows have also been relatively stable, underpinned by a reasonable allowed return on equity (ROE; 8.98% for 2019 to 2020) and full and timely recovery of purchased power costs.

2. Strong franchise

Hydro Ottawa is one of the largest municipally owned local distribution companies in Ontario, serving the densely populated areas within the City and the Village of Casselman. The majority of the Company's electricity sales are to residential customers, the federal government and the municipalities, universities, schools and hospitals sector, which have relatively stable year-over-year demand as they are less sensitive to economic cycles.

3. Long-term contracts for non-regulated power generation

Although Hydro Ottawa's non-regulated power generation business provides opportunities for earnings growth, it also entails higher business risk than the regulated distribution business. However, commodity price risk is mitigated by long-term contracts with creditworthy counterparties, such as the IESO. Both the expansion at Chaudière Falls and the Chaudière Hydro North and Hull Energy Refurbishments have 40-year contracts with the IESO.

Company's earnings and cash flows. As EBIT contributed by the non-regulated business has breached the previously noted 20% threshold (25.7% in 2018, from 7.5% in 2017), DBRS has introduced the *Rating Companies in the Independent Power Producer Industry* methodology in addition to the *Rating Companies in the Regulated Electric, Natural Gas and Water Utilities Industry* methodology in its assessment of Hydro Ottawa. DBRS estimates non-regulated operations will contribute around 30% to 35% of EBIT following the completion of the Refurbishments in 2020.

2. Large capex placing pressure on key credit metrics

The Company is in the midst of major capex programs to (1) enhance the reliability of the system and meet growing demographic demands and (2) complete the Refurbishments. The Ontario Energy Board (OEB) approved Hydro Ottawa's Custom Incentive Rate-setting (IR) application in December 2015, pre-approving the Company's five-year capex plan, which includes spending average gross capex of approximately \$83 million per year. This is expected to result in Hydro Ottawa continuing to generate free cash flow deficits over the medium term. As a result of the large capex program, cash flow-to-debt and debt-to-capital for the Company have been pressured.

3. Operational risks

DBRS considers the non-regulated generation segment as having higher operational risk than the regulated distribution business. Examples of operational risks include mechanical failure of the turbines or flood events that could lead to a shutdown of the generation facilities. DBRS notes that unplanned outages could significantly reduce generation output and negatively affect the earnings and cash flows of the Company. Additionally, a prolonged outage could also result in a failure of the Company to meet its power purchase agreement (PPA) commitments. This risk is, however, partly mitigated by the maintenance of adequate insurance coverage.

4. No access to equity markets

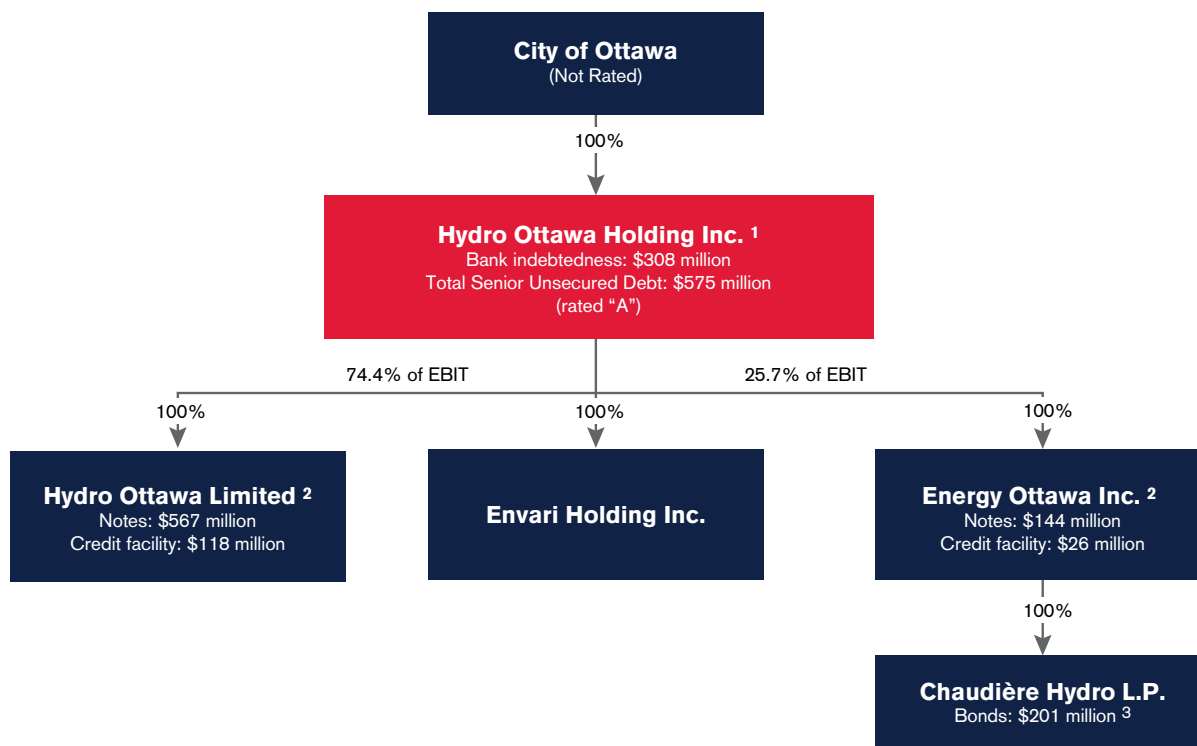
Hydro Ottawa's ownership structure (100% owned by the City) limits its ability to directly access the equity markets. As a result, the Company's cash flow deficits are being financed largely through its revolving credit facilities and debt issuances.

Challenges

1. Increasing exposure to higher-risk non-regulated business

DBRS considers the non-regulated business as higher risk than Hydro Ottawa's core regulated electricity distribution business. This is largely due to the greater volume risk associated with the generation business. Although commodity price risk has been mitigated through long-term contracts, increasing exposure to the non-regulated segment could result in greater volatility in the

Corporate Structure



As at June 30, 2019.

¹ Total Senior Unsecured Debt is presented at face value.

² The debt at these subsidiaries are owed to the Company, mostly in the form of promissory notes.

³ The senior secured amortizing bonds were issued for the Chaudière Falls Expansion and are non-recourse to the Company.

- Hydro Ottawa is wholly owned by the City. All outstanding notes and credit facility at the Hydro Ottawa Limited (HOL) and Energy Ottawa Inc. (EOI) level are in the form of inter-company debt owed to the Company.
- The Company incorporated Enviri Holding Inc. in 2018 to separate energy management and infrastructure services previously delivered by EOI.
- In May 2019, the Company incorporated Chaudière Financial L.P., a wholly owned subsidiary of EOI, to issue Senior Secured Amortizing Green Bonds to fund the Refurbishments.
 - The bonds are guaranteed by Hydro Ottawa until the recourse release dates are met (expected in late 2019 and 2020) following the completion of each refurbishment.
- DBRS views the relationship between the Company and the City as strong.
 - While the City has acknowledged its commitment on retaining and supporting the Company in a situation of extraordinary financial distress, DBRS continues to view Hydro Ottawa on a stand-alone basis, separate from the City, and has not included any potential support from the City in its assessment of the Company's ratings.

Earnings and Outlook

	12 mos. to June 30	For the year ended December 31				
(CAD millions where applicable)	2019	2018	2017	2016	2015	2014
Total revenues	1,149	1,140	1,166	1,198	1,088	1,021
Net sales	281	282	257	231	223	212
EBITDA	134	137	118	107	100	93
EBIT	71	75	63	57	57	54
Gross interest expense ¹	20	20	26	20	20	19
Net income before non-recurring items	31	39	36	38	35	36
Reported net income	34	42	36	35	32	30
Return on equity	6.9%	8.7%	8.4%	8.9%	8.6%	9.0%
Regulated rate base	936	913	870	833	669	669
Approved regulated return on equity	N/A	9.19%	9.19%	9.19%	9.42%	9.42%
Actual regulated return on equity	N/A	9.14%	10.10%	9.80%	7.92%	8.06%

EBIT by Subsidiary (estimate)

(CAD millions)	LTM	2018	2017	2016	2015	2014
Hydro Ottawa Limited	56	57	59	55	53	49
Energy Ottawa Inc.	19	20	5	5	8	7
	75	77	64	60	61	57
Hydro Ottawa Holding Inc. (non-cons.)	(5)	(2)	(1)	(3)	(4)	(2)
Hydro Ottawa Holding Inc. (consolidated)	71	75	63	57	57	54

¹ Excludes non-recourse debt.

2018 Summary

- EBITDA and EBIT increased in 2018 largely because of a full year's contribution from the Chaudière Falls Expansion, which began commercial operations in August 2017.
 - While one unit at the Chaudière Falls Expansion was out of service in 2018, Hydro Ottawa received insurance proceeds for lost generation revenues.
 - EBIT for HOL decreased modestly because of higher depreciation from the growing asset base.
- Interest expense decreased as DBRS excluded from gross interest expense interest on the non-recourse debt issued for the Chaudière Falls Expansion.
- Net income before non-recurring items increased largely because of stronger contributions from non-regulated operations.
 - Non-regulated operations accounted for 25.7% of EBIT in 2018, a significant increase from 7.5% in 2017.
- Reported net income included a \$4.1 million one-time conservation and demand management payment received.

2019 Summary and Outlook

- Earnings decreased for LTM 2019 because of modestly lower earnings from both regulated and non-regulated operations, and higher income taxes.
 - Earnings from EOI was lower as two plants are out of service during the Refurbishment.
- DBRS expects earnings in 2019 to decrease as higher regulated earnings from the growing rate base will likely be offset by lower earnings from the non-regulated segment with the two plants out of service during the Refurbishments.
- While EBIT from regulated operations is expected to increase in 2019, DBRS expects non-regulated operations to contribute around 30% to 35% of EBIT beginning 2020 following the completion of Refurbishments.
 - The Negative trend reflects DBRS's expectation that Hydro Ottawa's earnings will be more volatile going forward as a result of the Company's greater exposure to non-regulated operations. Earnings from the non-regulated generation business are typically more volatile as this sector is subject to greater volume risk.

Financial Profile

	12 mos. to June 30	For the year ended December 31				
(CAD millions where applicable)	2019	2018	2017	2016	2015	2014
Net income before non-recurring items	31	39	36	38	35	36
Depreciation & amortization	63	62	55	50	43	39
Deferred income taxes and other	8	11	(3)	3	14	7
Cash flow from operations	102	113	88	90	92	82
Dividends paid	(22)	(22)	(21)	(19)	(18)	(19)
Capital expenditures	(240)	(222)	(168)	(164)	(124)	(103)
Free cash flow (bef. working cap. changes)	(160)	(131)	(101)	(93)	(50)	(40)
Changes in working capital	(36)	(20)	(34)	(6)	(23)	44
Net free cash flow	(197)	(151)	(135)	(99)	(73)	4
Acquisitions & long-term investments	(3)	(2)	(10)	(41)	(91)	(3)
Net equity change	0	0	0	0	0	0
Net debt change ¹	194	66	77	269	173	20
Other financing	6	88	68	(133)	26	(21)
Change in cash ¹	0	0	(0)	(4)	35	0
Consolidated external debt ²	881	800	731	642	573	430
Total debt in capital structure ^{2, 3}	65.9%	63.3%	62.5%	60.1%	58.1%	52.3%
Cash flow/Total debt ^{2, 3}	11.4%	13.8%	11.2%	14.2%	16.0%	19.0%
EBIT gross interest coverage (times) ^{2, 3}	3.18	3.40	2.22	2.96	2.82	2.91
Dividend payout ratio	71.4%	55.9%	56.6%	51.7%	52.3%	54.1%

¹ Adjusted for bank indebtedness. ² Excludes non-recourse debt. ³ Includes operating leases.

2018 Summary

- Hydro Ottawa's cash flow-to-debt and EBIT gross interest coverage ratios improved because of the higher earnings and cash flows. However, the debt-to-capital ratio weakened as the Company funded the Refurbishments by drawing on its credit facilities.
 - While Hydro Ottawa's key credit metrics are in line with the "A" rating category under the Regulated Utilities methodology, they are in the BBB category under the *Rating Companies in the Independent Power Producer Industry* methodology. Overall, considering the mix of regulated and non-regulated businesses, credit metrics remain in line with the "A" rating category, albeit weaker for the current ratings.
- Cash flow from operations increased significantly because of a full year's contribution from the Chaudière Falls Expansion.
- Capex remained elevated because of continued high level of capex needed (1) in the regulated distribution business to sustain the reliability of the system and (2) for the Refurbishments.
- Dividends of \$21.9 million were in line with the Company's dividend policy. Hydro Ottawa pays dividends equal to the greater of \$20 million, or 60% of HOL's net income.
- The Company generated a significant negative net free cash flow because of the high level of capex. This was funded through the release of restricted cash from the Chaudière Falls Expansion bond issuance and by drawing on the credit facilities.

2019 Outlook

- Hydro Ottawa's key credit metrics weakened for LTM 2019 because of the higher debt load to finance the Refurbishments.
 - In July 2019, the Company issued \$290.5 million of Senior Secured Amortizing Green Bonds to finance the Refurbishments. The bonds will be recourse to Hydro Ottawa until the recourse release date following completion of each refurbishment (\$67 million expected to be released by the end of 2019 and \$223 million by the end of 2020).
- Cash flow from operations decreased, tracking the lower net income for the period.
 - Going forward, DBRS expects cash flow from operations to be slightly more volatile as a result of the Company's greater exposure to non-regulated operations.
- DBRS also anticipates elevated capex to continue in 2019 (approximately \$250 million), as Hydro Ottawa continues to invest in renewing the infrastructure of the distribution system and work on the Refurbishments.
 - DBRS expects the Company's key credit metrics to remain pressured in 2019 and 2020 during its large capex program.

Liquidity and Credit Facilities

Credit facilities

(CAD millions - as at December 31, 2018)

	Amount	Drawn/LoC	Available	Expiry
Revolving operating credit line 1	190.0	90.1	99.9	1-Aug-21
Revolving operating credit line 2	150.0	150.0	0.0	1-Aug-21
Commercial card facility	0.75	0.0	0.8	1-Aug-21
Commercial card facility (USD facility)	0.25	0.0	0.3	1-Aug-19
Total consolidated credit facilities	341.0	240.1	100.9	

- Hydro Ottawa's liquidity remained reasonable, reflecting stable cash flows and available credit facilities. As at March 31, 2019, the Company had \$14.7 million in standby letters of credit outstanding.
- DBRS believes that the Company's liquidity is sufficient to finance its capex and working capital needs.
- Hydro Ottawa renewed its credit facility in 2018. The current facility is made up of the following five types of credit availability:
 - \$190 million three-year revolving operating line with two years remaining;
 - \$150 million revolving term line to fund operating activities and to refinance debt; and
 - \$0.75 million and USD 0.2 million commercial card facility.
- The credit facility contains customary covenants and events of default, including a covenant to maintain the consolidated tangible net worth in excess of \$175 million at all times. It also requires the debt-to-capitalization ratio to be at or below 75% on a consolidated basis. The Company was in compliance with its covenants as at March 31, 2019.

Long-Term Debt Maturities

Long-Term Debt Maturity

(CAD millions - as at December 31, 2018)

	Amount	Rate	Maturity
Senior Unsecured Debentures, Series 2006-1	50.0	5.0%	Dec. 2036
Senior Unsecured Debentures, Series 2013-1	150.0	4.0%	May 2043
Senior Unsecured Debentures, Series 2015-1	200.0	2.6%	Feb. 2025
Senior Unsecured Debentures, Series 2015-2	175.0	3.6%	Feb. 2045
Total recourse debt	575.0		
Senior secured amortizing bond	203.8	4.1%	Mar. 2057
Total long-term debt	778.8		
Less: Unamortized debt-issuance costs	(5.4)		
Total	773.4		

- The trust indenture contains the following covenants for the Series 2006, Series 2013 and Series 2015 debentures:
 - Any additional indebtedness is subject to a 75% capitalization ratio test;
 - Negative pledge clause; and
 - Restrictions on asset sales and amalgamations.
- The Company was in compliance with its covenants as at March 31, 2018.
- In July 2019, Chaudière Financial L.P. (a wholly owned subsidiary of EOI), issued \$290.5 million of 3.525% Senior Secured Amortizing Green Bonds due December 31, 2059. The bonds are secured by the assets of the Refurbishments, with a guarantee provided by Hydro Ottawa until the recourse release dates.
 - The Company expects the release recourse dates to be met for \$67 million of the bonds by the end of 2019, and the remaining by the end of 2020.

Generation Facilities

(as at June 30, 2019)

Fuel	Facility	Ownership	Capacity (MW)	% of Total Capacity	Contract Expiry
Hydro	Chaudière #2 Station	100%	8	6%	2030
	Chaudière #4 Station	100%	8	6%	2030
	Grinder Station	100%	1	1%	2027
	Chaudière Hydro LP Plant	100%	29	23%	2057
	Chaudière Hydro North LP Plant	100%	12	9%	2060
	Hull Energy	100%	27	21%	2060
	6 Eastern Ontario assets	100%	8	6%	2030
	4 New York state assets	100%	23	18%	
Total Hydro			116	90%	
Landfill Gas	Trail Road Landfill	60%	6	5%	2027
	Moose Creek Landfill	50%	4	3%	2033
Total Landfill Gas			10	8%	
Solar	Solar rooftop projects	100%	2	2%	2036
Total			128		

- Hydro Ottawa has PPAs with the IESO for all its generation facilities except for the four New York State assets.
- The Company is currently refurbishing the Chaudière Hydro North LP Plant and Hull Energy assets. Hydro Ottawa has signed a PPA with the IESO for the plants following the completion of the Refurbishments.
 - The Chaudière Hydro North LP Plant is expected to return to service by the end of 2019, with Hull Energy expected to be in service in 2020.

Regulation

- HOL (the local distribution company; a regulated subsidiary of Hydro Ottawa) is regulated by the OEB under the *Ontario Electricity Act, 1998*.
- As part of Ontario's Renewed Regulatory Framework for Electricity Distributions, HOL applied under Custom IR in April 2015 for rates from 2016 through 2020. In December 2015, the OEB approved a settlement agreement that included the following:
 - Final rates for 2016. The OEB was satisfied with the HOL's proposed 2017 to 2020 rates, but the Company will be required to confirm annually if an update is required, including for the items below:

(CAD millions)	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Revenue requirement	175.3	183.1	192.6	200.5	205.2
OM&A	83.1	84.7	86.3	88.0	89.6
Capex	73.8	81.9	89.2	63.6	108.7
Rate base	833.1	869.7	912.8	936.1	973.8

- Operating, Maintenance and Administration (OM&A) for 2017 and beyond were calculated using an escalation factor of 1.91%, based on an inflation factor of 2.07%, plus a growth factor of 0.14% and less a productivity and stretch factor of 0.3%. The OM&A escalation factor was revised in 2018 for 2019 and 2020 at 1.55%, based on an inflation factor of 1.71%, plus a growth factor of 0.14% and less a productivity and stretch factor of 0.3%.
- ROE of 9.19% for 2016 to 2018 was approved. ROE for 2019 and 2020 was updated in 2018 to 8.98%.
- HOL will adopt an Efficiency Adjustment Mechanism deferral account to capture any changes in the revenue requirement if the Company is moved to a lower efficiency cohort (i.e., one with a higher productivity and stretch factor than Hydro Ottawa's 2014 cohort of 0.3%). Conversely, a move to a higher-efficiency cohort will have no impact on the Company's revenue requirement.

- A deferral account to capture the revenue requirement impact of up to \$66 million in capex of the proposed new operating centres and administrative facilities. A separate deferral account will also be set up to capture the revenue requirements impacts of capex that exceed the approved \$66 million, with the recoverability subject to a prudence review following the Custom IR period.
- A Capital Variance Account to track variances in actual and forecast in-service additions for three categories (system renewal and system service, system access and general plant). Any underspending or delayed capex will be captured in the account to be disposed of at the end of the Custom IR period. The Company will also not be able to charge back any overspending above the approved in-service additions plan to customers.
- An Earnings Sharing Mechanism where any earnings above HOL's approved ROE will be shared on a 50/50 basis between the Company and its ratepayers.

- In August 2018, the Company filed its application with the OEB for approval of rates effective January 1, 2019. The OEB issued its decisions in December 2018, approving a 1.55% increase in base rates and the refund to customers of a \$8 million balance in the Company's deferral and variance accounts.
- HOL is allowed to fully recover its purchased power costs (except doubtful accounts on power cost, which are manageable) in a timely fashion, eliminating its exposure to power price risk. DBRS views this as a positive factor in the current regulatory system in Ontario.
- The OEB announced in April 2015 its policy to implement revenue decoupling for all local distribution companies in Ontario. Beginning December 2016, HOL will phase in a fixed monthly rate for its residential customers. Over the four-year period, the fixed portion of the monthly rate will increase gradually, so by 2019 all residential customers will be charged a fixed monthly fee for distribution services.
 - This policy is expected to reduce volume risk faced by HOL, as revenues from residential customers will no longer fluctuate as a result of weather sensitivities.

Assessment of Hydro Ottawa's Regulatory Environment

The chart below reflects DBRS's assessment of the current regulatory environment for Hydro Ottawa based on DBRS's methodologies.

Criteria	Score	Analysis
1. Deemed Equity	Excellent Good Satisfactory Below Average Poor	The OEB allows HOL to have a deemed equity of 40%, which is consistent with the other electricity distribution companies in Ontario. As a result of the need to maintain the regulatory capital structure, Hydro Ottawa's leverage has been in line with the "A" rating range.
2. Allowed ROE	Excellent Good Satisfactory Below Average Poor	HOL has an allowed ROE of 8.98% for 2019 to 2020. The difference in ROE between HOL and other distribution companies is mainly due to the timing of the regulatory filings and the interest environment prevalent at that time.
3. Energy Cost Recovery	Excellent Good Satisfactory Below Average Poor	There is no power price risk for HOL as it is not responsible for purchasing power from generation facilities or the wholesale market. Power costs are passed on to rate payers at rates set by the OEB, and HOL collects the payments from its customers on a monthly basis.
4. Capital and Operating Cost Recoveries	Excellent Good Satisfactory Below Average Poor	Under Custom IR, the OEB has approved HOL's capex plan for 2016 to 2020. Capital costs will be added to the rate base after completion on an annual basis. DBRS notes that a Capital Variance Account has been established to track underspending or delays in three capex categories and will be returned to customers at the end of the Custom IR period. Any overspending above the capex plan will not be charged back to customers.
5. COS vs. IRM	Excellent Good Satisfactory Below Average Poor	HOL is regulated under Custom IR, which is a hybrid of cost of service (COS) and the incentive rate-setting method (IRM), for a five-year period from 2016 to 2020. The inflation, productivity and stretch factors are reasonable.
6. Political Interference	Excellent Good Satisfactory Below Average Poor	The Government of Ontario plays a significant role in the electricity sector in Ontario, given that the majority of the utilities are government owned (Hydro Ottawa is owned by the City of Ottawa). Further, stakeholders such as the IESO are also government owned. As a result, the government has direct and indirect influence on Ontario's electricity industry.
7. Stranded Cost Recovery	Excellent Good Satisfactory Below Average Poor	Minimal stranded costs exist in the Ontario market. DBRS notes that the recovery of the costs is also subject to some regulatory lag. Although stranded costs have been fully recovered in the past years, assets could potentially be written down if the OEB does not approve the recovery of the costs.
8. Rate Freeze	Excellent Good Satisfactory Below Average Poor	Distribution rates were frozen for a short time in the early 2000s. There have been no subsequent province-wide rate freezes.

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Hydro Ottawa Holding Inc.

(CAD millions)	June 30	December 31			June 30	December 31	
Assets	2019	2018	2017	Liabilities & Equity	2019	2018	2017
Cash & equivalents	15	17	14	Bank indebtedness	308	227	158
Accounts receivable	172	179	193	Accounts payable	189	174	170
Inventories	2	1	2	Current portion L.T.D.	0	0	0
Prepaid expenses & other	16	11	76	Other current liab.	1	4	0
Total current assets	205	208	284	Total current liab.	498	405	328
Net fixed assets	1,543	1,450	1,261	Long-term debt	773	773	773
Future income tax assets	8	8	5	Provisions	14	13	14
Goodwill & intangibles	122	124	130	Deferred income taxes	44	45	30
Investments & others	74	65	51	Other L.T. liab.	167	156	148
				Shareholders' equity	456	463	438
Total assets	1,952	1,856	1,732	Total liab. & SE	1,952	1,856	1,732

Balance Sheet &
Liquidity & Capital Ratios

	12 mos. to June 30	For the year ended December 31				
	2019	2018	2017	2016	2015	2014
Current ratio	0.41	0.51	0.86	1.06	1.13	0.42
Total debt in capital structure	70.3%	68.4%	68.0%	66.4%	58.0%	52.2%
Total debt in capital structure 1, 2	65.9%	63.3%	62.5%	60.1%	58.1%	52.3%
Cash flow/Total debt	9.5%	11.3%	9.5%	10.7%	16.0%	19.0%
Cash flow/Total debt 1, 2	11.4%	13.8%	11.2%	14.2%	16.0%	19.0%
(Cash flow-dividends)/Capex (times)	0.33	0.41	0.40	0.43	0.59	0.61
Dividend payout ratio	71.4%	55.9%	56.6%	51.7%	52.3%	54.1%

Coverage Ratios (times)

EBIT gross interest coverage 1	3.46	3.70	2.42	2.92	2.82	2.91
EBIT gross interest coverage 1, 2	3.18	3.40	2.22	2.96	2.82	2.91
EBITDA gross interest coverage	6.53	6.79	4.53	5.44	4.94	4.99
Fixed-charge coverage	3.46	3.70	2.42	2.92	2.82	2.91

Profitability Ratios

EBITDA margin	47.6%	48.4%	45.9%	46.2%	44.8%	43.8%
EBIT margin	25.2%	26.4%	24.6%	24.8%	25.6%	25.6%
Profit margin	11.1%	13.9%	14.2%	16.2%	15.6%	16.8%
Return on equity	6.9%	8.7%	8.4%	8.9%	8.6%	9.0%
Return on capital	3.1%	3.7%	3.8%	4.3%	5.3%	5.8%

1 Excludes non-recourse debt. **2** Includes operating leases.

Application of Multiple Methodologies

Hydro Ottawa is engaged in both regulated and non-regulated businesses. The regulated business accounted for approximately 74% of EBIT in 2018, and the non-regulated business accounted for the remaining 26% of earnings. Following the completion of the Refurbishment in 2020, DBRS estimates the non-regulated business will contribute between 30% to 35% of EBIT. As a result of the material sizes and contributions from both businesses, DBRS applies the following two methodologies for the Company: (1) the *Rating Companies in the Regulated Electric, Natural Gas and Water Utilities Industry* methodology for the Hydro Ottawa's regulated segment, and (2) the *Rating Companies in the Independent Power Producer Industry* methodology for the Company's non-regulated segment.

Rating History

	Current	2018	2017	2016	2015	2014
Issuer Rating	A	A	A	A	A	A
Senior Unsecured Debt	A	A	A	A	A	A

Previous Action

- "DBRS Confirms Hydro Ottawa Holding Inc. at "A" with Stable Trends," July 31, 2018.

Previous Report

- Hydro Ottawa Holding Inc.: Rating Report, August 20, 2018.

Notes:

All figures are in Canadian dollars unless otherwise noted.

For the definition of Issuer Rating, please refer to Rating Definitions under Rating Policy on www.dbrs.com.

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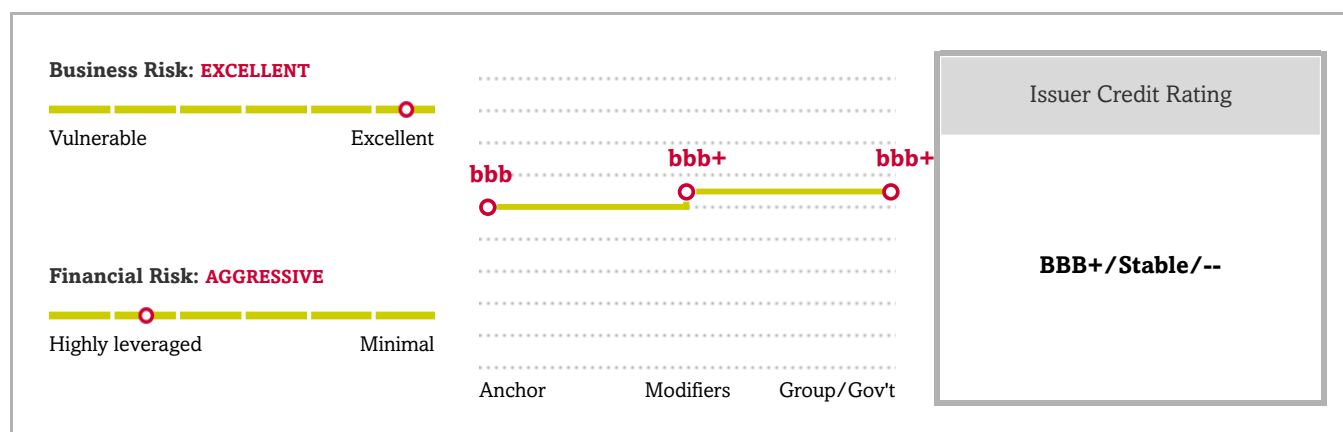
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Hydro Ottawa Holding Inc.



Credit Highlights

Overview

Key strengths	Key risks
Relatively strong regulatory structure supports stable cash flows for its low-risk electricity distribution business.	Large capital program to execute for 2019, which will pressure credit metrics in the near term.
Diverse customer base comprising mainly residential customers, small businesses, and entities in the municipalities, universities, schools, and hospitals (MUSH) sector.	Will file a new rate application for 2021-2025, that includes the recovery of increased capital relating to the new building facility, subject to regulatory approval
Unregulated generation business features long-term contracts, favorable rates, and credible counterparties that provide a stable cash flow stream.	Lacks operational diversity because it only operates in the City of Ottawa, which makes the company reliant on its regulator, the Ontario Energy Board (OEB), to sustain its credit quality.

Unregulated cash flow is backed by quality contracts. Hydro Ottawa Holding Inc. (HOHI) generates about 20% of its cash flow from its unregulated generation. Although we view unregulated power generation as higher risk, this segment features long-term contracts, favorable terms, and creditworthy counterparties that partially mitigate risk and provide HOHI with stable cash flows.

The company has large capital spending plans over our outlook period. HOHI continues to execute its large capital program of about C\$260 million through 2019, which includes the refurbishment of two hydro facilities and the construction of a new headquarters. This capital spending will pressure the company's credit metrics through 2020.

HOHI lacks geographic and regulatory diversity. HOHI serves the City of Ottawa, which is the capital of Canada, and has a diverse customer base that mainly consists of residential customers, small businesses, and entities in the MUSH sector. We consider the province of Ontario to be a relatively strong regulatory jurisdiction, which supports our excellent assessment of the company's business risk. However, compared with other utilities, HOHI lacks geographic and regulatory diversity, making it reliant on the OEB to sustain its credit quality.

Outlook: Stable

The stable outlook on HOHI reflects the predictable and stable cash flow we expect the company to generate from its low-risk, regulated distribution business over our two-year outlook horizon. The outlook also reflects the stable cash flow from the utility's unregulated renewable power generation operations, which are backed by strong purchase power agreements (PPAs). For fiscal year 2019, we expect HOHI's credit metrics to remain weak, with funds from operations (FFO) to debt of about 9.5%, because of delays in the refurbishment of its hydro assets due to weather and its large capital programs. We expect the company's credit metrics to recover in 2020-2021 with FFO to debt of about 10.5%-11.0%.

Downside scenario

We could lower our rating on HOHI over the next 12-24 months if the company's credit metrics deteriorate and its FFO to debt falls below 10% with no prospects for improvement. This could occur if the utility experiences any material adverse regulatory decisions, substantial delays, or cost overruns related to the refurbishment of its hydro assets or if it undertakes additional acquisitions that it funds with a material level of debt. Alternatively, additional growth in HOHI's unregulated power business could weaken the company's business risk profile, potentially leading us to lower our rating. However, we do not expect this to occur during our outlook period.

Upside scenario

Although unlikely, we could raise our rating on HOHI over the next 12-24 months if the utility improves its financial position, causing its FFO to debt to approach 15%. This could occur if the company earns better-than-forecast returns or deleverages its balance sheet. Alternatively, we could raise our rating if HOHI's share of sustained, unregulated cash flow relative to its regulated cash flow decreases.

Our Base-Case Scenario

Hydro Ottawa Holding Inc.

Assumptions	Key Metrics												
<ul style="list-style-type: none">• OEB, the company's regulator, will remain relatively stable and HOHI will not experience any material, adverse regulatory decisions;• HOHI will continue to earn close to its allowed return on equity based on its deemed capital structure;• No material delays or cost overruns on its hydro asset refurbishment projects;• New customer growth of about 1% annually during our outlook period;• Capital spending of about C\$260 million in 2019 and C\$140 million in 2020; and• Dividend payments of about C\$21 million per year.	<table><tr><th></th><th>2018A</th><th>2019E</th><th>2020E</th></tr><tr><td>FFO to debt (%)</td><td>10.9</td><td>9.5</td><td>10.5</td></tr><tr><td>FFO interest cash coverage (x)</td><td>4.45</td><td>4.3</td><td>4.3</td></tr></table> <p>A--Actual. E--Estimate. FFO--Funds from operations.</p>		2018A	2019E	2020E	FFO to debt (%)	10.9	9.5	10.5	FFO interest cash coverage (x)	4.45	4.3	4.3
	2018A	2019E	2020E										
FFO to debt (%)	10.9	9.5	10.5										
FFO interest cash coverage (x)	4.45	4.3	4.3										

Company Description

HOHI is wholly owned by the City of Ottawa and governed by an independent board of directors appointed by its shareholder. The company's core businesses are electricity distribution, renewable energy generation, and energy conservation and management services. HOHI owns and operates three subsidiary companies.

Hydro Ottawa Ltd. (HOL) is a regulated electricity distribution company operating in the City of Ottawa. It is the third-largest municipally owned electrical utility in Ontario serving approximately 340,000 customers.

Portage Power (PP), formerly known as Energy Ottawa, is the largest municipally owned producer of green power in Ontario. PP has installed capacity of about 128 megawatts (MW) and owns and operates six run-of-the-river hydroelectric generators at Chaudiere Falls. In addition, the company also holds interests in two landfill gas-to-energy joint ventures.

Envari Holdings Inc. (EHI) is a provider of commercial energy management services. EHI delivers energy solutions for its large commercial, industrial, municipal, and utility clients.

Business Risk: Excellent

Our assessment of HOHI's business risk profile largely reflects its low-risk electricity distribution operations and our view of its management of regulatory risk.

The utility continues to operate under a supportive regulatory regime. The OEB, the regulator for the Province of Ontario, continues to provide a transparent, consistent, and independently operated regulatory framework that

Hydro Ottawa Holding Inc.

supports a stable and predictable cash flow model, which we view as a key credit strength. The regulatory framework also limits the utility's exposure to commodity risk and the associated cash flow volatility because the tariff structure allows it to recover the full cost of purchased power from its customers. The tariff structure also allows the operator to recover prudently spent operating costs, capital expenditure, or other unexpected material losses in a timely manner.

Further supporting our excellent business risk profile assessment is the utility's diverse customer base with no significant concentration risk. Residential customers, small businesses, and the MUSH sector account for majority of the company's customers. In our view, this customer profile is less sensitive to macroeconomic stress and business cycles.

Even though HOHI generates a material portion of its cash flows (about 20%) from unregulated power (renewable energy generation), which has much higher industry risk due to fluctuations in energy price, the utility is able to mitigate this risk through long-term PPA contracts with attractive terms. Most of HOHI's PPA contracts are long-term with an average length of at least 10 years. Some are also indexed to inflation, which provide the company with a steady, predictable, and stable cash flow stream. Moreover, HOHI's counterparty in these PPA contracts is the Independent Electricity Systems Operator (IESO), an agent of the Government of Ontario, which partially mitigates its counterparty concentration risk exposure. Furthermore, HOHI owns all of the hydro-generation assets at the Chaudiere Falls in the Ottawa-Hull region, which gives the company full access to, and control of, the river and allows it to better coordinate and operate the assets to optimize its cash flows.

Peer comparison

Table 1

Peer Comparison					
Industry sector: electric					
	Hydro Ottawa Holding Inc.	Alectra Inc.	Toronto Hydro Corp.	ENMAX Corp.	Ontario Power Generation Inc.
Ratings as of Sept. 25, 2019	BBB+/Stable/--	A/Stable/--	A/Stable/--	BBB+/Negative/--	BBB+/Negative/A-2
--Fiscal year ended Dec. 31, 2018--					
(Mil. C\$)					
Revenue	1,138.6	3,452.0	3,472.7	2,378.8	5,474.0
EBITDA	143.0	363.5	530.2	588.6	2,019.0
FFO	108.6	296.7	408.5	398.6	1,530.4
Interest expense	33.9	71.8	90.8	127.8	277.7
Cash interest paid	31.5	65.8	79.1	117.0	286.6
Cash flow from operations	133.7	235.7	514.2	514.9	1,510.4
Capital expenditure	241.5	425.0	490.6	312.2	1,635.0
FOCF	(107.9)	(189.3)	23.6	202.7	(124.6)
DCF	(129.8)	(263.3)	(70.3)	162.7	(425.6)
Cash and short-term investments	16.7	16.0	0.0	89.0	349.0
Debt	996.8	2,016.3	2,365.1	2,507.8	11,437.4
Equity	462.9	1,689.0	1,833.5	2,261.3	13,127.0

Hydro Ottawa Holding Inc.

Table 1

Peer Comparison (cont.)

Industry sector: electric

	Hydro Ottawa Holding Inc.	Alectra Inc.	Toronto Hydro Corp.	ENMAX Corp.	Ontario Power Generation Inc.
Adjusted ratios					
EBITDA margin (%)	12.6	10.5	15.3	24.7	36.9
Return on capital (%)	5.9	6.2	7.0	5.7	5.2
EBITDA interest coverage (x)	4.2	5.1	5.8	4.6	7.3
FFO cash interest coverage (x)	4.4	5.5	6.2	4.4	6.3
Debt/EBITDA (x)	7.0	5.5	4.5	4.3	5.7
FFO/debt (%)	10.9	14.7	17.3	15.9	13.4
Cash flow from operations/debt (%)	13.4	11.7	21.7	20.5	13.2
FOCF/debt (%)	(10.8)	(9.4)	1.0	8.1	(1.1)
DCF/debt (%)	(13.0)	(13.1)	(3.0)	6.5	(3.7)

FFO--Funds from operations. FOCF--Free operating cash flow. DCF--Discretionary cash flow.

Financial Risk: Aggressive

We evaluate HOHI's financial risk profile using our medial volatility financial benchmark tables rather than the tables we use for a typical corporate issuer, which reflects the company's lower-risk regulated business model and its management of regulatory risk.

For 2019, we expect HOHI's credit metrics to be weak because its capital programs will be larger than expected due to the timing of capital programs and increased costs. In addition, the company temporarily shut down some hydro assets and delayed its hydro refurbishment projects due to weather conditions in early 2019. We now expect that HOHI will complete the refurbishments in the first half of 2020 rather than by year-end 2019. We also expect the utility to file for recovery of the increased capital costs in its next rate application. Under our base-case scenario, which assumes capital spending of about C\$260 million in 2019 and C\$135 million in 2020 and dividends of about C\$22 million in each year, we expect HOHI to have FFO to debt of about 9.5% in 2019. In 2020, we expect the company's FFO to debt to improve to about 10.5%.

Financial summary

Table 2

Financial Summary

Industry sector: electric

	--Fiscal year ended Dec. 31--				
	2018	2017	2016	2015	2014
(Mil. C\$)					
Revenue	1,138.6	1,151.5	1,202.4	1,112.1	1,012.3

Hydro Ottawa Holding Inc.

Table 2

Financial Summary (cont.)

Industry sector: electric

	--Fiscal year ended Dec. 31--				
	2018	2017	2016	2015	2014
EBITDA	143.0	124.5	110.9	121.5	93.5
FFO	108.6	87.1	87.2	105.1	73.5
Interest expense	33.9	31.2	24.4	21.5	19.3
Cash interest paid	31.5	31.4	20.8	19.3	18.8
Cash flow from operations	133.7	74.3	92.2	72.9	90.0
Capital expenditure	241.5	180.2	181.9	126.9	100.3
FOCF	(107.9)	(106.0)	(89.7)	(54.0)	(10.3)
DCF	(129.8)	(126.6)	(109.1)	(72.2)	(29.6)
Cash and short-term investments	16.7	0.9	1.0	4.0	0.0
Gross available cash	16.7	0.9	1.0	4.0	0.0
Debt	996.8	930.5	852.9	578.3	429.6
Equity	462.9	438.1	426.8	413.4	398.1
Adjusted ratios					
EBITDA margin (%)	12.6	10.8	9.2	10.9	9.2
Return on capital (%)	5.9	5.4	5.5	8.8	6.6
EBITDA interest coverage (x)	4.2	4.0	4.5	5.7	4.8
FFO cash interest coverage (x)	4.4	3.8	5.2	6.4	4.9
Debt/EBITDA (x)	7.0	7.5	7.7	4.8	4.6
FFO/debt (%)	10.9	9.4	10.2	18.2	17.1
Cash flow from operations/debt (%)	13.4	8.0	10.8	12.6	21.0
FOCF/debt (%)	(10.8)	(11.4)	(10.5)	(9.3)	(2.4)
DCF/debt (%)	(13.0)	(13.6)	(12.8)	(12.5)	(6.9)

FFO--Funds from operations. FOCF--Free operating cash flow. DCF--Discretionary cash flow.

Liquidity: Adequate

We assess HOHI's liquidity as adequate. We expect the company's liquidity sources to be more than 1.1x its uses over the next 12 months and anticipate that its net sources would remain positive even if its EBITDA declined by 10%. In our view, HOHI has sound relationships with its banks and a generally satisfactory standing in the credit markets. In the unlikely event of liquidity distress, we expect the company to scale back on its capital spending to preserve its credit metrics.

Hydro Ottawa Holding Inc.

Principal Liquidity Sources	Principal Liquidity Uses
<ul style="list-style-type: none"> • Cash of about C\$20 million as of March 31, 2019; • Cash FFO of about C\$130 million; and • Availability under its undrawn committed facilities of about C\$70 million as of March 31, 2019. 	<ul style="list-style-type: none"> • Debt maturities of about C\$150 million, including short-term debt; • Capital spending of about C\$260 million; and • Dividends of about C\$21 million over the next 12 months.

Debt maturities

HOHI has no long-term debt maturing between 2019 and 2023.

Other Credit Considerations

Overall, we assess HOHI's business risk profile as being at the stronger half of the excellent range compared with those of its peers. Specifically, the utility's PPA contracts in its unregulated business feature above-market rates, long maturities, and some are indexed to inflation. Furthermore, under the PPAs there is no obligation to deliver electricity and no minimum production requirements.

Government Influence

Our view of the relationship between HOHI and the City of Ottawa, its municipal owner, remains the same. We believe there is a low likelihood that Ottawa will provide extraordinary and timely support to HOHI during periods of financial distress. Although the utility is important to the city, given that it operates the city's electricity distribution network and is solely owned by the city of Ottawa, the province—not the city—maintains oversight of electricity regulation, including tariff setting. In addition, an investor-owned entity could undertake HOHI's role, if necessary. Furthermore, the city does not have any formal policy or track record of providing financial relief or support to the utility. For these reasons, we view the likelihood of extraordinary government support as low, which does not affect our rating on HOHI.

Issue Ratings - Subordination Risk Analysis

Capital structure

HOHI's capital structure consists of about C\$575 million of senior unsecured debt at the corporate level and about C\$500 million of senior secured amortizing debt at the project level.

Analytical conclusions

We rate HOHI's senior unsecured debt 'BBB+', the same level as our issuer credit rating, because its ratio of priority debt to total debt is less than 50%, which is consistent with our criteria.

Hydro Ottawa Holding Inc.

Reconciliation

Table 3

Reconciliation Of Hydro Ottawa Holding Inc. Reported Amounts With S&P Global Ratings' Adjusted Amounts (Mil. C\$)

--Fiscal year ended Dec. 31, 2018--

Hydro Ottawa Holding Inc. reported amounts								
	Debt	Shareholders' equity	EBITDA	Operating income	Interest expense	S&P Global Ratings' adjusted EBITDA	Cash flow from operations	Capital expenditure
	1,000.2	463.0	135.0	72.8	30.4	143.0	139.0	244.2
S&P Global Ratings' adjustments								
Cash taxes paid	--	--	--	--	--	(2.9)	--	--
Cash taxes paid: Other	--	--	--	--	--	--	--	--
Cash interest paid	--	--	--	--	--	(28.7)	--	--
Operating leases	3.4	--	0.2	0.2	0.2	(0.2)	(0.0)	--
Postretirement benefit obligations/deferred compensation	9.9	--	--	--	0.7	--	--	--
Accessible cash and liquid investments	(16.7)	--	--	--	--	--	--	--
Capitalized interest	--	--	--	--	2.6	(2.6)	(2.6)	(2.6)
Nonoperating income (expense)	--	--	--	2.1	--	--	--	--
Reclassification of interest and dividend cash flows	--	--	--	--	--	--	(2.6)	--
Noncontrolling interest/minority interest	--	(0.1)	--	--	--	--	--	--
EBITDA: Other	--	--	7.8	7.8	--	--	--	--
Total adjustments	(3.5)	(0.1)	8.0	10.1	3.5	(34.4)	(5.3)	(2.6)
S&P Global Ratings' adjusted amounts								
	Debt	Equity	EBITDA	EBIT	Interest expense	Funds from operations	Cash flow from operations	Capital expenditure
	996.8	462.9	143.0	82.9	33.9	108.6	133.7	241.5

Ratings Score Snapshot

Issuer Credit Rating

BBB+/Stable/--

Business risk: Excellent

- **Country risk:** Very low

Hydro Ottawa Holding Inc.

- **Industry risk:** Low
- **Competitive position:** Excellent

Financial risk: Aggressive

- **Cash flow/Leverage:** Aggressive

Anchor: bbb

Modifiers

- **Diversification/Portfolio effect:** Neutral (no impact)
- **Capital structure:** Neutral (no impact)
- **Financial policy:** Neutral (no impact)
- **Liquidity:** Adequate (no impact)
- **Management and governance:** Satisfactory (no impact)
- **Comparable rating analysis:** Positive (+1 notch)

Stand-alone credit profile : bbb+

- **Group credit profile:** bbb+
- **Related government rating:** AA
- **Likelihood of government support:** Low (no impact)

Related Criteria

- General Criteria: Group Rating Methodology, July 1, 2019
- General: Corporate Methodology: Ratios And Adjustments, April 1, 2019
- General: Reflecting Subordination Risk In Corporate Issue Ratings, March 28, 2018
- General Criteria: Rating Government-Related Entities: Methodology And Assumptions, March 25, 2015
- General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- Utilities: Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013
- General: Corporate Methodology, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Methodology: Management And Governance Credit Factors For Corporate Entities, Nov. 13, 2012
- General Criteria: Use Of CreditWatch And Outlooks, Sept. 14, 2009

Business And Financial Risk Matrix							
Business Risk Profile	Financial Risk Profile						
	Minimal	Modest	Intermediate	Significant	Aggressive	Highly leveraged	
	Excellent	aaa/aa+	aa	a+/a	a-	bbb	bbb-/bb+
	Strong	aa/aa-	a+/a	a-/bbb+	bbb	bb+	bb
	Satisfactory	a/a-	bbb+	bbb/bbb-	bbb-/bb+	bb	b+
	Fair	bbb/bbb-	bbb-	bb+	bb	bb-	b
	Weak	bb+	bb+	bb	bb-	b+	b/b-
Vulnerable	bb-	bb-	bb-/b+	b+	b	b-	

Hydro Ottawa Holding Inc.

BBB+/Stable/--

BBB+

25-Aug-2016

BBB+/Stable/--

A-/Watch Neg/--

A-/Stable/--

*Unless otherwise noted, all ratings in this report are global scale ratings. S&P Global Ratings' credit ratings on the global scale are comparable across countries. S&P Global Ratings' credit ratings on a national scale are relative to obligors or obligations within that specific country. Issue and debt ratings could include debt guaranteed by another entity, and rated debt that an entity guarantees.

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PROSPECTUS FOR PLANNED AND RECENT SHARE ISSUES

Hydro Ottawa's sole shareholder is Hydro Ottawa Holding Inc. (the "Holding Company"). The Holding Company is 100% owned by the City of Ottawa (the "City"). There are no plans for additional share issues to the City or otherwise.

ACCOUNTING ORDERS

Hydro Ottawa confirms that it maintains compliance with the Uniform System of Accounts (“USofA”), as set out in the OEB’s Accounting Procedures Handbook (“APH”).

As part of the OEB’s Decision and Order on Hydro Ottawa’s 2012 distribution rate application, Hydro Ottawa received the following utility-specific accounting order:¹

- Sub-Account 1508 - Other Regulatory Assets - Other Post-Employment Benefits (“OPEB”) Deferral Account, to record cumulative actuarial gains or losses in Hydro Ottawa’s post-retirement benefits.

As part of the OEB’s Decision and Order on Hydro Ottawa’s 2016 distribution rate application, Hydro Ottawa received the following utility-specific accounting orders:²

- Sub-Account 1508 - Other Regulatory Assets - Y-Factor Variance Account, to record the revenue requirement associated with the construction of the new facilities and related land up to the amount of \$66.0M and the return of the existing facilities and related land.
- Sub-Account 1508 - Other Regulatory Assets - New Facilities Deferral Account, to record the revenue requirement impacts arising from costs of the new facilities and related land that is above the \$66.0M captured in the Y-Factor Variance Account.
- Sub-Account 1508 - Other Regulatory Assets - Gains/Losses from Sale of Existing Facilities Deferral Account, to record the after-tax gains/losses from sale of existing facilities and related land.
- Sub-Account 1508 - Other Regulatory Assets - Gains and Losses on disposal of Fixed Assets Variance Account, to record the difference between the forecast and actual loss on the disposal of fixed assets, related to retirement of assets or damage to plant.

¹ Ontario Energy Board, *Decision and Rate Order*, EB-2011-0054 (January 26, 2012).

² Ontario Energy Board, *Decision and Order*, EB-2015-0004 (December 22, 2015).

- 1 ● Sub-Account 1508 - Other Regulatory Assets - Earnings Sharing Mechanism (“ESM”) Variance Account, to record amounts related to any earnings above Hydro Ottawa’s
- 2 Variance Account, to record amounts related to any earnings above Hydro Ottawa’s
- 3 approved Return on Equity (“ROE”) to be shared on a 50/50 basis between Hydro
- 4 Ottawa and its ratepayers with no dead band.
- 5 ● Sub-Account 1508 - Other Regulatory Assets - Connection Cost Recovery Agreement
- 6 (“CCRA”) Payments Deferral Account, to record the revenue requirement impact of
- 7 CCRA payments made to Hydro One.
- 8 ● Sub-Account 1508 - Other Regulatory Assets - Revenue Requirement Differential
- 9 Variance Account related to Capital Additions, to record the revenue requirement impact
- 10 of underspending on Hydro Ottawa’s capital plan by specific categories.
- 11 ● Sub-Account 1508 - Other Regulatory Assets - Efficiency Adjustment Mechanism
- 12 Deferral Account, to record the proxy stretch factor related to any Hydro Ottawa
- 13 efficiency ranking declines during the Custom IR term for 2016-2020.

14

15 As part of the OEB’s Decision and Order on Hydro Ottawa’s Pole Attachment Charge, Hydro

16 Ottawa received the following utility-specific accounting orders:³

17

- 18 ● Sub-Account 1508 - Other Regulatory Assets - Wireless Attachment Revenues Deferral
- 19 Account, to record revenues earned, if any, from wireless attachments from 2016-2020.
- 20 ● Sub-Account 1508 - Other Regulatory Assets - Pole Attachment Charge Revenues
- 21 Variance Account to record the difference between revenue based on the pole
- 22 attachment charge of \$57 per attachment per year and revenue based on the final
- 23 charge approved by the OEB for 2016 of \$53.

24

25 Hydro Ottawa hereby confirms compliance with the foregoing utility-specific accounting orders.

26

27 In addition, Hydro Ottawa confirms compliance with the following generic regulated accounting

28 orders:

³ Ontario Energy Board, *Decision and Rate Order on Pole Attachment Charge*, EB-2015-0004 (February 25, 2016).

- 1 ● Energy Retailer Service Charges, to establish the following new variance accounts:⁴
 - 2 ○ Sub-Account 1508 - Other Regulatory Assets - Retailer Service Charges
 - 3 Incremental Revenue; and
 - 4 ○ Sub-Account 1508 - Other Regulatory Assets - Retailer Service Charges
 - 5 Incremental Revenue Carrying Charges.
- 6 ● Accounting Guidance related to Pension and OPEB Forecast Accrual vs. Actual Cash
- 7 Payment Differential Variance Account.⁵
- 8 ● Sub-Account 1508 - Other Regulatory Assets - OPEB Differential - Variance Tracking
- 9 Account related to Pension and OPEB.⁶

10
11 Please refer to Exhibit: 9-1-3: Group 2 Accounts for additional information on the accounts
12 described in this Schedule.

⁴ Ontario Energy Board, *Decision and Order in the matter of Energy Retailer Service Charges effective May 1, 2019*, EB-2015-0304 (February 14, 2019).

⁵ Ontario Energy Board, *Regulatory Treatment of Pension and Other Post-employment Benefits (OPEBs) Costs* (May 18, 2017).

⁶ Ontario Energy Board, *Regulatory Treatment of Pension and Other Post-employment Benefits (OPEBs) Costs: Section B - Variance Tracking Account* (Sept 14, 2017).

ACCOUNTING STANDARDS USED

Hydro Ottawa adopted International Financial Reporting Standards (“IFRS”) for financial reporting purposes on January 1, 2015. The audited financial statements provided in Exhibit 1-3-1: Audited Financial Statements have been prepared in accordance with IFRS.

ACCOUNTING TREATMENT FOR UTILITY-OWNED GENERATION

Hydro Ottawa confirms that the accounting for utility-owned generation, other than behind-the-meter generation, has been segregated from its rate-regulated activities.

As described in Exhibit 2-4-3: Distribution System Plan and Attachment 2-1-1(A): New Administrative Office and Operations Facilities, Hydro Ottawa's new facilities include behind-the-meter solar installations. This investment is expected to reduce Hydro Ottawa's environmental footprint and electricity costs for the next 30 years. The solar arrays are included in Hydro Ottawa's rate-regulated activities.

ACCOUNTING TREATMENT OF NON-UTILITY BUSINESS

Hydro Ottawa confirms that the accounting treatment used by the utility segregates the business activities of its non-utility business from its rate-regulated business.

CHANGES TO ACCOUNTING POLICIES USED IN PREVIOUS APPLICATIONS

Since the filing of Hydro Ottawa's last rebasing Application submitted in 2015,¹ the utility has adopted three new accounting standards as required by the International Accounting Standards Board. These include International Financial Reporting Standard ("IFRS") 15 – *Revenue from Contracts with Customers* ("IFRS 15"), IFRS 9 – *Financial Instruments* ("IFRS 9"), and IFRS 16 – *Leases* ("IFRS 16").

On January 1, 2018, Hydro Ottawa adopted IFRS 15 – *Revenue from Contracts with Customers*. IFRS 15 supersedes previous revenue recognition guidance, including International Accounting Standard ("IAS") 18 – *Revenue*, IAS 11 – *Construction Contracts*, and related interpretations. IFRS 15 provides a standardized, five-step model to recognize revenue (i.e. identify contract, identify performance obligations, determine transaction price, allocate transaction price, and recognize revenue). Per IFRS 15, depending on whether certain criteria are met, revenue is recognized over time in a manner that best reflects Hydro Ottawa's performance, or at a point in time when control of the goods or services is transferred to the customer. IFRS 15 applies to nearly all contracts with customers, unless covered by another standard (i.e. leases, financial instruments, insurance contracts), or those that are out of scope of IFRS 15 (i.e. contributions in aid of construction from developers). The adoption of IFRS 15 did not have an impact on Hydro Ottawa's revenue recognition practices, as reported in the last rebasing Application. Consequently, there is no impact to revenue requirement.

On January 1, 2018, Hydro Ottawa adopted IFRS 9 – *Financial Instruments*, which replaces IAS 39 – *Financial Instruments: Recognition and Measurement* ("IAS 39"). IFRS 9 includes revised guidance on the classification and measurement of financial assets, including basing the classification of financial assets on their contractual cash flow characteristics and the entity's business model for managing financial assets. In contrast, IAS 39 based the classifications on specific definitions for each category. Moreover, IFRS 9 simplifies the former IAS 39

¹ Hydro Ottawa Limited, *2016-2020 Custom Incentive Rate-Setting Distribution Rate Application*, EB-2015-0004 (April 29, 2015).

1 classifications into three main categories (i.e. amortized cost, fair value through other
2 comprehensive income, and fair value through profit or loss), and introduces a new expected
3 credit loss model for measuring impairment of financial assets. As a result, Hydro Ottawa
4 assessed which business models apply to the financial assets it held and classified the financial
5 instruments into the appropriate IFRS 9 categories. In addition, Hydro Ottawa revised its
6 impairment methodology under IFRS 9 for each of its classes of financial assets. The utility's
7 financial instruments will continue to be subsequently measured at amortized cost (previously
8 classified as loans and receivables for financial assets under IAS 39). The new impairment
9 methodology results in the same expected credit loss (i.e. allowance for doubtful accounts) as
10 under the method used in Hydro Ottawa's last rebasing Application. The adoption of IFRS 9 by
11 the utility did not result in any quantitative adjustments being recognized as at January 1, 2018.
12 Consequently, there is no impact to revenue requirement.

13
14 On January 1, 2019, Hydro Ottawa adopted IFRS 16 – *Leases*, which replaces IAS 17 –
15 *Leases*. IFRS 16 eliminates the current dual model (i.e. on and off balance sheet) and aims to
16 provide greater comparability between companies who lease assets (i.e. right-of-use assets)
17 and those who purchase assets with a single on-balance sheet approach. Under IFRS 16, all
18 leases from the lessee's perspective will have to be recognized on the balance sheet, with
19 related lease liabilities, and with exemptions for short-term (i.e. < 1 year) and "low value" leases.
20 The adoption of IFRS 16 by Hydro Ottawa did not result in any right-of-use assets being
21 recognized as at January 1, 2019. However, with the adoption of IFRS 16, Hydro Ottawa
22 proposes to include the cost of any future right-of-use assets related to leases as part of rate
23 base, since it is akin to purchasing property, plant, and/or equipment and financing it.

CORPORATE STRUCTURE AND GOVERNANCE

1. INTRODUCTION

Pursuant to section 2.1.4 of the *Chapter 2 Filing Requirements for Electricity Distribution Rate Applications*, as updated on July 12, 2018 and addended on July 15, 2019, Hydro Ottawa herein provides information regarding its corporate and utility organizational structure, and corporate governance practices.

This Schedule includes the following attachments:

- Attachment 1-4-1(A): Shareholder Declaration – Hydro Ottawa Holding Inc.
- Attachment 1-4-1(B): Shareholder Declaration – Hydro Ottawa Limited
- Attachment 1-4-1(C): Charter of the Hydro Ottawa Holding Inc. Board of Directors
- Attachment 1-4-1(D): Charter of the Hydro Ottawa Limited Board of Directors
- Attachment 1-4-1(E): Charter of the Nominating Committee
- Attachment 1-4-1(F): Charter of the Audit Committee
- Attachment 1-4-1(G): Charter of the Governance and Management Resources Committee
- Attachment 1-4-1(H): Charter of the Investment Review Committee
- Attachment 1-4-1(I): Charter of the Strategic Initiatives and Oversight Committee
- Attachment 1-4-1(J): 2018 and 2019 Board and Committee Meeting Schedule
- Attachment 1-4-1(K): Director Orientation and Continuing Education Policy and Process
- Attachment 1-4-1(L): Code of Business Conduct
- Attachment 1-4-1(M): Director Conflict of Interest and Conduct Guidelines
- Attachment 1-4-1(N): Related Party Transaction Disclosure Policy and Process
- Attachment 1-4-1(O): Business Conduct Hotline Brochure

2. CORPORATE AND UTILITY ORGANIZATIONAL STRUCTURE

Hydro Ottawa Holding Inc. (“Holding Company” or “the Corporation”) was created as a result of the *Electricity Act, 1998*, which required all electric utilities to operate as business corporations.

Under this structure, the Holding Company is a for-profit company that continues to be wholly owned by the City of Ottawa, and is governed by an independent Board of Directors appointed by its shareholder. The core businesses of the Corporation are electricity distribution, renewable energy generation, and energy and utility services. In 2019, the Holding Company owned and operated three primary subsidiary companies: Hydro Ottawa Limited (referred to as “Hydro Ottawa” in all of the other evidence in this Application), a regulated distribution utility operating in the City of Ottawa and the Village of Casselman; Energy Ottawa Inc., the largest Ontario-based municipally-owned producer of green power; and Envari Holding Inc., a company that sells energy solutions to municipalities, industrial and commercial clients, and to various electricity distributors.

2.1. OEB REPORT ON UTILITY GOVERNANCE

In 2018, the Ontario Energy Board (“OEB”) issued a report entitled *Best Practices regarding Governance of OEB Rate-Regulated Utilities*.¹ The report identified best practices in utility governance and confirmed the OEB’s intent to introduce new mandatory governance reporting and record keeping requirements (“RRRs”) for rate-regulated utilities, including natural gas distributors, electricity distributors, electricity transmitters, and Ontario Power Generation. The OEB’s stated objectives in setting out best practices and introducing new reporting on governance are to build upon its focus on utility performance and to allow the OEB to obtain insight into the quality and robustness of decision-making by utilities. The combination of identified best practices and mandatory reporting is expected to support the OEB’s ability to rely upon utility governance as an indicator of utility performance.²

As stated in the 2018 report, the OEB believes “that good governance is a significant contributor to excellence in utility performance and an important indicator of a utility’s ability to achieve expected outcomes valued by customers.” It is the OEB’s expectation that the identification of governance-related best practices and implementation of RRRs will help foster the adoption of more robust practices throughout the sector. In turn, the OEB anticipates that

¹ Ontario Energy Board, *Report of the Board - Best Practices regarding Governance of OEB Rate-Regulated Utilities*, EB-2014-0255 (December 20, 2018).

² *Ibid*, page 3.

1 this will result in strengthened management accountability, enhanced utility performance, and
2 improved outcomes for consumers.

3
4 Hydro Ottawa shares the OEB's view that good governance is a contributor to good
5 performance. The utility is committed to ensuring effective corporate governance practices,
6 consistent with a company of its size, mandate, and business activities. Hydro Ottawa adheres
7 to high standards of integrity, transparency, and disclosure, and will ensure effective
8 compliance with the new RRRs.

9
10 As outlined in more detail below, Hydro Ottawa has in place a robust governance structure.

11 12 **2.2. CURRENT GOVERNANCE STRUCTURE**

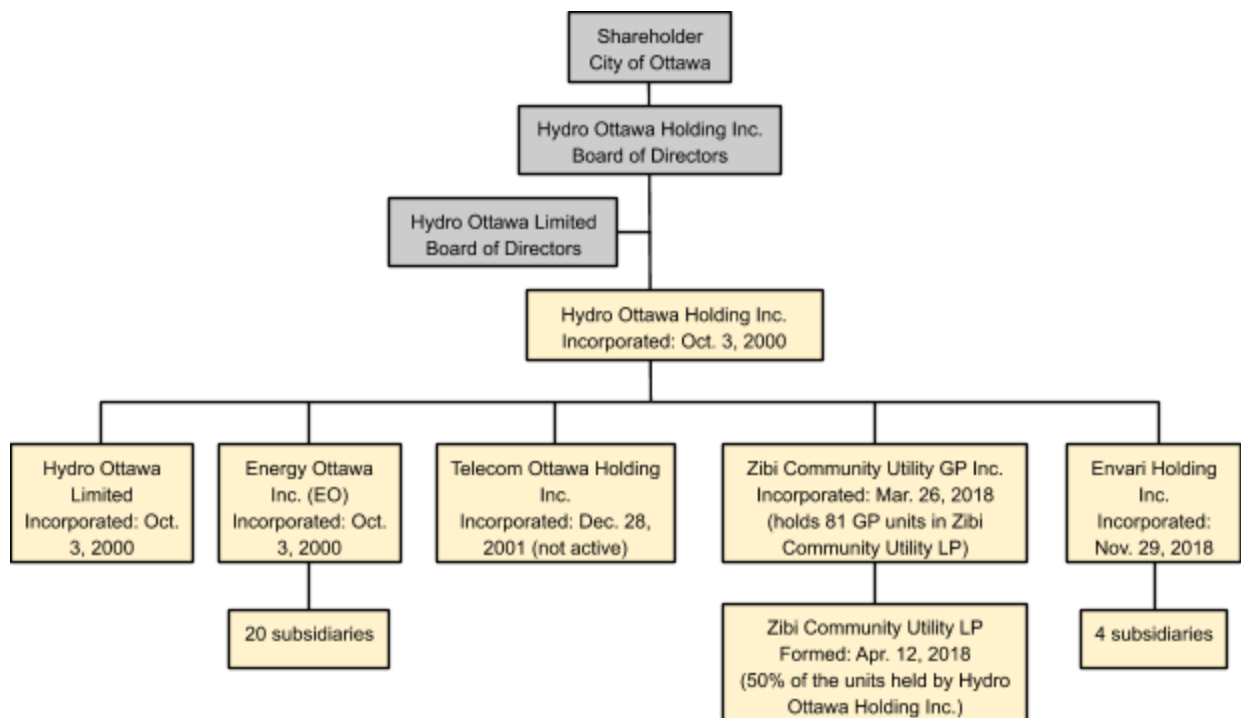
13 Accountability for the effective oversight of the Holding Company and its wholly-owned
14 subsidiaries (Hydro Ottawa Limited, Energy Ottawa Inc., and Envari Holding Inc.) rests with an
15 eleven-member Holding Company Board of Directors, which provides direction to the
16 Corporation on behalf of the shareholder, the City of Ottawa. The Holding Company Board
17 provides leadership within a framework of effective controls that enables risks to be assessed
18 and managed, and is responsible for supervising the management of the business and affairs
19 of the Corporation and its wholly-owned subsidiaries. In carrying out its oversight function, the
20 Holding Company Board of Directors is guided by a Shareholder Declaration issued by Ottawa
21 City Council (Attachment 1-4-1(A)) and revised from time to time. The Corporation's Code of
22 Business Conduct (Attachment 1-4-1(L)), its Director Conflict of Interest and Conduct
23 Guidelines (Attachment 1-4-1(M)), and a Related Party Transaction Disclosure Policy and
24 Process (Attachment 1-4-1(N)) also govern the actions of the Holding Company Board.

25
26 In 2006, a separate subsidiary Board of Directors was established to oversee the operations of
27 Hydro Ottawa Limited, in accordance with the OEB's *Affiliate Relationships Code for Electricity*
28 *Distributors and Transmitters* ("ARC"). The powers and functions of the Hydro Ottawa Limited
29 Board are set out in a Shareholder Declaration issued by the Holding Company Board of

1 Directors (Attachment 1-4-1(B)). The chart shown below depicts the relationship between the
2 various corporate entities.

3
4 The composition of the Hydro Ottawa Limited Board includes three members, two of whom
5 also serve on the Holding Company Board, and one who is a member of the management of
6 Hydro Ottawa Limited but who is not employed by an affiliate of the utility. The members
7 include the Holding Company Board Chair, the President and Chief Executive Officer of the
8 Holding Company and Hydro Ottawa Limited, and the Chief Electricity Distribution Officer of
9 Hydro Ottawa Limited.

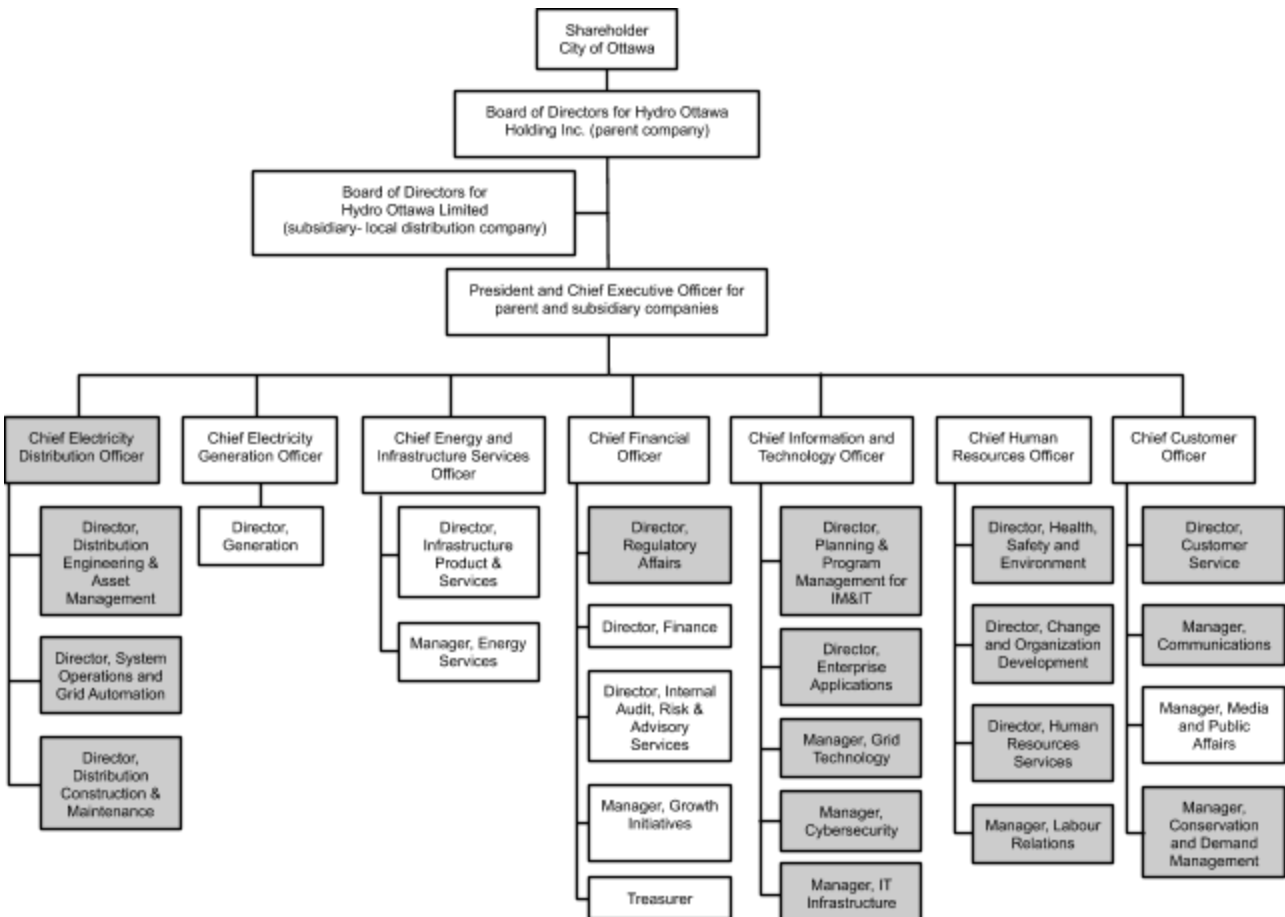
10
11 **Figure 1 – Corporate Entities Relationship Chart**



2.3. EXECUTIVE MANAGEMENT TEAM AND REPORTING RELATIONSHIP BETWEEN UTILITY MANAGEMENT AND PARENT COMPANY OFFICIALS

On a day-to-day basis, the Corporation is led by an Executive Management Team, comprised of the Corporation's President and Chief Executive Officer, the Chief Financial Officer, and the senior executives of the subsidiaries and critical functional areas. This team oversees the alignment of business practices and strategies with the goals of the Corporation, and drives performance by managing risks and opportunities. The Executive Management Team is accountable to the Corporation's Board of Directors through the President and Chief Executive Officer. The chart shown below depicts the relationship between utility management (shaded boxes) and Holding Company officials.

Figure 2 – Utility Management and Holding Company Relationship



3. CORPORATE GOVERNANCE PRACTICES

3.1. BOARD OF DIRECTORS

The composition of the Holding Company Board includes eleven members, eight of whom are independent of management and the sole shareholder, the City of Ottawa.

The composition of the Hydro Ottawa Limited Board includes three members: the Chair of the Holding Company Board; the President and Chief Executive Officer of the Holding Company and Hydro Ottawa Limited; and the Chief Electricity Distribution Officer of Hydro Ottawa Limited. One of the three members, Hydro Ottawa Limited's Chief Electricity Distribution Officer, is independent from any affiliate as required by the provisions of subsection 2.1.3 of the ARC.

The number and proportion of independent directors on the Hydro Ottawa Limited Board is set out in section 2 of its charter (Attachment 1-4-1(D)), which requires that one third of the Board shall, at all times, be independent of any affiliate.

To facilitate the exercise of independent judgement by the Holding Company and Hydro Ottawa Limited Boards in carrying out their respective responsibilities,

- the Holding Company Board is comprised of a majority of independent directors;
- the Hydro Ottawa Limited Board has met its charter requirements to have one third of the Board independent of any affiliate;
- a number of internal policies and processes are in place to address related party transactions (see Attachment 1-4-1(N): Related Party Transaction Disclosure Policy and Process), including, among other things:
 - an agenda item at each meeting of the Boards and committees that requires Board members to make declarations of interest and to disclose any transactions in which they could have an interest but also to disclose any entities in which they have come to have a financial interest that

could be involved in transactions with the Holding Company or its wholly-owned subsidiary companies;

- an annual disclosure to the Governance and Management Resources Committee (“GMRC”) of related party transactions involving directors of the Holding Company and its wholly-owned subsidiary companies; and
- an annual disclosure to the shareholder, through the City Manager, of related party transactions involving directors of the Holding Company and its wholly-owned subsidiary companies, including certification of compliance with the restrictions contained in the Shareholder Declaration relating to restrictions on payments to directors, their family members, and entities in which directors have a substantive ownership interest;

- the Audit Committee is comprised of a majority of independent directors, both the internal and external auditors attend the Audit Committee meetings, and the Audit Committee has a closed session with the external auditors and one with the internal auditor at every meeting;
- the Holding Company and Hydro Ottawa Limited Boards receive regular briefings on a variety of strategic issues; and
- the Holding Company and Hydro Ottawa Limited Boards conduct a periodic self-evaluation to assess the performance and effectiveness of the Boards, Board committees, and Board and committee chairs. All information supplied by Board members is kept confidential and is not accessible by members of management of the Corporation. All results of the assessment process are reported out to the Board on a confidential basis without attribution.

3.2. BOARD MANDATE

As part of its commitment to implementing good governance practices consistent with a corporation of its size and nature of business activities, the Holding Company (including its wholly-owned subsidiary companies) is committed to regularly assessing its practices to ensure that this goal continues to be met.

1 With respect to Board mandates, the GMRC of the Holding Company Board has been
2 assigned the responsibility to maintain charters for the Board and committees, including for the
3 Hydro Ottawa Limited Board, and annually reviews roles, responsibilities, and terms of
4 reference to ensure that they are consistent with good governance practices for a corporation
5 of the Holding Company's size and mandate.

6
7 The written mandate of the Hydro Ottawa Limited Board is set out in its charter, appended at
8 Attachment 1-4-1(D).

9 10 **3.3. BOARD MEETINGS**

11 A schedule of the 2018 and 2019 meetings of the Holding Company Board, its committees, and
12 the Hydro Ottawa Limited Board is appended at Attachment 1-4-1(J).

13 14 **3.4. ORIENTATION AND CONTINUING EDUCATION**

15 As part of its commitment to implementing good governance practices consistent with a
16 corporation of its size and nature of business activities, the Holding Company (including its
17 wholly-owned subsidiary companies) is committed to ensuring that members of the Board of
18 Directors receive both an initial orientation and on-going education that will assist them in
19 undertaking their roles as directors of the Corporation and its subsidiaries.

20
21 To this end, the Holding Company Board has put in place a Director Orientation and Continuing
22 Education Policy and Process (see Attachment 1-4-1(K)), and has assigned responsibility to
23 the GMRC for ensuring that appropriate and relevant practices are in place for Board director
24 orientation and continuing education. The Corporation encourages Board directors to
25 participate in external professional development education programs to assist in the execution
26 of their roles as Board directors, and also funds the participation of one Board director per year
27 for a recognized director education program providing Board director certification.

28
29 In addition, in 2017 the Corporation purchased a corporate "board" membership with the
30 Institute of Corporate Directors ("ICD") in order to provide all Board members with access to

1 continuing education opportunities. The Corporation's ICD board membership extends to all
2 Holding Company Board members and offers a number of resources aimed at optimizing
3 Board performance.

4 5 **3.5. ETHICAL BUSINESS CONDUCT**

6 The Corporation's Code of Business Conduct (Attachment 1-4-1(L)), its Director Conflict of
7 Interest and Conduct Guidelines (Attachment 1-4-1(M)), and a Related Party Transaction
8 Disclosure Policy and Process (Attachment 1-4-1(N)) govern the actions of both the Holding
9 Company and Hydro Ottawa Limited Boards. Moreover, the charters of the Holding Company
10 Board (Attachment 1-4-1(C)), the GMRC (Attachment 1-4-1(G)), and the Hydro Ottawa Limited
11 Board (Attachment 1-4-1(D)) each include specific provisions in relation to Code of Conduct
12 and Compliance.

13
14 In accordance with their charter requirements, the GMRC, and the Holding Company and
15 Hydro Ottawa Limited Boards, annually receive a report confirming that directors, members of
16 management, and those in key financial positions have signed an attestation acknowledging
17 acceptance of the company's Code of Business Conduct.

18
19 Additionally, the Corporation has established a Business Conduct Hotline (see Attachment
20 1-4-1(O)), a third party service that allows employees and Board members to anonymously
21 report any concerns they might have related to perceived improper activities in the workplace
22 and/or non-compliance with the Code of Business Conduct, or even suggestions for
23 improvement. The Audit Committee of the Holding Company Board receives annual Business
24 Conduct Hotline updates and more frequent reports if a serious complaint is received.

25 26 **3.6. NOMINATION OF DIRECTORS**

27 In accordance with the requirements of the Shareholder Declaration for the Holding Company
28 Board (Attachment 1-4-1(A)), the City of Ottawa, the sole shareholder, appoints all directors to
29 the Boards of the Holding Company and its wholly-owned subsidiaries, including Hydro Ottawa
30 Limited, except for the President and Chief Executive Officer. In doing so, the City considers
31 candidates recommended by the Nominating Committee of the Holding Company Board (see

1 charter at Attachment 1-4-1(E)), but is not obliged to select these candidates. The Nominating
2 Committee is assisted by outside consultants in its search for candidates for appointment to the
3 Boards.

4
5 As set out in the Shareholder Declaration, all candidates for appointment to the Boards must
6 meet certain requirements, including demonstrated integrity and high ethical standards,
7 relevant career experience and expertise, and an understanding of the Corporation both as a
8 service to local ratepayers and an asset of taxpayers.

9
10 In addition, the nomination and selection process is designed to maintain Boards that include
11 the following overarching competencies among one or more directors: strong business
12 background, including competitive business experience and strategic planning; strong financial
13 background, including financial accreditation and public or private market financing experience;
14 industry sector experience in the areas of business of the subsidiary companies; Board
15 experience; engineering experience; and merger and acquisition experience.

16
17 In 2018, the Institute on Governance assisted with the process of identifying and evaluating
18 potential candidates. The process used by the Institute on Governance to source qualified
19 candidates for the Nominating Committee's consideration was designed to target recruitment
20 priorities identified by the GMRC as part of its annual review of the Board competency profile.
21 It included the following:

- 22
23
 - A recruitment posting on the Corporation's website; and
 - 24 ● A review of the Institute of Corporate Directors Register.

25
26 The Institute on Governance assessed applications against the selection criteria set out in the
27 Shareholder Declaration as well as the recruitment priorities identified for 2018. Thereafter, it
28 provided the Nominating Committee with a report including a candidate listing, biographies,
29 and a summary competency assessment for each potential candidate.

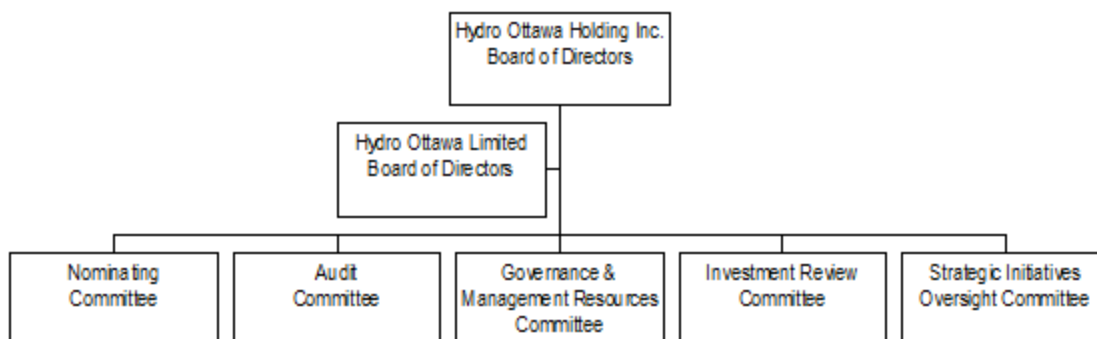
As per usual practice, the Nominating Committee then met to discuss the candidate listing provided by the Institute on Governance, giving consideration to the recruitment priorities identified through the Board profile review conducted earlier in the year. Following its deliberation, the Nominating Committee resolved to recommend candidates for appointments to the Board to the shareholder, and the recommended candidate names were included as part of the Holding Company's report to City Council for its Annual General Meeting ("AGM") held on June 27, 2018.

In 2019, no new recruitment was undertaken. The Nominating Committee met to consider the recruitment priorities identified by the GMRC as part of its annual review of the Board competency profile. Following its deliberation, the Nominating Committee resolved to recommend to the shareholder the reappointment of an outgoing Board member for an additional year. The recommended candidate's name was included as part of the Holding Company's report to City Council for its AGM held on June 26, 2019.

3.7. BOARD COMMITTEES

The following five committees have been created to assist the Holding Company and Hydro Ottawa Limited Boards in carrying out their respective duties:

Figure 3 – Board Committees



- **Nominating:** The Nominating Committee, with the assistance of outside consultants, identifies and evaluates potential candidates for appointment as Board directors. The

1 Nominating Committee makes recommendations to the shareholder (represented by
2 Ottawa City Council) for the appointment of Board directors. The Committee charter is
3 appended at Attachment 1-4-1(E).

- 4
- 5 • **Audit:** The Audit Committee reviews financial statements, accounting practices and
6 policies, auditing processes, and the results of internal and external audits and related
7 matters. It also oversees financial risk management and assesses internal controls. The
8 Committee charter is appended at Attachment 1-4-1(F).

9

10 The Audit Committee is comprised of a majority of independent directors. Financial
11 expertise is one of the overarching competencies for all Board directors, and all Audit
12 Committee directors are financially literate. In addition, both the internal and external
13 auditors attend the Audit Committee meetings, and the Audit Committee has a closed
14 session with the external auditors at every meeting.

- 15
- 16 • **Governance and Management Resources:** The GMRC reviews the Corporation's
17 governance structures and practices to ensure that the Board of Directors can fulfill its
18 mandate. It reviews management resources and compensation practices to ensure
19 systems are in place to attract, retain, and motivate qualified management employees.
20 It also reviews and assesses the performance of the President and Chief Executive
21 Officer, oversees the Board assessment process, and monitors compliance with codes
22 of conduct. The Committee charter is appended at Attachment 1-4-1(G).

- 23
- 24 • **Investment Review:** The Investment Review Committee is responsible for assisting
25 management and the Board of Directors in the review and pursuit of business
26 development, acquisition, and investment opportunities. In carrying out these functions,
27 the Committee focuses on the consistency of opportunities with strategic plans and
28 investment guidelines, the maximization of shareholder value, and the management of
29 risk. The Committee charter is appended at Attachment 1-4-1(H).

- 1 • **Strategic Initiatives Oversight:** The Strategic Initiatives Oversight Committee is
2 responsible for assisting the Board of Directors in guiding management and providing
3 support and focus for large-scale capital project efforts, as identified by the Board from
4 time to time. The Committee charter is appended at Attachment 1-4-1(I).

SHAREHOLDER DECLARATION dated the 25th day of June 2014.

BY: **CITY OF OTTAWA**
Being the sole shareholder of Hydro Ottawa Holding Inc.

WHEREAS subsection 108(2) of the *Ontario Business Corporations Act* permits all of the shareholders of a corporation to enter into a unanimous shareholder agreement;

AND WHEREAS pursuant to subsection 108(3) of such Act, a written declaration by a sole shareholder of a corporation that restricts in whole or in part the powers of the directors to manage or supervise the management of the business and affairs of the corporation is deemed to be a unanimous shareholder agreement;

AND WHEREAS pursuant to subsection 108(5) of such Act, to the extent that a unanimous shareholder agreement restricts the discretion or powers of the directors of a corporation to manage or supervise the management of the business and affairs of a corporation, a shareholder who is a party to the unanimous shareholder agreement assumes such powers and the related duties and liabilities and the directors are thereby relieved of their duties and liabilities;

AND WHEREAS the City of Ottawa is the sole owner of all the issued and outstanding shares of Hydro Ottawa Holding Inc./Société de Portefeuille d'Hydro Ottawa Inc. and desires to make this Declaration with the intent that to the extent that it restricts the discretion and powers of the directors of Hydro Ottawa Holding Inc./Société de Portefeuille d'Hydro Ottawa Inc., it shall constitute a unanimous shareholder agreement with respect to only those restrictions;

AND WHEREAS the City of Ottawa wishes that the shareholder declaration show that it is an objective of Hydro Ottawa Holding Inc. and its Subsidiary Hydro Ottawa Limited to have electricity customers in the whole of the geographic area of the City of Ottawa receive electricity distribution services from Hydro Ottawa Limited;

AND WHEREAS the City of Ottawa wishes to establish certain principles of governance and other fundamental principles and policies relating to Hydro Ottawa Holding Inc./Société de Portefeuille d'Hydro Ottawa Inc. and its subsidiaries;

NOW THEREFORE, the City of Ottawa hereby declares as follows:

ARTICLE I INTERPRETATION

1.1 Definitions

In this Declaration the following terms will have the meanings set out below:

"Act" means the *Ontario Business Corporations Act*, as now enacted or as the same may from time to time be amended, re-enacted or replaced;

“**Affiliate**” means a Body Corporate that is affiliated with Holdco as such relationship is defined in the Act;

“**Board**” means the board of directors of Holdco;

“**Body Corporate**” means a firm, partnership, unincorporated association, joint venture, corporation, bank, trust, pension fund, union, governmental agency, board, tribunal, ministry of commission or other legal entity of any kind whatsoever, but excludes an individual or natural person;

“**Business Day**” means a day, other than a Saturday or Sunday, on which the principal commercial banks located at Ottawa, Ontario are open for business during normal banking hours;

“**City**” means the City of Ottawa being the body corporate by which, on January 1, 2001, the inhabitants of the municipal areas, as defined in the *City of Ottawa Act, 1999*, are constituted as a body corporate as provided in subsection 2.(1) of such act;

“**Competitive Affiliates**” means Energy Ottawa Inc./Énergie Ottawa Inc. and Telecom Ottawa Holding Inc.;

“**External**” means, with respect to a member of the Board, (a) an individual who is not the Mayor (or his/her designee), a councillor or employee of the City; or (b) an individual who is not an officer or employee of Holdco or any Affiliate;

“**Holdco**” means Hydro Ottawa Holding Inc./Société de Portefeuille d’Hydro Ottawa Inc., a corporation incorporated under the Act;

“**Municipal Electric Utilities**” means collectively The Hydro-Electric Commission of the City of Ottawa, The Hydro-Electric Commission of the City of Nepean, The Hydro-Electric Commission of The City of Kanata, The Hydro-Electric Commission of the City of Gloucester and Goulbourn Hydro-Electric Commission;

“**Person**” means an individual, a natural person or a Body Corporate;

“**Regulator**” means the Ontario Energy Board, the Independent Electricity System Operator, the Ontario Power Authority or any other governmental or regulatory authority having jurisdiction over Holdco or a Subsidiary;

“**Subsidiary**” means, with respect to Holdco, each of the Utility Affiliate, the Competitive Affiliates and any body corporate of which more than 50% of its outstanding securities of any class carrying exercisable voting rights are beneficially owned, directly or indirectly, by Holdco, and includes any Body Corporate in like relation to a Subsidiary;

“**Third Party**” means a person who deals at arm’s length (as interpreted by subsection 251 (1) of the *Income Tax Act* (Canada) with Holdco or a Subsidiary; and

“**Utility Affiliate**” means Hydro Ottawa Limited/Hydro Ottawa Limitée, a corporation incorporated under the Act.

1.2 Calculation of Time

In this Declaration, unless otherwise specified, time periods within or following which any payment is to be made or act is to be done shall be calculated by excluding the day on which the period commences and including the day which ends the period and by extending the period to the next Business Day following if the last day of the period is not a Business Day.

1.3 Regulatory Matters

In the event of any conflict between any approval or direction or other requirement of the City of Ottawa and Holdco or a Subsidiary under this Declaration and any decision, order or policy of any Regulator, the decision, order or policy of the Regulator shall govern and Holdco and the Subsidiaries will at all times comply with any decision, order or policy of the Regulator whether or not an approval or direction has first been given in respect thereof by the City of Ottawa under this Declaration. For greater certainty, Holdco and the Subsidiaries will not seek any order from any Regulator for any matter that would require the approval of the City of Ottawa under this Declaration without first giving notice of their intention to seek such an order to the City of Ottawa.

ARTICLE 2 BUSINESS OF HOLDCO

2.1 Permitted Business Activities

Subject to its compliance with the *Energy Competition Act, 1998*, Holdco, either directly or through a Subsidiary, may engage in any of the following business activities:

- (a) Transmitting and distributing electricity;
- (b) providing the standard supply service of electricity to Persons connected to the distribution system of Holdco or a Subsidiary;
- (c) owning, managing, operating and having an ownership interest in electricity generation facilities;
- (d) providing meter installation, repair, calibration and reading services;
- (e) providing energy-related products and services;
- (f) providing services related to the promotion of energy conservation, energy efficiency, load management or the use of cleaner energy sources, including alternative and renewable energy sources and services to assist

the Government of Ontario in achieving its goals in electricity conservation;

- (g) providing energy procurement and energy efficiency services;
- (h) renting or selling hot water heaters;
- (i) providing street lighting services;
- (j) distributing gas or any other energy product which is carried through pipes or wires to the user;
- (k) retailing electricity produced at a generating facility owned, operated or managed by a Subsidiary;
- (l) participating in the retailing of electricity (other than as set out in paragraph (k) above) or gas on a basis that is limited to normal commercial risk and does not subject Holdco or a Subsidiary to risk created by variations in the market price of the commodity;
- (m) using the real property that Holdco or a Subsidiary has the right to use for the purpose of providing telecommunications services, or entering into agreements with any Third Party, or Subsidiary, authorizing such Third Party or Subsidiary to use such real property for the purpose of providing telecommunications services;
- (n) managing or operating on behalf of the City of Ottawa the provision of a public utility, water or sewage service;
- (o) conducting business activities the principal purpose of which is to use more effectively the assets of a Subsidiary; any other business activities carried on by the Municipal Electric Utilities at the time the assets of the latter were transferred to Holdco and/or a Subsidiary, the principal purpose of which is to use more effectively the assets of Holdco or a Subsidiary; and
- (p) subject to the restrictions set out in paragraph (l), any other business activities permitted, pursuant to provincial legislation, to be carried on by an electricity distributor or its affiliates where the voting securities carrying more than 50 per cent of the voting rights attached to the voting securities of the electricity distributor are owned directly or indirectly by a municipal corporation .

2.2 Other Business Activities with Prior Approval

Subject to compliance with the *Energy Competition Act, 1998*, and with the prior written approval of the City of Ottawa, Holdco, either directly or through a Subsidiary, may engage in any of the following business activities:

- (a) retailing electricity or gas on a basis which exposes Holdco or a Subsidiary to the risk of fluctuations in the market price of the commodity.

2.3 City of Ottawa Consent

The Board shall have the authority to prepare a business case for consideration by the City of Ottawa whether or not related to any business activity set out in section 2.2. hereof which business case shall include an assessment of whether or not the new business activity is financially viable or otherwise commercially prudent to be pursued by Holdco or a Subsidiary. Upon a review of the business case, the City of Ottawa shall advise Holdco in writing whether or not the new business activity may be pursued by Holdco or its Subsidiary.

2.4 Service Territory

Holdco shall have an objective of having electricity customers in the whole of the geographic area of the City of Ottawa receive electricity distribution services from its Subsidiary Hydro Ottawa Limited.

ARTICLE 3 OPERATION AND CONTROL

3.1 Number of Directors

Holdco shall be managed by the Board which shall be comprised of not less than five (5) and not more than eleven (11) directors, and which will consist of eleven (11) directors elected by the City of Ottawa, of whom:

- (a) one (1) shall be the Mayor of the City of Ottawa or a member of the Council of the City of Ottawa designated by such Council in the event that such Mayor chooses not to act as a director;
- (b) two other members of the Council of the City of Ottawa, until November 30, 2014 and shall be reduced to one other member of the Council of the City of Ottawa effective December 1, 2014;
- (c) the Chair of the Board of Directors of Hydro Ottawa Limited (unless such office shall be held at the same time by the Chair of the Board);
- (d) one shall be the President and Chief Executive Officer of Holdco; and
- (e) the balance shall be External, one of whom shall become Chair of the Board.

Paragraph (c) shall be repealed effective December 1, 2014.

3.2 Governance Practices

The Board of Directors of Holdco shall prepare and make available to the City of Ottawa upon request a manual setting out its governance practices. The manual shall include a description of the roles and responsibilities of the Board of Directors, of the Chair of the Board of Directors, of individual directors and of the President and Chief Executive Officer.

3.3 Role of the Chair of the Board

The Chair of the Board of Directors shall carry out the following duties and responsibilities:

- (a) provide leadership to the company and its Board of Directors;
- (b) provide leadership in the good governance of the corporation;
- (c) set the agenda for meetings of the Board of Directors;
- (d) chair the meetings of the Board of Directors ;
- (e) ensure that the Board of Directors and its committees work effectively in carrying out their responsibilities;
- (f) attend to the assessment of the performance of the Board of Directors;
- (g) facilitate the relationship between the Board of Directors and management;
- (h) represent the company at meetings with the shareholder and to the public;
- (i) attend to the evaluation of the performance of the President and Chief Executive Officer of Holdco;
- (j) assist the President in the evaluation of the performance of senior management of Holdco and its subsidiaries and in the proper succession planning for the Senior Management;
- (k) collaborate with the Shareholder to allow for the proper succession planning for the Board of Directors; and
- (l) carry out such other functions and responsibilities as may be determined by the Board of Directors.

3.4 Committees

The Board may appoint one or more committees which shall have such powers as may be assigned by the Board. The Board may appoint additional members of a committee from outside the Board for their particular expertise, but a majority of the members of committees with responsibilities relating to the operations of Holdco shall be members of the Board.

3.5 Nominating Committee

The City of Ottawa shall consider candidates nominated by the Nominating Committee, being a Committee established to assist in the selection of directors of Holdco and its wholly-owned Subsidiaries, but shall not be obliged to select such candidates. It is expected that the Nominating Committee will develop a process to identify and evaluate potential Board candidates in order to recommend a slate of qualified candidates to the City of Ottawa. The Nominating Committee shall utilize the services of a placement service to search for members of the Board.

3.6 Criteria For Selection of Directors

The process used by the Nominating Committee shall be designed to ensure that each director satisfies the following criteria:

- (a) demonstrates integrity and high ethical standards;
- (b) has career experience and expertise relevant to Holdco's business purposes, financial responsibilities and risk profile;
- (c) demonstrates an appreciation of the fiduciary duties of a Director;
- (d) demonstrates well-developed listening, communicating and influencing skills;
- (e) demonstrates an interest in and a commitment to devote the time necessary so that the individual Directors can actively participate in Board and Committee discussions and debate;
- (f) demonstrates an understanding of the role of Hydro Ottawa as a service to local ratepayers; and
- (g) demonstrates an understanding of the role of Hydro Ottawa as an asset of taxpayers;

The process used by the Nominating Committee shall also be designed to maintain a Board having the following competencies among one or more directors:

- (a) strong business background;
- (b) strong financial background including financial accreditation;
- (c) industry sector experience in the areas of business of the Subsidiary companies;
- (d) strategic planning and corporate stewardship experience;
- (e) competitive business experience;

- (f) an awareness of the needs of the Corporation's customers;
- (g) public or private market financing experience; and
- (h) board experience.

3.7 Term of Office

The term of office for a director shall be:

- (a) In the case of a director who is the Mayor of the City, or City Council's designee, as the case may be, for a term which ends on the earlier of: (i) the date on which the term of office of such Mayor ends; or (ii) the date on which his or her successor takes office;
- (b) In the case of the director who is the President and Chief Executive Officer of Holdco, for so long as the director holds such office;
- (c) In the case of members of the Council of the City of Ottawa other than the Mayor, for the balance of the term for which the member of Council has been elected and
- (d) In the case of any other directors, for such terms, which will be staggered, as may, from time to time, be provided in the by-laws of Holdco.

Any director may stand for re-election to the Board at the expiry of his or her term, subject to any limitations as may, from time to time, be provided in the by-laws of Holdco.

3.8 Remuneration

The remuneration of the members of the Board or the board of directors of a Subsidiary for their respective services as directors will be as determined by the City of Ottawa from time to time. For greater certainty, only one annual stipend will be paid where an individual is a director of both Holdco and a Subsidiary. Notwithstanding the foregoing:

- (a) the directors who are members of the Council of the City of Ottawa (including the Mayor) will receive no remuneration; and
- (b) the President and Chief Executive Officer of Holdco will receive no remuneration in his or her capacity as director,

although the individuals described in paragraphs (a) and (b) will, along with all other directors, be reimbursed by Holdco for their out-of-pocket expenses upon presentation of supporting receipts therefor.

The Board of Directors shall review every other year the remuneration paid to members of the Board of Directors of Holdco and its Subsidiaries (including the Chair) and bring forward

recommendations to the City of Ottawa for consideration in connection with the presentation of the financial statements for such year.

No amount shall be paid to the Chair, directors, members of their immediate families or entities in which they have a substantive ownership interest over and above the remuneration for directors determined by the City of Ottawa from time to time.

3.9 Vacancies

If a member of the Board ceases to be a director for any reason, the City of Ottawa will fill the vacancy created thereby as soon as reasonably possible having regard to the provisions of section 3.1. If a member of the board of directors of a Subsidiary ceases to be a director for any reason, Holdco will cause the vacancy to be filled by another director as soon as reasonably possible.

ARTICLE 4 SHAREHOLDER MATTERS

4.1 Shareholder Approval under the Act

In accordance with the provisions of the Act, Holdco will not, without the prior written approval of the City of Ottawa:

- (a) amend its articles or make, amend or repeal any by-law;
- (b) amalgamate (except for an amalgamation with one or more Subsidiaries), apply to continue as a body corporate under the laws of another jurisdiction, merge, consolidate or reorganize, or approve or effect any plan of arrangement, in each case whether statutory or otherwise;
- (c) take or institute proceedings for any winding-up, arrangement, reorganization or dissolution;
- (d) create new classes of shares or reorganize, consolidate, subdivide or otherwise change its outstanding securities;
- (e) change its auditor;
- (f) make any change to the number of directors comprising the Board; or
- (g) enter into any other transaction or take any other action that requires shareholder approval pursuant to the Act.

4.2 Additional Matters Requiring Shareholder Consent

The powers of the Board, including without limitation any committee thereof, from time to time are hereby restricted, in part, such that Holdco shall not without the prior written approval of the City of Ottawa:

- (a) make any change in the issued capital of Holdco;
- (b) enter into any agreement or make any offer or grant any right capable of becoming an agreement to allot or issue any shares of Holdco;
- (c) permit the ratio of consolidated funded obligations to total consolidated capitalization of Holdco to exceed 75 percent, as calculated in accordance with market standard practice for local distribution utilities in the Province of Ontario;
- (d) make directly or indirectly loans or advances in excess of fifty thousand dollars (\$50,000) to any Person, other than a Subsidiary;
- (e) give security for or guarantee debts in excess of fifty thousand dollars (\$50,000) of any Person, other than a Subsidiary;
- (f) declare any dividend prior to consultation with the City or any dividend which is inconsistent with the dividend policy communicated, from time to time in writing, by the City of Ottawa to the Board;
- (g) appoint any auditor to fill any vacancy in the position of auditor which may occur during a year;
- (h) appoint any director to fill any vacancy in the position of director of the Board or director of the board of directors of Subsidiary directly or indirectly wholly owned by the City of Ottawa, as contemplated by section 3.5 hereof;
- (j) establish any financial year end of Holdco which is not December 31; or
- (k) sell or otherwise dispose of, by conveyance, transfer, lease, sale and leaseback or other transaction, ten percent (10%) or more of its assets or undertaking,

4.3 Liability of the City of Ottawa

In the exercise of the rights, duties and powers assumed and transferred under this Declaration, the City of Ottawa, as the sole shareholder of Holdco, shall be subject to the same obligations and liabilities to which the Board would otherwise have been subject if this Declaration had not been made and the Board is hereby wholly relieved of all powers, duties and liabilities as directors of Holdco to the extent that the City of Ottawa is subject thereto.

4.4 Residual Power of Boards

Without restricting the application of sections 4.1 and 4.2 hereof, the Board and the boards of directors of a Subsidiary shall have, subject to the Act and this Declaration, the full authority to manage the business and affairs of Holdco and a Subsidiary, respectively, including the authority to develop and recommend to the City of Ottawa decisions with respect to any of the matters specified in sections 4.1 and 4.2 hereof.

4.5 City of Ottawa Power to Consent

The rights, powers and duties vested in the City of Ottawa pursuant to the provisions of this Declaration shall be exercised by or pursuant to a resolution or by-law of the City of Ottawa.

**ARTICLE 5
REPORTING TO CITY OF OTTAWA**

5.1 Reports

Holdco will report to the City of Ottawa on any and all matters as requested by the City of Ottawa from time to time including reports relating to a Subsidiary. Without limiting the foregoing, Holdco shall provide, in a timely manner, to the City of Ottawa an annual financial report containing such financial and other information as the City of Ottawa may reasonably request and which information Holdco is legally entitled to provide. Holdco shall provide to the City of Ottawa a report of material facts and material changes as they occur and shall be guided by securities laws applicable to publicly traded corporations when assessing the extent and timing of such disclosure.

**ARTICLE 6
GENERAL PROVISIONS**

6.1 Reference on Certificates

Holdco shall cause a reference to this Declaration to be noted conspicuously on every share certificate issued by Holdco. Holdco shall cause each Subsidiary to ensure that a reference to the Declaration delivered to it pursuant to section 6.4 hereof is noted conspicuously on every share certificate issued by such Subsidiary.

6.2 Termination

This Declaration shall be effective as of the date hereof and shall continue in full force and effect until the City of Ottawa has given written notice to the Board of the revocation and termination of this Declaration.

6.3 Amendment of Declaration

This Declaration may be amended by the City of Ottawa from time to time as circumstances may require and the City of Ottawa will consult with the Board prior to completing any amendments and will promptly provide the Board with copies of such amendments.

6.4 Revocation of Previous Declarations

The Declaration dated June 29, 2006 passed by the City of Ottawa is hereby revoked and replaced by this Declaration.

6.5 Governing Law

This Declaration shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein.

6.6 Effective Date

This Declaration shall be effective as of and from July 1, 2014, except as otherwise expressly provided.

IN WITNESS WHEREOF, the City of Ottawa has executed this Declaration as a unanimous shareholder agreement pursuant to subsections 108(2) and 108(3) of the Act.

CITY OF OTTAWA

Per:

By: _____

Name: Jim Watson

Title: Mayor

By: _____

Name: M. Rick O'Connor

Title: City Clerk and Solicitor



SHAREHOLDER DECLARATION dated the 28th day of August 2014.

BY: **HYDRO OTTAWA HOLDING INC./SOCIÉTÉ DE
PORTEFEUILLE D'HYDRO OTTAWA INC.**
A corporation incorporated under
The laws of the Province of Ontario
("Holdco").

WHEREAS subsection 108(2) of the *Ontario Business Corporations Act* permits all of the shareholders of a corporation to enter into a unanimous shareholder agreement;

AND WHEREAS pursuant to subsection 108(3) of such Act, a written declaration by a sole shareholder of a corporation that restricts in whole or in part the powers of the directors to manage or supervise the management of the business and affairs of the corporation is deemed to be a unanimous shareholder agreement;

AND WHEREAS pursuant to subsection 108(5) of such Act, to the extent that a unanimous shareholder agreement restricts the discretion or powers of the directors of a corporation to manage or supervise the management of the business and affairs of a corporation, a shareholder who is a party to the unanimous shareholder agreement assumes such powers and the related duties and liabilities and the directors are thereby relieved of their duties and liabilities;

AND WHEREAS Holdco is the registered and beneficial owner of all the issued and outstanding shares of Hydro Ottawa Limited/Hydro Ottawa Limitée and desires to make this Declaration with the intent that to the extent that it restricts the discretion and powers of the directors of Hydro Ottawa Limited/Hydro Ottawa Limitée, it shall constitute a unanimous shareholder agreement with respect to only those restrictions;

AND WHEREAS Holdco, together with its subsidiaries Hydro Ottawa Limited/Hydro Ottawa Limitée and Energy Ottawa Inc./Énergie Ottawa Inc., are the successors to the businesses formerly carried on by the Municipal Electric Utilities (as herein defined);

AND WHEREAS Holdco wishes that this declaration show that it is an objective of Hydro Ottawa Limited to provide electricity distribution services to all customers in the geographic area of the City of Ottawa;

AND WHEREAS Holdco wishes to establish certain principles of governance and other fundamental principles and policies relating to Hydro Ottawa Limited/Hydro Ottawa Limitée and its subsidiaries;

NOW THEREFORE, Holdco hereby declares as follows:

ARTICLE I INTERPRETATION

1.1 Definitions

In this Declaration the following terms will have the meanings set out below:

“Act” means the Ontario *Business Corporations Act*, as now enacted or as the same may from time to time be amended, re-enacted or replaced;

“Affiliate” means a Body Corporate that is affiliated with Hydro Ottawa Limited as such relationship is defined in the Act;

“Board” means the board of directors of Hydro Ottawa Limited;

“Body Corporate” means a firm, partnership, unincorporated association, joint venture, corporation, bank, trust, pension fund, union, governmental agency, board, tribunal, ministry of commission or other legal entity of any kind whatsoever, but excludes an individual or natural person;

“Business Day” means a day, other than a Saturday or Sunday, on which the principal commercial banks located at Ottawa, Ontario, are open for business during normal banking hours;

“External” means, with respect to a member of the Board, (a) an individual who is not the Mayor, a councillor or employee of the City; or (b) an individual who is not an officer and employee of Hydro Ottawa Limited or any Affiliate;

“Hydro Ottawa Limited” means Hydro Ottawa Limited/Hydro Ottawa Limitée, a corporation incorporated under the laws of Ontario;

“Municipal Electric Utilities” means collectively The Hydro-Electric Commission of the City of Ottawa, the Hydro-Electric Commission of the City of Nepean, The Hydro-Electric Commission of The City of Kanata, The Hydro-Electric Commission of the City of Gloucester and Goulbourn Hydro-Electric Commission;

“Person” means an individual, a natural person or a Body Corporate;

“Regulator” means the Ontario Energy Board, the Independent Electricity System Operator, the Ontario Power Authority or any other governmental or regulatory authority having jurisdiction over Hydro Ottawa Limited or a Subsidiary;

“Subsidiary” means, any body corporate, the incorporation of which has been approved by Holdco as contemplated by subsection 4.2(a) hereof, of which more than 50% of its outstanding

securities of any class carrying exercisable voting rights are beneficially owned, directly or indirectly, by Hydro Ottawa Limited, and includes any Body Corporate in like relation to a Subsidiary;

“Third Party” means a person who deals at arm’s length (as interpreted by subsection 251 (1) of the *Income Tax Act* (Canada) with Hydro Ottawa Limited;

1.2 Calculation of Time

In this Declaration, unless otherwise specified, time periods within or following which any payment is to be made or act is to be done shall be calculated by excluding the day on which the period commences and including the day which ends the period and by extending the period to the next Business Day following if the last day of the period is not a Business Day.

1.3 Regulatory Matters

In the event of any conflict between any approval or direction or other requirement of Holdco and Hydro Ottawa Limited or a Subsidiary under this Declaration and any decision, order or policy of any Regulator, the decision, order or policy of the Regulator shall govern and Hydro Ottawa Limited and a Subsidiary will at all times comply with any decision, order or policy of the Regulator whether or not an approval or direction has first been given in respect thereof by Holdco under this Declaration. For greater certainty, Hydro Ottawa Limited and a Subsidiary will not seek any order from any Regulator for any matter that would require the approval of Holdco under this Declaration without first giving notice of their intention to seek such an order to Holdco.

ARTICLE 2 BUSINESS OF HYDRO OTTAWA LIMITED

2.1 Permitted Business Activities

Subject to its compliance with the *Energy Competition Act*, 1998, Hydro Ottawa Limited, either directly or through a Subsidiary, may engage in any of the following business activities:

- (a) Transmitting and distributing electricity;
- (b) providing the standard supply service of electricity to Persons connected to the distribution system of Hydro Ottawa Limited or a Subsidiary;
- (c) providing meter installation, repair, calibration and reading services;
- (d) providing services related to the promotion of energy conservation, energy efficiency, load management or the use of cleaner energy sources, including alternative and renewable energy sources and services to assist

the Government of Ontario in achieving its goals in electricity conservation

- (e) providing street lighting services;
- (f) managing or operating on behalf of the City of Ottawa the provision of a public utility, water or sewage service;
- (g) using the real property that Hydro Ottawa Limited or a Subsidiary has the right to use for the purpose of providing telecommunications services for the purpose of electricity transmission or distribution, or entering into agreements with any Third Party, or Subsidiary, authorizing such Third Party or Subsidiary to use such real property for the purpose of providing telecommunications services for the purpose of electricity transmission or distribution;
- (h) any other business activities carried on by the Municipal Electric Utilities at the time the assets of the latter were transferred to Hydro Ottawa Limited, the principal purpose of which is to use more effectively the assets of Hydro Ottawa Limited; and
- (i) any other business activities permitted, pursuant to provincial legislation, to be carried on by an electricity distributor where the voting securities carrying more than 50 per cent of the voting rights attached to the voting securities of the electricity distributor are owned directly or indirectly by a municipal corporation.

2.2 Other Business Activities with Prior Approval

Subject to compliance with the *Energy Competition Act, 1998*, and with the prior written approval of Holdco, Hydro Ottawa Limited, either directly or through a Subsidiary, may engage in any of the following business activities:

- (a) business activities which Hydro Ottawa Limited is not otherwise permitted to undertake which are not prohibited by section 71 of the *Ontario Energy Board Act, 1998*.

2.3 Holdco Consent

The Board shall have the authority to prepare a business case for consideration by Holdco related to any business activity set out in section 2.2. hereof which business case shall include an assessment of whether or not the new business activity is financially viable or otherwise commercially prudent to be pursued by Hydro Ottawa Limited or a Subsidiary. Upon a review of the business case, Holdco shall advise Hydro Ottawa Limited in writing whether or not the new business activity may be pursued by Hydro Ottawa Limited or its Subsidiary.

2.4 Service Territory

Hydro Ottawa Limited shall have an objective of providing electricity distribution services to all electricity customers in the geographic area of the City of Ottawa.

ARTICLE 3 OPERATION AND CONTROL

3.1 Number of Directors

Until November 30, 2014, Hydro Ottawa Limited shall be managed by the Board which shall be comprised of not less than five (5) and not more than seven (7) directors, and which initially will consist of seven (7) directors elected by Holdco, of whom:

- (a) one (1) shall be the President and Chief Executive Officer of Holdco;
- (b) one shall be a member of the Council of the City of Ottawa;
- (c) one shall be the Chair of Holdco (unless such office shall be held at the same time by the Chair of the Board) and
- (d) the balance shall be External, one of whom may become Chair of the Board.

provided that one-third of the Board shall, at all times, be independent from any Affiliate as required by the provisions of subsection 2.1.3 of the Ontario Energy Board's Affiliate Relationships Code for Electricity Distributors and Transmitters.

Effective December 1, 2014, Hydro Ottawa Limited shall be managed by the Board which shall be comprised of not less than two (2) and not more than three (3) directors, and which initially will consist of three (3) directors elected by Holdco, of whom:

- (a) one shall be the President and Chief Executive Officer of Holdco;
- (b) one shall be the Chair of Holdco; and
- (c) one shall be a member of the management of Hydro Ottawa Limited who is not employed by an affiliate of Hydro Ottawa Limited

For greater certainty, notwithstanding the fact that the size of the Board may vary within the range specified above, the Board shall at all times be comprised of the director holding the office referred to in paragraph (a) above.

3.2 Term of Office

The term of office for a director shall be:

- (a) In the case of the director who is the President and Chief Executive Officer of Holdco for so long as the director holds such office;
- (b) Until November 30, 2014, in the case of members of the Council of the City of Ottawa, for the balance of the term for which the member of Council has been elected; and
- (c) In the case of any other directors, for terms, which will be staggered, as may, from time to time, be provided in the by-laws of Hydro Ottawa Limited.

Any director may stand for re-election to the Board at the expiry of his or her term.

3.3 Chair of the Board

The Chair of the Board of Hydro Ottawa Limited shall be appointed by Holdco from among the members of the Board of Directors who are also members of the Board of Directors of Holdco.

3.4 Vacancies

If a member of the Board ceases to be a director for any reason, Holdco will fill the vacancy created thereby as soon as reasonably possible having regard to the provisions of section 3.1. If a member of the board of directors of a Subsidiary ceases to be a director for any reason, Hydro Ottawa Limited will cause the vacancy to be filled by another director, to be identified by Holdco, as soon as reasonably possible.

3.5 Remuneration

The remuneration of the members of the Board or the board of directors of a Subsidiary for their respective services as directors, will be as determined by Holdco from time to time. For greater certainty, only one annual stipend will be paid where an individual is a director of both Hydro Ottawa Limited and an Affiliate. Notwithstanding the foregoing,

- (a) the director who is a member of the Council of the City of Ottawa will receive no remuneration; and
- (b) the President and Chief Executive Officer of Holdco will receive no remuneration in his or her capacity as director,

- (c) the member of the management of Hydro Ottawa Limited who is not employed by an affiliate of Hydro Ottawa Limited will receive no remuneration in his or her capacity as a director,

although the individuals described in paragraphs (a) and (b) will, along with all other directors, be reimbursed by Hydro Ottawa Limited for their out-of-pocket expenses upon presentation of supporting receipts therefor.

No amount shall be paid to the Chair, directors, members of their immediate families or entities in which they have a substantive ownership interest over and above the remuneration for directors determined by Holdco from time to time.

ARTICLE 4 SHAREHOLDER MATTERS

4.1 Shareholder Powers

In accordance with the provisions of the Act, Hydro Ottawa Limited will not, without the prior written approval of Holdco:

- (a) amend its articles or make, amend or repeal any by-law;
- (b) amalgamate (except for an amalgamation with one or more Subsidiaries), apply to continue as a body corporate under the laws of another jurisdiction, merge, consolidate or reorganize, or approve or effect any plan of arrangement, in each case whether statutory or otherwise;
- (c) take or institute proceedings for any winding-up, arrangement, reorganization or dissolution;
- (d) create new classes of shares or reorganize, consolidate, subdivide or otherwise change its outstanding securities;
- (e) change its auditor;
- (f) make any change to the number of directors comprising the Board; or

enter into any other transaction or take any other action that requires shareholder approval pursuant to the Act.

4.2 Additional Matters Requiring Shareholder Consent

The powers of the Board, including without limitation any committee thereof, from time to time are hereby restricted, in part, such that Hydro Ottawa Limited shall not without the prior written approval of Holdco:

- (a) cause a Subsidiary to be incorporated;
- (b) make any change in the issued capital of Hydro Ottawa Limited;
- (c) enter into any agreement or make any offer or grant any right capable of becoming an agreement to allot or issue any shares of Hydro Ottawa Limited;
- (d) give shareholder approval, as shareholder of a Subsidiary, in respect of any matter which shareholder approval for a Subsidiary is required;
- (e) implement a business plan other than a business plan approved by Holdco;
- (f) incur operating or capital expenditures that exceed the budget for Hydro Ottawa Limited approved by Holdco;
- (g) submit an application to a Regulator for the approval of rates to be charged by Hydro Ottawa Limited that seeks a rate of return on equity other than the rate approved by Holdco;
- (h) borrow any money on the credit of Hydro Ottawa Limited other than from Holdco;
- (i) grant any security or create an encumbrance on the assets of Hydro Ottawa Limited;
- (j) make directly or indirectly loans or advances except advances made to employees to defray expenses to be incurred in the course of the business of Hydro Ottawa Limited;
- (k) give security for or guarantee debts;
- (l) make donations or contributions to any Person contrary to policies established by Holdco;
- (m) permit any conduct contrary to codes of conduct or ethical standards established by Holdco applicable to directors, officers, employees, contractors or other representatives of Hydro Ottawa Limited;
- (m.1) adopt any governance practices applicable to directors of Hydro Ottawa Limited other than governance practices established by Holdco;
- (n) make any payment of remuneration to officers or employees of Hydro Ottawa Limited in any form in excess of guidelines or directives established by Holdco;

- (o) declare any dividend prior to consultation with Holdco or any dividend which is inconsistent with the dividend policy communicated, from time to time in writing, by Holdco to the Board;
- (p) appoint any auditor to fill any vacancy in the position of auditor which may occur during a year;
- (q) appoint any director to fill any vacancy in the position of director, as contemplated by section 3.4 hereof;
- (r) enter into any partnership or any arrangement for the sharing of profits, union of interests, joint venture or reciprocal concession with any Person; and
- (s) establish any financial year end of Hydro Ottawa Limited which is not December 31;

4.3 Liability of Holdco

In the exercise of the rights, duties and powers assumed and transferred under this Declaration, Holdco, as the sole shareholder of Hydro Ottawa Limited, shall be subject to the same obligations and liabilities to which the Board would otherwise have been subject if this Declaration had not been made and the Board is hereby wholly relieved of all powers, duties and liabilities as directors of Hydro Ottawa Limited to the extent Holdco is subject thereto.

4.4 Residual Power of Boards

Without restricting the application of sections 4.1 and 4.2 hereof, the Board and the boards of directors of a Subsidiary shall have, subject to the Act and this Declaration, the full authority to manage the business and affairs of Hydro Ottawa Limited and a Subsidiary, respectively, including the authority to develop and recommend to Holdco decisions with respect to any of the matters specified in sections 4.1 and 4.2 hereof.

4.5 Holdco Power to Consent

The rights, powers and duties vested in Holdco pursuant to the provisions of this Declaration shall be exercised by or pursuant to a resolution or by-law of Holdco.

ARTICLE 5 REPORTING TO HOLDCO

5.1 Reports

Hydro Ottawa Limited will report to Holdco on any and all matters as requested by Holdco from time to time including reports relating to a Subsidiary. Without limiting the foregoing, Hydro Ottawa Limited shall provide, in a timely manner, to Holdco, an annual financial report containing such financial and other information as Holdco may reasonably request and which information Hydro Ottawa Limited is legally entitled to provide. Hydro Ottawa Limited shall provide to Holdco a report of material facts and material changes as they occur and shall be guided by securities laws applicable to publicly traded corporations when assessing the extent and timing of such disclosure

ARTICLE 6 GENERAL PROVISIONS

6.1 Reference on Certificates

Hydro Ottawa Limited shall cause a reference to this Declaration to be noted conspicuously on every share certificate issued by Hydro Ottawa Limited. Hydro Ottawa Limited shall cause each Subsidiary to ensure that a reference to the Declaration delivered to it pursuant to subsection 6.4 hereof is noted conspicuously on every share certificate issued by such Subsidiary.

6.2 Termination

This Declaration shall be effective as of the date hereof and shall continue in full force and effect until Holdco has given written notice to the Board of the revocation and termination of this Declaration.

6.3 Amendment of Declaration

This Declaration may be amended from time to time by Holdco as circumstances may require and Holdco will consult with the Board prior to completing any amendments and will promptly provide the Board with copies of such amendments.

6.4 Declaration re Subsidiaries

In the event that, with the approval of Holdco contemplated by subsection 4.2(a) hereof, Hydro Ottawa Limited causes a Subsidiary to be incorporated, and so often as the same may occur, Hydro Ottawa Limited shall execute and deliver a declaration to each such Subsidiary in the form of this Declaration, mutatis mutandis.

6.5 Revocation of Previous Declarations

The Declaration dated January 17, 2002 is hereby revoked and replaced by this Declaration.

6.6 Governing Law

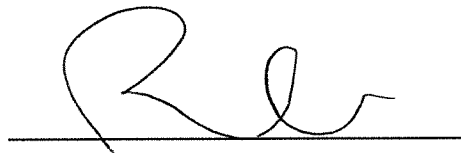
This Declaration shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein.

6.7 Effective Date

This Declaration shall be effective as of and from August 28, 2014, except as otherwise expressly provided.

IN WITNESS WHEREOF, Holdco has executed this Declaration as a unanimous shareholder agreement pursuant to subsections 108(2) and 108(3) of the Act.

**HYDRO OTTAWA HOLDING
INC./SOCIÉTÉ DE PORTEFEUILLE
D'HYDRO OTTAWA INC.**

A handwritten signature in dark ink, appearing to be 'J. Bryce Conrad', is written over a horizontal line.

By:

Name: J. Bryce Conrad
Title: President and Chief Executive Officer

Approved by the Board of Directors: April 2, 2009

Revised on: August 27, 2009

Revised on: November 14, 2013

Revised on: August 28, 2014

Revised on June 18, 2019

HYDRO OTTAWA HOLDING INC
(HOHI)

CHARTER OF THE BOARD OF DIRECTORS

1. PRIMARY ROLE OF THE BOARD

“HOHI” means “Hydro Ottawa Holding Inc.”, a corporation existing under the Ontario Business Corporations Act.

The Board of Directors (the “Board”) of “HOHI” is appointed by the City of Ottawa (the sole Shareholder of HOHI) and is charged with the careful and responsible management of HOHI and, subject to the provisions of the shareholder declaration, is the highest decision making authority within the organization. This responsibility of the Board consists primarily of managing or supervising those who manage the business and affairs of HOHI. As such, the overarching role of the Board of Directors focuses on ***governance and stewardship*** rather than on running the day-to-day operations of HOHI – the latter of which is the responsibility of management. The Board is further authorized to delegate to an officer or officers of HOHI certain powers to manage the business and affairs of HOHI. As such,

- a) the Board delegates to the Chief Executive Officer of HOHI (the “CEO”) the powers and authority to manage the business and affairs of HOHI; and
- b) the Board assumes the role of supervising the CEO’s management of the business and affairs of HOHI (the “Supervisory Role”).

The governance goal of the Board of Directors is to enhance executive decision making for the purpose of improving the performance of the organization. Accordingly, every member of the Board (a “Director”) must, in discharging his or her Supervisory Role and other responsibilities,

- c) act honestly and in good faith ***with a view to the best interests of HOHI***; and
- d) exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances.

The Board of Directors is accountable to the Corporation’s Shareholder.

2. COMPOSITION

The Board of HOHI shall be appointed by the City of Ottawa and shall be comprised of not less than five (5) and not more than eleven (11) directors, and which will consist of eleven (11) directors of whom:

- a) one (1) shall be the Mayor of the City of Ottawa or a member of the Council of the City of Ottawa designated by such Council in the event that such Mayor chooses not to act as a director;

Approved by the Board of Directors: April 2, 2009

Revised on: August 27, 2009

Revised on: November 14, 2013

Revised on: August 28, 2014

Revised on June 18, 2019

- b) two other members of the Council of the City of Ottawa until November 30, 2014 and shall be reduced to one other member of the Council of the City of Ottawa effective December 1, 2014;
- c) the Chair of the Board of Directors of Hydro Ottawa Limited (unless such office shall be held at the same time by the Chair of the Board);
- d) the President and Chief Executive Officer of HOHI; and
- e) all other directors shall be External, one of whom shall become Chair of the Board.

Paragraph c) shall be repealed effective December 1, 2014.

3. THE SUPERVISORY ROLE

No provision of this Charter is intended to or may be construed to impose on the Board of Directors or any member thereof any duties, standard of care or liabilities in any way more onerous or extensive than those otherwise existing at law. In particular, to the extent that HOHI, acting as a shareholder, has not restricted the discretion or powers of the directors of an affiliated or subsidiary corporation to manage or supervise the management of its business and affairs, the Board of Directors and any member thereof shall not be considered to have assumed any duties, standard of care or liabilities in respect of the management or supervision of the management of the affairs of such affiliated or subsidiary corporation.

Without limiting the scope or nature of the Supervisory Role, the Board acknowledges and accepts that the Supervisory Role includes the following obligations and responsibilities of the Board:

3.1 Financial Reporting

- a) The Board must satisfy itself that HOHI meets all financial reporting and disclosure obligations imposed on HOHI by applicable laws, regulations, rules, policies and other requirements relating to financial reporting and disclosure promulgated by governments and regulatory agencies ("Financial Reporting Obligations"). The Board shall satisfy itself as to the quality and integrity of financial statements, internal controls, information systems and disclosure controls.

The Board recognizes that it has the responsibility to review and provide guidance to Management about:

- i. financial strategies;
- ii. capital and debt structures
- iii. proposed mergers, acquisitions, divestitures and strategic investments;
- iv. policies relating to financial management, including cash flow management, working capital and dividend distributions;
- v. financial risk, including relevant policies, risk management and insurance; and
- vi. other transactions or financial issues that management desires to have reviewed by the Board.

The Board must also satisfy itself that:

- 1. HOHI's annual and interim financial statements present fairly HOHI's financial position, the results of its operations and its cash flows in accordance with Canadian generally accepted

Approved by the Board of Directors: April 2, 2009

Revised on: August 27, 2009

Revised on: November 14, 2013

Revised on: August 28, 2014

Revised on June 18, 2019

accounting principles (“Canadian GAAP”) as well as certain industry related regulatory requirements;

2. HOHI’s annual financial statements are audited and reported on by a reputable firm of chartered accountants (the “external auditor”) which is objective and independent; and
3. Material financial information concerning HOHI is disseminated to its sole Shareholder in a timely manner and all financial information concerning HOHI which is disseminated to the Shareholder is accurate, complete and fairly presented.

b) The Board must also:

1. appoint and maintain an audit committee (the “Audit Committee”) to assist the Board in discharging its responsibility to satisfy itself that HOHI meets the Financial Reporting Obligations;
2. nominate a firm of chartered accountants for appointment by the Shareholder of HOHI as the external auditor of HOHI and its subsidiaries;
3. fix the compensation of the external auditor;
4. adopt policies governing HOHI’s hiring of partners, employees and former partners and employees of the present and any former external auditor; and
5. approve the payment of dividends to the Shareholder in compliance with legal requirements and requirements of the Shareholder dividend policies.

3.2 Strategic Planning

- a) The Board, in conjunction with the CEO, must develop a statement of the strategy which HOHI intends to pursue in carrying on business (the “Strategic Plan”) which includes: (1) determining those long-term goals (i.e. mission, vision and values) and objectives which reflect an organization’s sources of competitive advantage and which address important stakeholder needs; and (2) identifying the scope (or domain) of business activities within which those goals and objectives are to be achieved.
- b) If at any time the Board is of the opinion that the then-existing Strategic Plan is no longer appropriate, the Board – in conjunction with the CEO - must develop a revised Strategic Plan.
- c) After the Board has approved the Strategic Plan, the Board must monitor on an ongoing basis HOHI’s implementation of the Strategic Plan and HOHI’s progress toward achieving the Strategic Plan.

3.3 Business Planning

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Revised on: August 27, 2009

Revised on: November 14, 2013

Revised on: August 28, 2014

Revised on June 18, 2019

- a) The Board must review and consider for approval the Business Plans of HOHI and its subsidiaries as presented by the CEO of HOHI.
- b) The Board must review and consider for approval the annual budgets of HOHI and its subsidiaries as presented by the CEO of HOHI.
- c) After the Board has approved the budget of HOHI the Board must monitor its progress and achievement at each regular meeting of the HOHI Board.

3.4 Risk Management

The Board must satisfy itself that the risks confronting HOHI (“Risks”) are identified, monitored and managed by the senior management of HOHI (“Management”) (Note: Senior management is defined as being comprised of the CEO and those reporting directly to the CEO.)

In particular, the Board must satisfy itself that:

- a) Management has identified the most significant Risks currently confronting HOHI;
- b) New significant Risks which confront HOHI will be identified in a timely manner and brought to the attention of the Board;
- c) appropriate risk assessment processes to identify, assess and manage significant risks are implemented; and
- d) Management directly and effectively monitors and manages HOHI’s significant risks.

3.5 Human Resources

- a) The Board must satisfy itself that there exists within HOHI and its subsidiaries effective human resource policies and practices to enable HOHI to attract and retain the people required by HOHI to meet the Strategic Plan. In particular, the Board must annually satisfy itself that:
 - 1. HOHI’s overall compensation philosophy for Management balances the objectives of (i) attracting and retaining highly competent managers, (ii) appropriately and fairly rewarding strong performance by managers, (iii) maintaining HOHI’s employee costs at competitive levels, and (iv) linking managers’ compensation to the achievement of HOHI’s strategic objectives;
 - 2. HOHI establishes and maintains a succession plan which identifies the potential successors to the holders of all Management positions in HOHI; and
 - 3. HOHI establishes and maintains effective policies and practices for training and continuously improving the skills of high-potential managers and employees; and

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4. HOHI is in compliance with its approved human resources policies, procedures and guidelines as well as all applicable laws, regulations, rules, policies and other requirements of governments and regulatory agencies relating to human resources.

b) The Board must also:

1. establish and regularly review a job description for the CEO which reflects the Board's delegation to the CEO of the powers and authority to manage the business and affairs of HOHI;
2. establish and execute processes for the recruitment, selection, motivation, evaluation and compensation of the CEO which will enable HOHI to achieve the Strategic Plan;
3. establish and approve the terms and conditions of the CEO's employment by HOHI;
4. Establish and approve a formal process for annually assessing the performance of the CEO; and
5. discharge the CEO when the Board believes he or she is no longer capable of managing the business and affairs of HOHI.

The Board may delegate to a Board committee (the "Governance and Management Resources Committee" or "GMRC") the authority to perform any of the tasks (a1) through (b5) in this section and to make recommendations to the Board concerning them.

3.6 Pension Governance

The Board must satisfy itself as to the oversight and governance of, and approve all material amendments to, any and all pension plans sponsored by the Corporation and its subsidiaries. In particular, the Board must annually satisfy itself that

- a) Appropriate pension plan governance structures are in place related to its obligations as plan sponsor and administrator in accordance with applicable legislation, regulations and industry guidelines;
- b) Mandates regarding pension plan and fund administration are clearly described for the board, relevant committee(s), pension fund agents and trustees and other participants in the governance process;
- c) Measures to implement the mandates are established and the plan governance structure is reviewed on a regular basis;
- d) Documentation that evidences implementation of plan administration is developed and maintained;
- e) The board or its relevant committee(s) receives and considers regular reports from the responsible executive involved in plan administration; and
- f) The operation of the plan is made transparent through communication to plan members.

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Subject to applicable law, the Board may delegate to a committee or committees appointed by the Board, various aspects of the operation and administration of any and all pension plans sponsored by the Corporation and its subsidiaries.

3.7 Code of Conduct, Compliance and Communication

The Board must:

- a) establish, maintain and monitor compliance with a written code of business conduct and ethics (the “Code”) applicable to Directors, Officers and employees of the Corporation. The Code must constitute standards reasonably designed to promote integrity, the protection and proper use of assets, avoid conflicts of interest and both deter and report wrongdoing;
- b) require every HOHI and subsidiary Director, member of Management and those in key financial positions to annually sign an attestation acknowledging acceptance of the Code of Conduct;
- c) satisfy itself that every employee of HOHI and its subsidiaries receives training on the Code of Conduct and signs an attestation acknowledging when they received it;
- d) require waivers of compliance with the Code which shall be granted only by the Board or an appropriately empowered Board committee;
- e) satisfy itself as to the integrity, comprehensiveness and effectiveness of those elements of HOHI (including its resources, management information systems, processes, culture, structure and tasks) which, taken together (the “Internal Controls”), support HOHI’s personnel in meeting HOHI’s objectives and obligations, including the Financial Reporting Obligations;
- f) adopt an external communications policy for HOHI and its subsidiaries;
- g) satisfy itself (i) as to the integrity of the CEO and the other members of Management, and (ii) that the CEO and the other members of Management create and maintain a culture of integrity throughout HOHI; and
- h) satisfy itself that Management, the Board, and the Corporation comply with the applicable laws, regulations, rules, policies and other requirements promulgated by legislation and applicable industry regulation and that appropriate policies and processes exist for compliance with environmental, health and safety laws and regulations.

The Board may delegate to a Board committee (the “Governance and Management Resources Committee” or “GMRC”) the authority to perform any of the tasks (a) through (h) in this section and to make recommendations to the Board concerning them.

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4. GOVERNANCE

4.1 Governance Structures and Practices

- a) The Board must satisfy itself that the governance structures and practices of HOHI and its subsidiaries comply with the requirements of the Shareholder Declaration and enable the HOHI Board to discharge the Board's responsibilities in a highly effective manner. In particular, the Board must satisfy itself that:
 1. With the exception of the President and CEO, all HOHI Directors are independent. For the purposes of this charter, a Director is independent if the Director has no relationship with HOHI which, in the view of the Board, could reasonably be expected to interfere with the exercise of the Director's independent judgment;
 2. the Chair of the Board is an External Director and not a member of Management;
 3. every Board committee is comprised of a majority of independent directors;
 4. the Board, as a whole, possesses the competencies and skills required to enable the Board to discharge the Supervisory Role and the Board's other responsibilities;
 5. the number of Directors constituting the Board facilitates effective decision-making by the Board; and
 6. as a part, or by means, of regularly scheduled meetings, the Board holds separate meetings of the Directors at which no member of Management is present.
- b) The Board must also:
 1. develop HOHI's approach to corporate governance, including a set of governance principles and guidelines specifically applicable to HOHI;
 2. appoint and maintain any committees of the Board as the Board deems necessary in discharging its responsibilities;
 3. develop and maintain written charters for the Board and each committee of the Board as well as written position descriptions for the individual Director and all Board leadership positions;
 4. develop and implement processes for regularly assessing the effectiveness of the Board, each Board committee, the individual Directors and all Board leadership positions taking into account their respective charters and position descriptions;
 5. identify the skills and knowledge required for directors and provide an orientation and continuing education process directed at enabling Directors to fully understand the nature and operation of HOHI's business(es) and affairs as well as the individual Director's and the Board's roles and responsibilities for the successful performance of HOHI; and
 6. establish and maintain a process, that includes Board approval, by which any Director may, at the expense of HOHI, engage independent counsel or other advisors to provide advice to the

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Director with respect to the Director's liabilities or the discharge of his or her responsibilities as a Director; and

The Board may delegate to a Board committee (the "Governance and Management Resources Committee" or "GMRC") the responsibility to perform any of the tasks (1) through (6) in this section and to make recommendations to the Board concerning them.

4.2 Governance Principles

The Board must use its best efforts to establish and sustain amongst all Directors governance principles which incorporate the following:

- a) acceptance of the Board's accountability for HOHI's performance;
- b) recognizing the responsibility to act in the best interest of the Corporation;
- c) recognizing, that the Board as a whole, through the Chair, has the authority to direct the actions of the CEO and Management and that no individual director has the authority to direct such actions unless specifically authorized by the Board to do so;
- d) recognizing that directors must comply with the Code of Business Conduct and that personal and external interests are not to be permitted to conflict with the interests of the Corporation;
- e) recognizing the importance of solidarity ("the board speaks only with one voice") once decisions are taken;
- f) recognizing that no member of the Board has the authority to speak or act on behalf of the Corporation unless specifically authorized to do so; and
- g) respecting and preserving the confidentiality of corporate information.

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Revised: June 18, 2019

(A) CHARTER OF THE BOARD OF DIRECTORS

**(i) HYDRO OTTAWA LIMITED
(HOL)**

1. Primary Role Of The Board

“HOL” means “Hydro Ottawa Limited”, a corporation existing under the Ontario Business Corporations Act.

The Board of Directors (the “Board”) of “HOL” is appointed by the City of Ottawa, on behalf of Hydro Ottawa Holding Inc (the sole Shareholder of HOL), and is charged with the supervision of the business activities of HOL. As such, the overarching role of the Board of Directors focuses on ***governance and stewardship*** rather than on running the day-to-day operations of HOL – the latter of which is the responsibility of management. The Board is further authorized to delegate to an officer or officers of HOL certain powers to manage the business and affairs of HOL. As such,

- a) the Board delegates to the Chief Executive Officer of HOL (the “CEO”) the powers and authority to manage the business and affairs of HOL; and
- b) the Board assumes the role of supervising the CEO’s management of the business and affairs of HOL (the “Supervisory Role”).

The governance goal of the Board of Directors is to enhance executive decision making for the purpose of improving the performance of the organization. Accordingly, every member of the Board (a “Director”) must, in discharging his or her Supervisory Role and other responsibilities,

- c) act honestly and in good faith ***with a view to the best interests of HOL***; and
- d) exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances.

The Board of Directors is accountable to the Corporation’s sole Shareholder, Hydro Ottawa Holding Inc. (“HOHI”)

2. Composition

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The Board of Hydro HOL shall be appointed by the City of Ottawa and, until November 30, 2014, shall be comprised of not less than five (5) and not more than seven (7) directors of whom:

- a) one shall be the President and Chief Executive Officer of HOHI;
- b) one shall be a member of Council of the City of Ottawa;
- c) one shall be the Chair of HOHI; and
- d) all other directors shall be External, independent Directors, one of whom may become Chair of the HOL Board.

Effective December 1, 2014, the Board of Hydro Ottawa Limited shall be comprised of not less than two (2) and not more than three (3) directors, and which initially will consist of three (3) directors elected by Holdco, of whom:

- (a) one shall be the President and Chief Executive Officer of Holdco;
- (b) one shall be the Chair of Holdco; and
- (c) one shall be a member of the management of Hydro Ottawa Limited who is not employed by an affiliate of Hydro Ottawa Limited.

One-third of the Board shall, at all times, be independent from any Affiliate as required by the provisions of subsection 2.1.3 of the Ontario Energy Board's Affiliate Relationships Code for Electricity Distributors and Transmitters.

For greater certainty, notwithstanding the fact that the size of the Board may vary within the range specified above, the Board shall at all times be comprised of the director holding the office referred to in paragraph (a) above.

3. **The Supervisory Role**

Without limiting the scope or nature of the Supervisory Role, the Board acknowledges and accepts that the Supervisory Role includes the following obligations and responsibilities of the Board:

Financial Reporting and Disclosure

The Board must satisfy itself that HOL meets all financial reporting and disclosure obligations imposed on HOL by applicable law and applicable regulations, rules, policies and other requirements relating to financial reporting and disclosure promulgated by governments and regulatory agencies ("Financial Reporting Obligations"). The Board shall satisfy itself as to the integrity of financial statements, internal controls, information systems and disclosure controls.

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The Board recognizes that it has the responsibility:

- a) To ensure that HOL's annual and interim financial statements present fairly HOL's financial position, the results of its operations and its cash flows in accordance with Canadian generally accepted accounting principles ("Canadian GAAP") as well as certain industry related regulatory requirements;
- b) To ensure that HOL's annual financial statements are audited and reported on by a firm of chartered accountants (the "external auditor") which is objective and independent;
- c) To review and approve the financial statements of HOL;
- d) To approve the payment of dividends to HOHI in compliance with legal requirements and requirements of the shareholder dividend policy; and
- e) To ensure that material financial information concerning HOL is disseminated to its sole Shareholder, HOHI, in a timely manner and all financial information concerning HOL which is disseminated to the Shareholder must be accurate, complete and fairly presented.

Business Planning

- a) The Board, in conjunction with the CEO and subject to HOHI direction and approval, must develop a business plan which indicates the over-arching strategy that HOL intends to pursue in carrying on business. The Business Plan must align to the enterprise strategic plan established by HOHI.
- b) The Board must regularly review the integrity of the business plan and, if at any time the HOL Board is of the opinion that the then-existing Business Plan is no longer appropriate, the Board – in conjunction with the CEO - must develop a revised Business Plan.
- c) After the Board has approved the Business Plan, submitted the Business Plan to HOHI and received the approval of the Business Plan by the Board of HOHI, the Board must monitor on an ongoing basis HOL's implementation of the Business Plan and HOL's progress toward achieving it.
- d) The Board must annually consider for approval the budget of HOL as presented by the CEO of HOL, subject to the approval of HOHI.
- e) After the Board has approved the budget, submitted the budget to HOHI and received the approval of the budget by the Board of HOHI, the Board must monitor its progress and achievement at each regular meeting of the HOL Board.

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April 2, 2009

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Risk Management

The Board must satisfy itself that the risks confronting HOL (“Risks”) are identified, monitored and managed by the senior management of HOL (“Management”) (Note: Senior management is defined as being comprised of the CEO and those reporting directly to the CEO).

In particular, the Board must satisfy itself that:

- a) Management has identified the most significant Risks currently confronting HOL;
- b) New significant Risks which confront HOL will be identified in a timely manner and brought to the attention of the Board;
- c) ensure the implementation of appropriate risk assessment processes to identify, assess and manage significant risks are implemented; and
- d) Management directly and effectively monitors and manages HOL’s significant risks.

Human Resources

The Board must satisfy itself that there exists within HOL effective human resource policies and practices to enable HOL to attract and retain the people required by HOL to meet the Business Plan and the enterprise Strategic Plan.

In particular, the Board must annually satisfy itself that:

- a) HOL establishes and maintains effective policies and practices for training and continuously improving the skills of high-potential managers and employees; and
- b) HOL is in compliance with its approved human resources policies, procedures and guidelines as well as all applicable laws, regulations, rules, policies and other requirements of governments and regulatory agencies relating to human resources.

Code of Conduct and Compliance

The Board must:

- a) establish, maintain and monitor compliance with the written code of business conduct and ethics (the “Code”) approved by HOHI and applicable to Directors, Officers and employees of the Corporation;

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- b) require that every HOL Director, member of Management and those in key financial positions annually sign an attestation acknowledging acceptance of the Code of Business Conduct;
- c) satisfy itself that every employee of HOL receives training on the Code of Business Conduct and signs an attestation acknowledging when they receive it;
- d) satisfy itself (i) as to the integrity of the members of Management, and (ii) that the members of Management create and maintain a culture of integrity throughout HOL; and
- e) satisfy itself that Management, the Board, and the Corporation comply with the applicable laws, regulations, rules, policies and other requirements promulgated by legislation and applicable industry regulation and that appropriate policies and processes exist for compliance with environmental, health and safety laws and regulations.

4. Governance Practices

The Board also acknowledges and accepts the following responsibilities and obligations of the Board.

- a) As a part, or by means, of regularly scheduled meetings of the Board, the Board will hold separate meetings of the Directors at which no member of Management or the general public is present;
- b) The Board will provide an orientation and continuing education process directed at enabling Directors to understand fully the nature and operation of HOL's business and affairs as well as the individual Director's and the Board's roles and responsibilities for the successful performance of HOL;
- c) The Board will implement processes for regularly assessing the effectiveness of the Board, any Board committee, the individual Directors and all Board leadership positions taking into account their respective charters and position descriptions; and
- d) The Board will establish and maintain a process that includes Board approval, by which any Director may, at the expense of HOL, engage independent counsel or other advisors to provide advice to the Director with respect to the Director's liabilities or the discharge of his or her responsibilities as a Director.

The Board must use its best efforts to establish and sustain amongst all Directors governance principles which incorporate the following values, and convictions:

- a) acceptance of the Board's accountability for HOL's performance;

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- b) recognizing the responsibility to act in the best interest of the Corporation;
- c) recognizing that the Board as a whole, through the Chair, has the authority to direct the actions of the CEO and Management and that no individual director has the authority to direct such actions unless specifically authorized by the Board to do so;
- d) recognizing that directors must comply with the Code of Business Conduct and that personal and external interests are not to be permitted to conflict with the interests of the Corporation;
- e) recognizing the importance of solidarity (“the board speaks only with one voice”) once decisions are taken;
- f) recognizing that no member of the Board has the authority to speak or act on behalf of the Corporation unless specifically authorized to do so; and
- g) respecting and preserving the confidentiality of corporate information.



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May 14, 2009

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HYDRO OTTAWA HOLDING INC (HOHI)

Nominating Committee ("NC") Charter

1. Composition

- a) The Nominating Committee ("NC") of Hydro Ottawa Holding Inc. ("HOHI") is a Board Committee which shall be comprised of up to 5 members of which:
 - (i) A majority shall be external directors of HOHI;
 - (ii) One (1) shall be the Mayor of the City of Ottawa;
 - (iii) Until November 30, 2014, two members shall be members of the Council of the City of Ottawa who are members of the Board of Directors of HOHI (as long as the City of Ottawa remains as the sole shareholder of HOHI) and shall be reduced to one member effective December 1, 2014 in the event the Mayor of the City of Ottawa chooses to act as a Director;
 - (iv) One (1) shall be the Board Chair as an *ex officio* voting member.
- b) The following skill set is normally looked for in the selection of NC members:
 - o Previous Board experience
 - o Familiarity with the legal and regulatory requirements of directorships and executive human resources management
 - o Previous experience in the recruitment, selection, motivation, evaluation and leadership of directors and senior executives
 - o Excellent interpersonal and conflict resolution skills

It is not necessary for any one member of the Committee to possess all of the skill set items. However, each skill set item (and parts thereof) should be present in the NC's composition.

- c) The Chair of HOHI shall recommend, for HOHI Board approval, the members to serve on the NC.
- d) The Chair of the Nominating Committee shall be the Chair of the Board of Directors.

2. Terms of Reference



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May 14, 2009

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Revised: June 18, 2019

- a) The purpose of the Nominating Committee is to identify and evaluate potential candidates for appointment as Directors to the Boards of HOHI and its subsidiaries.
- b) The NC shall make recommendations to the Shareholder of HOHI and its subsidiaries regarding the appointment of candidates as Directors.
- c) For the purpose of carrying out items (a) through (c) in this section, the NC shall:
 - i. review with the Board, or the GMRC, the selection criteria for the appointment of Directors to the Boards of HOHI and its subsidiaries and any suggested changes to the selection criteria set out in the Shareholder Declaration;
 - ii. receive from the Board, or the GMRC, any selection criteria for the appointment of Directors to the Boards of HOHI and its subsidiaries in addition to those set out in the Shareholder Declaration;
 - iii. develop processes to identify, evaluate and nominate potential candidates for appointment as Directors to the Boards of HOHI and its subsidiaries in accordance with the requirements of the Shareholder Declaration;
 - iv. have the authority, in its sole discretion, to retain such outside consultants to help the NC identify candidates and to investigate their suitability for appointment as Directors; and
 - v. examine and report on any other matters necessary to meet the purposes of the Committee.

3. Operating Principles

The NC shall fulfill its responsibilities within the context of the following principles:

a) Conduct

The NC expects its Committee members and nominees for appointment to the Board of HOHI and its subsidiaries to operate in compliance with HOHI's Code of Business Conduct and policies and with all applicable laws and regulations governing HOHI.



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May 14, 2009

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b) Communications

The Chair and members of the NC expect to have direct, open and frank communications throughout the year with the Board, Management and other key NC advisors as applicable.

c) Committee Expectations and Information Needs

The NC shall communicate its expectations to the Board, Management and/or Governance and Management Resources Committee ("GMRC") with respect to the nature, timing and extent of its information needs. The Committee expects that all reasonably required and available information (including minutes) relating to each matter to be dealt with by the NC at its meetings will be received from the Board, Management and/or the GMRC within a reasonable time frame in advance of each Committee meeting.

d) Reliance on Experts

In contributing to the NC's discharging of its duties under this Charter, each member of the NC shall be entitled to rely in good faith upon:

- i) the reports of HOHI represented to him or her by the Board Chair, the Chair of the GMRC, an officer of HOHI or in a written report of external advisors with respect to the recruitment and selection of Board members; and
- ii) any report of a lawyer, accountant, appraiser or other person whose profession lends credibility to a statement made by any such person.

e) In Camera Meetings

The members of the NC shall meet in private session as part of each meeting, (i.e., without Management present). The NC shall meet in private session as often as it deems necessary.

4. Operating Procedures



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May 14, 2009

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- a) The NC shall meet as circumstances dictate to carry out the responsibilities set out in its Terms of Reference. Meetings shall be held at the call of the Chair or upon the request of two (2) members of the Committee;
- b) a quorum shall be a majority of the members;
- c) in the absence of the Chair, the Committee members present shall appoint an Acting Chair;
- d) NC meeting agendas shall be the responsibility of the Chair of the Committee in consultation with the Board Chair, Committee members and Management.
- e) To assist the NC in discharging its responsibilities, the NC may, after consultation with the Board Chair, retain at the expense of HOHI, one or more persons having special expertise that will assist the NC in discharging its responsibilities.
- f) The NC shall report to the shareholders its recommendations for the appointment of directors to the Boards of Directors of HOHI and its subsidiaries.

5. Limitations on Committee's Duties

In contributing to the Committee's discharging of its duties under this Charter, each member of the Committee shall be obliged only to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances. Nothing in this Charter is intended, or may be construed, to impose on any member of the Committee a standard of care or diligence that is in any way more onerous or extensive than the standard to which all Board members are subject. The essence of the Committee's duties is to satisfy itself (but not to ensure) that the nominating policies, procedures and practices of HOHI (i) are being conducted effectively and in compliance with all applicable laws, statutes and regulations; (ii) are reasonable and appropriate in the circumstances given the nature of the organization and its strategy; and (iii) are sufficiently and accurately reported upon to the Board.

Approved by the Board of Directors: May 14, 2009

Revised on: August 22, 2013

Revised: November 14, 2013

Revised: November 27, 2014

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AUDIT COMMITTEE ("AC") CHARTER

HYDRO OTTAWA HOLDING INC (HOHI)

1. Composition

- a) The Audit Committee ("AC") of Hydro Ottawa Holding Inc. ("HOHI") is a Board Committee which shall be comprised of that number of Directors as shall be determined from time to time by the Board, of which:
 - i. A majority shall be External Directors of HOHI;
 - ii. One (1) shall be the Board Chair as an *ex officio* voting member; and
 - iii. All members of the AC shall be independent of the management of HOHI and its subsidiaries.
- b) The following skill set is normally looked for in the selection of AC members:
 - i. All members should be *financially literate* (i.e. have the expertise and capability to read and understand the financial statements of HOHI and its related subsidiaries);
 - ii. One of the members shall hold a financial accreditation and that person should normally be the Chair;
 - iii. Previous audit committee experience;
 - iv. Risk management experience;
 - v. Mergers and acquisitions experience; and
 - vi. Internal control, corporate disclosure and regulatory compliance experience.

Except as specifically set out above, it is not necessary for any one member of the committee to possess all of the skill set items. However, each skill set item (or parts thereof) should be present in the AC's composition.
- c) The Chair of HOHI shall recommend, for HOHI Board approval, both the members to serve on the AC and the Chair of the AC.

2. Terms of Reference

The AC's role is to assist the Board of HOHI in fulfilling its oversight responsibilities concerning the financial affairs of HOHI (which includes its subsidiaries) and in monitoring the organization's financial reporting and disclosure.

Reporting by the AC will be solely to the HOHI Board. However, the Chief Executive Officer and the Chief Financial Officer, will be expected to advise the HOL Board of any matters of concern raised by the AC in reviewing HOL's financial affairs.

The objective of the Board's monitoring of HOHI financial reporting and disclosure (the "Financial Reporting Objective") is to satisfy itself of the following:

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- a) that HOHI and its subsidiaries comply with all applicable laws, regulations, rules, policies and other requirements of governments, regulatory agencies relating to financial reporting and disclosure;
- b) that the accounting principles, significant judgments and disclosures which underlie or are incorporated in HOHI and subsidiary financial statements, are appropriate in the prevailing circumstances;
- c) that HOHI's and its subsidiaries' interim and annual financial statements present fairly HOHI's financial position as a result of its operations in accordance with:
 - (i) generally accepted accounting principles ("GAAP"); and
 - (ii) certain industry related regulatory requirements,and together with the annual Management Discussion and Analysis (i.e., the document containing a complete and integrated view of the organization's historical operations, prospective analysis and financial condition explaining the 'why' behind performance and prospects) constitute a fair presentation of HOHI's financial condition; and
- d) that appropriate information concerning the financial position and performance of HOHI is disseminated to the Board in a timely manner.

3. Fundamental Activities

The Board is of the view that the Financial Reporting Objective (see 2 a) through d) above) cannot be reliably met unless the following activities are conducted effectively:

- a) HOHI's accounting functions are performed in accordance with a system of internal financial controls designed to capture and record properly and accurately all of HOHI's and its subsidiaries financial transactions;
- b) HOHI's internal financial controls are regularly assessed for effectiveness and efficiency; and
- c) HOHI's and its subsidiaries' interim financial results and annual financial statements are prepared promptly by management and are prepared in accordance with GAAP - as well as certain industry related regulatory requirements.

To fulfill its roles and responsibilities, the AC shall:

4. Financial Reporting

- a) review HOHI's and its subsidiaries' annual financial statements with Management and the external auditors to satisfy itself that the statements are prepared in accordance with GAAP, are complete, represent fairly HOHI's financial position and performance, and together with the Management's Discussion and Analysis, ensure fair presentation of the HOHI's and subsidiaries' financial condition and report thereon to the Board;

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Revised on: August 22, 2013

Revised: November 14, 2013

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- b) receive from Management a copy of the engagement letter provided to the external auditors;
- c) receive from the external auditors a copy of the “Management Letter” and Management’s response to it;
- d) review all aspects of the annual report which pertain to the historical, current or projected financial performance of the Corporation;
- e) review HOHI’s consolidated interim financial results with Management to satisfy itself that the statements are prepared in accordance with GAAP, are complete, represent fairly HOHI’s financial position and performance, and ensure fair presentation of HOHI’s consolidated financial condition and report thereon to the Board;
- f) receive from Management any additional representations required by the AC;
- g) satisfy itself that adequate procedures are in place for the review of HOHI’s disclosure of financial information extracted or derived from HOHI’s financial statements (especially ratio and trend analyses) in order to satisfy itself that such information is fairly presented and periodically assess the adequacy of these procedures; and
- h) obtain summaries of complex financings and other significant transactions and other potentially difficult matters whose treatment in the annual financial statements merits advance disclosure to the Audit Committee;

5. Accounting Policies

- a) review with Management and the external auditors the appropriateness of HOHI’s accounting policies, disclosures, reserves, key estimates and judgments, including changes or variations thereto and satisfy itself that they are presented fairly in accordance with GAAP; and
- b) review major issues regarding accounting principles and financial statement presentation including any significant changes in the selection or application of accounting principles to be observed in the preparation of the accounts of HOHI and its subsidiaries.

6. Risk and Uncertainty

The AC shall satisfy itself that financial risk is being effectively managed or controlled by identifying the principal financial risks facing HOHI and its subsidiaries and HOHI’s tolerance for financial risk, and approving financial risk management plans.

7. Compliance with Legal, Ethical and Regulatory Requirements

The AC shall satisfy itself that HOHI has implemented appropriate systems of internal control to ensure compliance with legal, ethical and regulatory requirements and that these systems are operating effectively by:

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- a) reviewing summaries of matters reported pursuant to the Corporation's "Business Conduct Hotline" and actions taken in relation thereto;
- b) inquiring about the policies and procedures the company has in place for monitoring compliance with laws and regulations and HOHI's own code of business conduct;
- c) informing senior management and external auditors which matters the AC wishes them to report should such matters come to the auditors' attention during the course of the auditors' work;
- d) asking senior management to provide a summary concerning compliance and any changes in the acts or regulations governing HOHI and its subsidiaries;
- e) considering whether the CFO or others should be asked to undertake special assignments to monitor compliance with regulatory requirements;
- f) reviewing no less than annually the reasonableness of the expenses reimbursed to the Chair and members of the Boards; and
- g) receiving no less than annually the Board Chair's oral report with respect to his/her semi-annual review of the reasonableness of expenses reimbursed to the President and Chief Executive Officer.

8. Internal Audit

- a) assess periodically the need for an internal audit function within HOHI and, if needed, whether it is adequately staffed and effectively carried out;
- b) review and recommend the internal audit charter (i.e. the terms of reference, program of audit activities and resources of the internal audit function, and the independence of the internal audit function) to ensure its primary reporting relationship to the AC;
- c) review and approve internal audit plans; and
- d) review reports and recommendations of the internal auditors and monitor the implementation of recommendations.

9. Internal Controls Over Financial Reporting

- a) review both Management's overall approach to control and the plans of the CFO and external auditors to satisfy itself that the combined evaluation and testing of internal financial controls is comprehensive, coordinated and cost-effective;
- b) inquire specifically about HOHI's compliance with its internal control policies and procedures; and
- c) receive regular reports from Management, internal audit, the external auditors and HOHI's legal advisors on all significant deviations or any indications/detections of fraud and the investigative and corrective activity undertaken in respect thereto.

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10. Relationship with External Auditors

- a) recommend to the Shareholder, through the Board, the need for the annual financial statements of HOHI to be audited by external auditors;
- b) approve the compensation to be paid to the external auditor;
- c) recommend to the Shareholder, through the Board, the appointment of the external auditors;
- d) review the performance of the external auditors annually or more frequently as required;
- e) if deemed necessary, receive a report annually from the external auditors with respect to their independence, such report to include a disclosure of all engagements (and fees related thereto) for audit and non-audit services for HOHI;
- f) review with the external auditors the scope of the audit, the areas of special emphasis to be addressed in the audit and the materiality levels which the external auditors propose to employ;
- g) meet with the external auditors in the absence of Management to determine that no Management restrictions have been placed on the scope and extent of the audit examinations by the external auditors or the reporting of their findings to the AC;
- h) establish effective communication processes with Management and HOHI's CFO and external auditors to assist the AC in monitoring objectively the quality and effectiveness of the relationship among the external auditors, Management and the Committee;
- i) oversee the work of the external auditors and the resolution of disagreements between Management and the external auditors with respect to financial reporting;
- j) request that the external auditors provide to the AC, at least annually, an oral and/or written report describing the external auditors' internal quality assurance policies and procedures as well as any material issues raised in the most recent internal quality assurance reviews; and
- k) approve additional engagements of the external auditors for non-audit assignments.

11. Other Responsibilities

- a) Investigate any matters that, in the AC's discretion, fall within the Committee's responsibilities; and
- b) Perform such other functions as may from time to time be assigned to the AC by the Board.

12. Operating Principles

The AC shall fulfill its responsibilities within the context of the following principles:

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a) Conduct

The AC expects the Management of HOHI to operate in compliance with HOHI's Code of Business Conduct and policies; with laws and regulations governing HOHI; and to maintain strong financial reporting and control processes.

b) Communications

The Chair and members of the AC expect to have direct, open and frank communications throughout the year with Management, other Committee Chairs, the external auditors, the Chief Financial Officer ("CFO") and other key AC advisors as applicable.

c) Financial Literacy

All AC members shall have the ability to read and understand a set of financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of the issues that can reasonably be expected to be raised by HOHI's financial statements.

d) Annual AC work Plan

The AC, in consultation with Management and the external auditors, shall develop and present to the Board for the Board's approval a work plan which, amongst other things, will describe the activities in which the AC will engage for the purpose of carrying out the AC's responsibilities as set out in this Charter. In addition, the AC, in consultation with Management and the external auditors, shall develop and participate in a process for review of important financial topics that have the potential to impact HOHI's financial disclosure.

e) Committee Expectations and Information Needs

The AC shall communicate its expectations to Management and the external auditors with respect to the nature, timing and extent of its information needs. The Committee expects that all reasonably required and available information (including minutes) relating to each matter to be dealt with by the AC at its meetings will be received from Management and the external auditors within a reasonable time frame in advance of each Committee meeting.

f) Reliance on Experts

In contributing to the AC's discharging of its responsibilities under this Charter, each member of the AC shall be entitled to rely in good faith upon:

- i. The financial statements of HOHI represented to him or her by the Management of HOHI or in a written report of the external auditors to present fairly the financial position of HOHI in accordance with generally accepted accounting principles; and
- ii. Any report of a lawyer, accountant, appraiser or other person whose profession lends credibility to a statement made by any such person.

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g) In Camera Meetings

The members of the AC shall meet in private session and separately with the external auditors annually; and, as part of each meeting, with the AC members only (i.e., without Management present). The Committee shall meet in private session as often as it deems necessary.

h) Committee Self-Assessment

The AC shall regularly review, discuss and assess its own performance. In addition, the AC shall periodically review its role, responsibilities and terms of reference as specified in this Charter.

i) The External Auditors

The AC expects that, in discharging their responsibilities to the Board, the external auditors shall be accountable to the Board through the AC. The external auditors shall report all material issues or potentially material issues to the AC.

13. Operating Procedures

- a) The AC shall meet at least twice annually, or more frequently as circumstances dictate. Meetings shall be held at the call of the Chair, or upon the request of two (2) members of the Committee or at the request of the external auditors;
- b) A quorum shall be a majority of the members;
- c) in the absence of the Chair, the Committee members present shall appoint an Acting Chair;
- d) AC meeting agendas shall be the responsibility of the Chair of the Committee in consultation with the Board Chair, Committee members, Management and the external auditors;
- e) In addition to the external auditors, the AC may, after consultation with the Chair of the Board, retain one or more persons having special expertise that will assist the AC in discharging its responsibilities; and
- f) The AC, through its Chair, shall report after each Committee meeting to the Board at the Board's next regular meeting.

14. Limitations on the Audit Committee's Responsibilities

In contributing to the AC's discharging of its responsibilities under this Charter, each member of the AC shall be obliged only to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances. Nothing in this Charter is intended, or may be construed, to impose on any member of the AC a standard of care or diligence that is in any way more onerous or extensive than the standard to which all Board members are subject. The essence of the AC's responsibilities is monitoring and reviewing to satisfy itself (but not to ensure) that the

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Fundamental Activities are being conducted effectively and that the Financial Reporting Objective is being met and to enable the AC to report thereon to the Board.

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GOVERNANCE AND MANAGEMENT RESOURCES COMMITTEE ("GMRC")
CHARTER

HYDRO OTTAWA HOLDING INC.
(HOHI)

1. Composition

- a) The Governance & Management Resources Committee ("GMRC") of Hydro Ottawa Holding Inc. is a Board Committee which shall be comprised of up to 6 members of which:
- i. A majority shall be external directors of HOHI;
 - ii. One (1) shall be the Board Chair as an *ex officio* voting member; and
 - iii. All members of the GMRC shall be independent of the management of HOHI and its subsidiaries;
- b) The following skill set is normally looked for in the selection of GMRC members:
- i. Previous governance committee and human resources committee experience
 - ii. Familiarity with the legal and regulatory requirements of directorships and executive human resources management
 - iii. Previous experience in the recruitment, selection, motivation, evaluation and leadership of senior executives
 - iv. General corporate human resource management expertise

It is not necessary for any one member of the committee to possess all of the skill set items. However, each skill set item (and parts thereof) should be present in the GMRC's composition.

- c) The Chair of HOHI shall recommend, for HOHI Board approval, both the members to serve on the GMRC and the Chair of the GMRC.

2. Terms of Reference

- a) The GMRC's role is to assist the Board in monitoring both the governance and human resources structures, processes and policies of HOHI (which includes its subsidiaries).
- b) Reporting by the GMRC will be solely to the HOHI Board. However, the CEO and members of senior management reporting directly to the CEO will be expected to advise the HOL Board of any matters of concern raised by the GMRC affecting HOL.

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3. Governance Structures and Practices

- a) The GMRC must satisfy itself that the governance structures and practices of HOHI and its subsidiaries comply with the requirements of the shareholder declaration and enable the HOHI Board to discharge the Board's roles and responsibilities in a highly effective manner. In particular, the GMRC must satisfy itself that:
- i. With the exception of the President and CEO and members of the Council of the City of Ottawa, all HOHI Directors are independent. For the purposes of this charter, a Director is independent if the Director has no relationship with HOHI which, in the view of the Board, could reasonably be expected to interfere with the exercise of the Director's independent judgment;
 - ii. the Chair of the Board is an external director and not a member of Management;
 - iii. every Board committee is comprised of a majority of external directors;
 - iv. the Board, as a whole, possesses the competencies and skills required to enable the Board to discharge the its responsibilities and roles; and
 - v. the number of Directors constituting the Board facilitates effective decision-making by the Board.
- b) The GMRC must also:
- i. develop and recommend to the Board HOHI's approach to corporate governance, including a set of governance principles and guidelines specifically applicable to HOHI;
 - ii. review and make recommendations with respect to the Bylaws and Shareholder Declaration of HOHI;
 - iii. recommend the creation of any committees of the Board as the GMRC deems necessary for the Board to discharge its responsibilities;
 - iv. develop and maintain written Charters for the Board and each committee of the Board;
 - v. review and recommend the enterprise risk management charter;
 - vi. develop and maintain written position descriptions for the Chair of the Board, the CEO, the Chairs of Board or Standing Committees and an individual Director;
 - vii. for the purpose of Board and Director development (and taking into account their respective charters and position descriptions), make recommendations to the Board of Directors regarding *the process* for ongoing and regular evaluations of the Board, each Board & Standing Committee, each individual Director, the Chair of the Board and the Chairs of Board and Standing Committees;
 - viii. identify the skills and knowledge required for directors and provide an orientation and continuing education process directed at enabling Directors to fully understand the nature and operation of HOHI's business(es) and affairs as well as the individual Director's and the Board's roles and responsibilities for the successful performance of HOHI;
 - ix. establish and maintain a process, that includes Board approval, by which any Director may, at the expense of HOHI, engage independent counsel or other advisors to provide advice to the Director with respect to the Director's liabilities or the discharge of his or her roles responsibilities as a Director;
 - x. develop policies and procedures for communication by HOHI and its subsidiaries with the Shareholder and other stakeholders;
 - xi. carry out any governance process adopted by the Board of Directors; and

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- xii. perform such other governance functions as may, from time to time, be assigned to the GMRC by the Board of Directors.

4. Risk Management

The GMRC shall review the risk management programs to satisfy the Board that appropriate risk management processes have been developed and implemented to identify, assess and manage significant risks. The GMRC shall also:

- a) receive regular updates on the Enterprise Risk Management (ERM) program that focuses on current and emerging risks and opportunities associated with meeting business objectives and executing on the organization's strategic direction, and annually review and recommend to the Board for approval the ERM charter; and
- b) receive regular updates on the Business Continuity Management program and associated plans that ensure that the organization has in place systems of preparedness and recovery to deal with potential threats (e.g. natural – severe weather and earthquakes, technology and supply – cyber and loss of supply, human – terrorism and pandemic) and to minimize potential impacts to business processes.

5. Human Resources Management

- a) The GMRC must satisfy itself that:

- i. HOHI's overall compensation philosophy for Management balances the objectives of (i) attracting and retaining highly competent managers, (ii) appropriately and fairly rewarding strong performance by managers, (iii) maintaining HOHI's employee costs at competitive levels, and (iv) linking managers' compensation to the achievement of HOHI's strategic objectives;
- ii. the comprehensive compensation programs for the CEO and for other members of senior management is appropriate;
- iii. HOHI establishes and maintains a succession plan which identifies the potential successors to the holders of key Management positions in HOHI; and
- iv. HOHI establishes, maintains and is in compliance with its approved human resources policies, procedures and guidelines as well as all applicable laws, regulations, rules, policies and other requirements of governments and regulatory agencies relating to human resources.

- b) The GMRC must also:

- i. establish and regularly review a job description for the CEO which reflects the Board's delegation to the CEO of the powers and authority to manage the business and affairs of HOHI;
- ii. recommend processes for the recruitment, selection, motivation, evaluation and compensation of the CEO which will enable HOHI to achieve the Strategic Plan;
- iii. recommend the terms and conditions of the CEO's employment by HOHI;

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- iv. make appropriate recommendations to the HOHI Board of Directors for the for approval of the terms of employment or termination of the Chief Executive Officer (“CEO”);
- v. make recommendations to the Board of Directors regarding a formal process for annually assessing the performance of the CEO;
- vi. establish the criteria against which the performance of HOHI and the CEO will be evaluated for the purposes of receiving any compensation adjustments;
- vii. conduct an annual performance review of the CEO against the performance criteria approved by the Board and report thereon to the Board of Directors;
- viii. review and recommend to the Board for approval any organization-wide benefit policies and practices related to the achievement of HOHI’s strategy as well as general terms and conditions of employment at HOHI;
- ix. review the CEO’s report to the Board annually *summarizing* the results of his/her performance evaluations and compensation changes for senior managers;
- x. review regularly the implementation of the evaluation, planning and development processes that focus attention on Management succession within HOHI;
- xi. review and approve the criteria recommended by the CEO against which the performance of other members of senior management will be evaluated for the purpose of receiving any compensation adjustments;
- xii. review and recommend to the Board of Directors for approval the organization wide human resources policies and procedures related to the achievement of HOHI’s strategy *and any significant changes in them*;
- xiii. identify with Management the risks associated with human resource activities at HOHI and to review Management’s plan to control them; and
- xiv. perform such other human resource functions as may, from time to time, be assigned to the GMRC by the Board of Directors.

6. Pension Governance

- a) The GMRC must, on behalf of the Board, satisfy itself that any and all pension plans sponsored by the Corporation and its subsidiaries are properly operated and administered, and that the fiduciary obligations of the pension plan sponsor and administrator are met. In particular, the GMRC must annually satisfy itself that
 - i. Mandates regarding pension plan and fund administration are clearly described for the board, relevant committee(s), pension fund agents and trustees and other participants in the governance process;
 - ii. Measures to implement the mandates are established and the plan governance structure is reviewed on a regular basis;
 - iii. Documentation that evidences implementation of plan administration is developed and maintained;
 - iv. The board or its relevant committee(s) receives and considers regular reports from others involved in plan administration; and
 - v. The operation of the plan is made transparent through communication to plan members.

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- b) The GMRC shall perform the specific duties, responsibilities and actions pursuant to the authority delegated to it by the Board, and shall make recommendations to the Board concerning them.

7. Code of Conduct & Compliance

The GMRC shall also, on behalf of the Board:

- a) establish, maintain and monitor compliance with a written code of business conduct and ethics (the “Code”) applicable to Directors, Officers and employees of the Corporation. The Code must constitute standards reasonably designed to promote integrity, the protection and proper use of assets, avoid conflicts of interest and both deter and report wrongdoing;
- b) require every HOHI and subsidiary Director, member of Management and those in key financial positions to annually sign an attestation acknowledging acceptance of the Code of Business Conduct;
- c) satisfy itself that every employee of HOHI and its subsidiaries receive training on the Code of Business Conduct and sign an attestation acknowledging when they received it;
- d) satisfy itself that waivers of compliance with the Code are granted only by the Board or an appropriately empowered Board committee;
- e) satisfy itself (i) as to the integrity of the CEO and the other members of Management, and (ii) that the CEO and the other members of Management create and maintain a culture of integrity throughout HOHI;
- f) satisfy itself that Management, the Board, and the Corporation comply with the applicable laws, regulations, rules, policies and other requirements promulgated by legislation and applicable industry regulation; and
- g) review and recommend the governance process and procedures relating to the Business Conduct Hotline.

8. Operating Principles

The GMRC shall fulfill its responsibilities within the context of the following principles:

- a) Conduct

The GMRC expects the Management (defined as being comprised of the CEO and his/her direct reports) of HOHI to operate in compliance with HOHI’s Code of Business Conduct and policies and with laws and regulations governing HOHI.

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b) Communications

The Chair and members of the GMRC expect to have direct, open and frank communications throughout the year with Management, other Committee Chairs and other key GMRC advisors as applicable.

c) Annual GMRC Work Plan

The GMRC, in consultation with Management shall develop and present to the Board for the Board's approval an annual Committee work plan which, amongst other things, will describe the activities in which the GMRC will engage for the purpose of carrying out the GMRC's responsibilities as set out in this Charter.

In addition, the GMRC, in consultation with Management shall develop and participate in a process for review of important governance and human resources topics that have the potential to impact HOHI's effective operation.

d) Committee Expectations and Information Needs

The GMRC shall communicate its expectations to Management with respect to the nature, timing and extent of its information needs. The Committee expects that all reasonably required and available information (including minutes) relating to each matter to be dealt with by the GMRC at its meetings will be received from Management within a reasonable time frame in advance of each Committee meeting.

e) Reliance on Experts

In contributing to the GMRC's discharging of its roles and responsibilities under this Charter, each member of the GMRC shall be entitled to rely in good faith upon:

- i. the reports of HOHI represented to him or her by the Management of HOHI or in a written report of external advisors with respect to the governance policies and human resources policies of HOHI ; and
- ii. any report of a lawyer, accountant, appraiser or other person whose profession lends credibility to a statement made by any such person.

f) In Camera Meetings

The members of the GMRC shall meet in private session as part of each meeting, (i.e., without Management present). The GMRC shall meet in private session as often as it deems necessary.

g) Committee Self-Assessment

The GMRC shall regularly review, discuss and assess its own performance. In addition, the GMRC shall periodically review its role, responsibilities and terms of reference as specified in the Charter.

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9. Operating Procedures

- a) The GMRC shall meet at least twice annually, or more frequently as circumstances dictate. Meetings shall be held at the call of the Chair or upon the request of two (2) members of the Committee;
- b) A quorum shall be a majority of the members;
- c) In the absence of the Chair, the Committee members present shall appoint an Acting Chair;
- d) GMRC meeting agendas shall be the responsibility of the Chair of the Committee in consultation with the Board Chair, Committee members and Management;
- e) To assist the GMRC in discharging its responsibilities, the GMRC may, after consultation with the Board Chair, retain at the expense of HOHI, one or more persons having special expertise that will assist the GMRC in discharging its responsibilities.
- f) The GMRC, through its Chair (or the Chair's designate), shall report after each Committee meeting to the Board at the Board's next regular meeting.

10. Limitations on Committee's Responsibilities

In contributing to the Committee's discharging of its responsibilities under this Charter, each member of the Committee shall be obliged only to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances. Nothing in this Charter is intended, or may be construed, to impose on any member of the Committee a standard of care or diligence that is in any way more onerous or extensive than the standard to which all Board members are subject. The essence of the Committee's responsibilities is to satisfy itself (but not to ensure) that the governance and human resources policies, procedures and practices of HOHI (i) are being conducted effectively and in compliance with all applicable laws, statutes and regulations; (ii) are reasonable and appropriate in the circumstances given the nature of the organization and its strategy; and (iii) are sufficiently and accurately reported upon to the Board.



1 **Approved by the Board of Directors on:**
May 13, 2010
Revised on: None

**HYDRO OTTAWA HOLDING INC.
(HOHI)**

INVESTMENT REVIEW COMMITTEE ("IRC") CHARTER

1. Composition

a) The Investment Review Committee ("IRC") of Hydro Ottawa Holding Inc. ("HOHI") is a Board Committee which shall be comprised of up to 5 members of which:

- (i) A majority shall be external directors of HOHI;
- (ii) One (1) shall be the Chair of the Audit Committee of HOHI;
- (iii) One (1) shall be the Mayor of the City of Ottawa if that person is a member of the Board of Directors of HOHI;
- (iv) Two members shall be directors who are members of the Board of Directors of HOHI who are independent of the management of HOHI and its subsidiaries;
- (v) One (1) shall be the Board Chair as an *ex officio* voting member.

b) The following skill set is normally looked for in the selection of IRC members:

- o Board experience
- o Experience in relation to mergers and acquisitions;
- o Experience in business development;
- o Experience in the design, construction or development of capital projects;
- o Experience in public or private financing or project financing

It is not necessary for any one member of the Committee to possess all of the skill set items. However, each skill set item (and parts thereof) should be present in the IRC's composition.

c) The Chair of HOHI shall recommend, for HOHI Board approval, the members to serve on the IRC.

d) The Chair of the IRC shall be the Chair of the Board of Directors.



2 **Approved by the Board of Directors on:**
May 13, 2010
Revised on: None

2. Terms of Reference

- a) The purpose of the Investment Review Committee is to assist management and the Board of Directors in the review and pursuit of business development, acquisition and investment opportunities.
- b) For the purpose of carrying out its purpose, the IRC shall:
 - i. Review and consider potential business development, acquisition or investment opportunities and make recommendations to the Board of Directors with respect thereto, with a focus on:
 - 1) The consistency of the opportunity with the strategic plan adopted by the Board of Directors;
 - 2) The consistency of the opportunity with investment guidelines and acquisition criteria approved by the Board of Directors;
 - 3) The maximization of shareholder value;
 - 4) The financial resources as well as other resources required to benefit from the opportunity over the short and long-term;
 - 5) The material risks related to the opportunity;
 - 6) The compliance with legislative and regulatory restrictions on business activities in exercising the opportunity; and
 - 7) Such other matters as the Committee may consider relevant to the assessment and evaluation of the opportunity;
 - ii. Approve the submission of letters of intent, expressions of interest or other documents brought by management to the Committee for its consideration indicating the interest of the corporation in pursuing an investment or acquisition, subject to any applicable final decision of the Board of Directors with respect to the investment or acquisition;
 - iii. Provide guidance and advice to management in relation to potential acquisition or investment opportunities; and
 - iv. Perform such other functions as may be assigned by the Board of Directors.

3. Operating Principles

The IRC shall fulfill its responsibilities within the context of the following principles:

- a) Conduct



3 **Approved by the Board of Directors on:**
May 13, 2010
Revised on: None

The IRC expects its Committee members to operate in compliance with HOHI's Code of Business Conduct and policies and with all applicable laws and regulations governing HOHI.

b) **Committee Expectations and Information Needs**

The Chair and members of the IRC expect to have direct, open and frank communications throughout the year with Management, other Committee Chairs and other key IRC advisors as applicable.

c) **Reliance on Experts**

In contributing to the IRC's discharging of its duties under this Charter, each member of the IRC shall be entitled to rely in good faith upon:

i) the reports of HOHI represented to him or her by the Board Chair, the Chair of the IRC, an officer of HOHI or in a written report of external advisors; and

ii) any report of a lawyer, accountant, appraiser or other person whose profession lends credibility to a statement made by any such person.

4. Operating Procedures

a) The IRC shall meet as circumstances dictate to carry out the responsibilities set out in its Terms of Reference. Meetings shall be held at the call of the Chair;

b) a quorum shall be a majority of the members;

c) in the absence of the Chair, the Committee members present shall appoint an Acting Chair;

d) IRC meeting agendas shall be the responsibility of the Chair of the Committee in consultation with Management.

e) To assist the IRC in discharging its responsibilities, the IRC may, after consultation with the Board Chair, retain at the expense of HOHI, one or more persons having special expertise that will assist the IRC in discharging its responsibilities.



4 **Approved by the Board of Directors on:**
May 13, 2010
Revised on: None

- f) The IRC, through its Chair (or the Chair's designate), shall report after each Committee meeting to the Board at the Board's next regular meeting.

5. Limitations on Committee's Duties

In contributing to the Committee's discharging of its duties under this Charter, each member of the Committee shall be obliged only to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances. Nothing in this Charter is intended, or may be construed, to impose on any member of the Committee a standard of care or diligence that is in any way more onerous or extensive than the standard to which all Board members are subject.

HYDRO OTTAWA HOLDING INC. (HOHI)

STRATEGIC INITIATIVES OVERSIGHT COMMITTEE (“SIOC”) CHARTER

1. Composition

- a) The Strategic Initiatives Oversight Committee (“SIOC”) of Hydro Ottawa Holding Inc. (“HOHI”) is a Board Committee which shall be comprised of that number of Directors as shall be determined from time to time by the Board, of which:
 - (i) A majority shall be external directors of HOHI;
 - (ii) One (1) shall be the Board Chair as an *ex officio* voting member; and
 - (iii) All other members shall be directors who are members of the Board of Directors of HOHI who are independent of the management of HOHI and its subsidiaries.
- b) The following skill set is normally looked for in the selection of SIOC members:
 - Board experience;
 - Merger and acquisition experience including change and transition management and transformation capacity;
 - Experience in business development;
 - Experience in the design, construction or development of capital projects; and
 - Experience in public or private financing or project financing.

It is not necessary for any one member of the Committee to possess all of the skill set items. However, each skill set item (and parts thereof) should be present in the SIOC’s composition.

- c) The Chair of HOHI shall recommend, for HOHI Board approval, both the members to serve on the SIOC and the Chair of the SIOC.

2. Terms of Reference

- a) The purpose of the Strategic Initiatives Oversight Committee is to assist the Board of Directors in overseeing the development and implementation of certain key strategic initiatives set out in the annual corporate scorecard adopted by the Board of Directors in support of the strategic plan.
- b) To fulfill its purpose, the SIOC shall:
 - (i) Oversee the planning and implementation of certain key strategic initiatives as identified by the Board of Directors from time to time;
 - (ii) Receive timely reports from management;
 - (iii) Review progress on planning as well as relevant communication, stakeholder engagement, and implementation plans;
 - (iv) Provide guidance and advice to management;

- (v) Ensure that management has considered all significant risks in the development of plans;
- (vi) Review and advise on the approval of major project decisions and monitor execution;
- (vii) Keep the Board of Directors apprised of progress and results, as well as the most significant risks and risk mitigation strategies, and make recommendations to the Board of Directors on such matters; and
- (viii) Perform such other functions as may be assigned by the Board of Directors.

3. Operating Principles

The SIOC shall fulfill its responsibilities within the context of the following principles:

a) Conduct

The SIOC expects its Committee members to operate in compliance with HOHI's Code of Business Conduct and policies and with all applicable laws and regulations governing HOHI.

b) Committee Expectations and Information Needs

The Chair and members of the SIOC expect to have direct, open and frank communications throughout the year with Management, other Committee Chairs and other key SIOC advisors as applicable.

c) Reliance on Experts

In contributing to the SIOC's discharging of its duties under this Charter, each member of the SIOC shall be entitled to rely in good faith upon:

- (i) the reports of HOHI represented to him or her by the Board Chair, the Chair of the SIOC, an officer of HOHI or in a written report of external advisors; and
- (ii) any report of a lawyer, accountant, appraiser or other person whose profession lends credibility to a statement made by any such person.

4. Operating Procedures

- a) The SIOC shall meet as circumstances dictate to carry out the responsibilities set out in its Terms of Reference. Meetings shall be held at the call of the Chair;
- b) a quorum shall be a majority of the members;
- c) in the absence of the Chair, the Committee members present shall appoint an Acting Chair;
- d) SIOC meeting agendas shall be the responsibility of the Chair of the Committee in consultation with Management;

- e) To assist the SIOC in discharging its responsibilities, the SIOC may, after consultation with the Board Chair, retain at the expense of HOHI, one or more persons having special expertise that will assist the SIOC in discharging its responsibilities; and
- f) The SIOC, through its Chair (or the Chair's designate), shall report after each Committee meeting to the Board at the Board's next regular meeting.

5. Limitations on Committee's Duties

In contributing to the Committee's discharging of its duties under this Charter, each member of the Committee shall be obliged only to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances. Nothing in this Charter is intended, or may be construed, to impose on any member of the Committee a standard of care or diligence that is in any way more onerous or extensive than the standard to which all Board members are subject.

2018 Board and Committee Meeting Dates

**Confirmed
May 17, 2018**

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
AUDIT COMMITTEE		Tues. Feb. 6 10:00 a.m.– 12:00 p.m.	Thurs. Mar. 29 9:00 a.m. - 11:30 a.m.		Tues. May 29 9:00 a.m. - 11:30 a.m.				Tues. Sept. 11 9:00 a.m. – 11:30 a.m.		Tues. Nov. 13 9:00 a.m. – 11:30 a.m.	
GMRC COMMITTEE				Wed. Apr. 4 12:00 p.m. – 3:00 p.m.	Thurs. May 31 12:00 p.m. – 3:00 p.m.				Thurs. Sept. 13 12:00 p.m. – 3:00 p.m.		Thurs. Nov. 15 12:00 p.m. – 3:00 p.m.	
INVESTMENT REVIEW COMMITTEE			Thurs. Mar. 29 12:00 p.m. – 2:30 p.m.		Thurs. May 31 9:30 a.m. – 11:30 a.m.							
NOMINATING COMMITTEE					Mon. May 28 11:00 a.m. – 11:45 a.m.							
STRATEGIC INITIATIVES OVERSIGHT COMMITTEE				Wed. Apr. 4 9:00 a.m. – 11:30 a.m.					Thurs. Sept. 13 9:00 a.m. – 11:30 a.m.		Thurs. Nov. 15 9:00 a.m. – 11:30 a.m.	
HOL BOARD				Thurs. Apr. 19 8:00 a.m.– 9:00 a.m.		Monday, June 11 8:00 a.m.– 9:00 a.m.			Thurs. Sept. 27 8:00 a.m.– 9:00 a.m.		Thurs. Nov. 29 8:00 a.m.– 9:00 a.m.	
HOHI BOARD				Thurs. Apr. 19 9:00 a.m.– 12:00 p.m.		Monday, June 11 9:00 a.m.– 12:00 p.m.			Thurs. Sept. 27 9:00 a.m.– 12:00 p.m.		Board Strategy Session Thurs. Nov 1	
						AGM Wed. June 27 10:00 a.m. – 12:00 p.m.					Board Mtg. Thurs. Nov. 29 9:00 a.m.– 12:00 p.m.	

**2019 MEETING SCHEDULE – HYDRO OTTAWA HOLDING INC. BOARD, ITS COMMITTEES,
AND ITS SUBSIDIARY BOARD, HYDRO OTTAWA LIMITED**

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
AUDIT COMMITTEE	Thurs. Jan 31 10:00 a.m. – 12:00 p.m.		Fri. Mar. 29 9:00 a.m. – 11:30 a.m.		Tues. May 28 9:00 a.m. – 11:30 a.m.				Tues. Sept. 10 9:00 a.m. – 11:30 a.m.		Tues. Nov. 12 9:00 a.m. – 11:30 a.m.	
GOVERNANCE AND MANAGEMENT RESOURCES COMMITTEE			Thurs. Mar. 28 12:00 p.m. – 3:00 p.m.		Thurs. May 30 12:00 p.m. – 3:00 p.m.				Thurs. Sept. 12 12:00 p.m. – 3:00 p.m.	Mon. Oct. 28 1:00 p.m. – 4:00 p.m.		
INVESTMENT REVIEW COMMITTEE						Mon. June 3 10:30 a.m. – 12:30 p.m.				Thurs. Oct. 10 9:00 a.m. – 10:30 a.m.		
NOMINATING COMMITTEE						Wed. June 5 2:30 p.m.						
STRATEGIC INITIATIVES OVERSIGHT COMMITTEE			Thurs. Mar. 28 9:00 a.m. – 11:30 a.m.			Mon. June 3 1:00 p.m. – 3:30 p.m.			Thurs. Sept. 12 9:00 a.m. – 11:30 a.m.		Thurs. Nov. 14 9:00 a.m. – 11:30 a.m.	
HYDRO OTTAWA LIMITED BOARD				Tues Apr. 16 8:00 a.m. – 9:00 a.m.		Tues. June 18 8:00 a.m. – 9:00 a.m.			Mon. Sept. 23 8:00 a.m. – 9:00 a.m.		Thurs. Nov. 28 8:00 a.m. – 9:00 a.m.	
HYDRO OTTAWA HOLDING INC. BOARD				Tue. Apr. 16 9:00 a.m. – 12:00 p.m.		Tues. June 18 9:00 a.m. – 12:00 p.m.			Mon. Sept. 23 9:00 a.m. – 12:00 p.m.	Board Strategy Session 8:30 a.m. – 7:30 p.m.	Thurs. Nov. 28 9:00 a.m. – 12:00 p.m.	
ANNUAL GENERAL MEETING (Board Chair only)						Wed June 26 10:00 a.m. – 12:00 p.m.						



1 **Approved by the Board of Directors on:
November 22, 2007**

**HYDRO OTTAWA HOLDING INC
(HOHI)**

**Director Orientation and Continuing Education
Policy and Process**

As part of its commitment to ensuring that the corporation implements good governance practices consistent with a corporation of its size and nature of business activities, Hydro Ottawa Holding Inc. and its subsidiaries are committed to ensuring that members of the Board of Directors receive both an initial orientation and on-going education that will assist them in undertaking their roles as directors of the corporation and its subsidiaries. The Governance and Management Resources Committee shall be responsible for ensuring that appropriate and relevant practices are in place to director orientation and continuing education.

Orientation of Directors

The program for the orientation of new directors will be tailored to reflect the knowledge, unique skills, experience and education of new directors.

Each new director shall receive an orientation package to assist the director in understanding the nature and structure of the businesses, an outline of current issues and an explanation of the expected roles and responsibilities of the directors. The overview of the businesses of the corporation will include a review of strategic directions, business, financial and capital plans, financial results, significant business issues and key areas of risk. The orientation package will also explain legal requirements applicable to the corporation and its subsidiaries including the regulatory environment within which the businesses operate, significant components of shareholder agreements (or declarations), by-laws, codes of conduct and key corporate and Board policies and procedures. The orientation package will also outline the structure of the organization and explain the roles and responsibilities of the Board, its committees and members of the executive.

In addition to the provision of an orientation package, new directors meet with members of the executive to review business activities and key functions and to review the roles and responsibilities of directors. The Chair will also meet with new directors during which the workload and expected time commitments will be further reviewed.



2 **Approved by the Board of Directors on:
November 22, 2007**

Continuing Education

Management will ensure that the members of the Board of Directors receive timely access to information needed to carry out their duties. Directors may contact the Chair, committee chairs and the Chief Executive Officer to recommend that matters be included in the agendas for meetings of the Board and its committees. Directors will receive a comprehensive information package in advance of meetings and may request further information to assist in the fulfillment of their roles as directors.

The corporation shall provide to directors with information relating to significant, specialized and complex business operations and activities. Management will also provide directors with information relating to good governance practices and other areas to assist the Board and its committees in fulfilling their responsibilities.

The corporation encourages directors to participate in external professional development education programs to assist in the execution of their roles as directors. The following process will apply to encourage participation in the programs:

1. The Corporate Secretary will disseminate information about external education opportunities brought to the attention of the corporation and directors are encouraged to provide to the Corporate Secretary information about other educational opportunities.
2. Directors may make a request to the Corporate Secretary to attend a specific educational program or to attend an undefined program addressing a defined topic or area. The Corporate Secretary will, in turn, forward requests to the Chair of the Board of Directors and the Chair of the Governance and Management Resources Committee.
3. The Chair of the Board of Directors, in consultation with the Chair of the Governance and Management Resources Committee, shall consider requests and determine which requests shall be approved having regard to the following:
 - a. The educational needs of the individual director;
 - b. The relevance of a particular program to the fulfillment of the role and responsibilities of the director;
 - c. The scope of knowledge of the matters addressed by the program already held by the individual director and other members of the Board of Directors;
 - d. The cost and quality of the program, including related travel costs;
 - e. The existence, availability and quality of comparable programs;
 - f. Existing budgetary restrictions of the corporation;
 - g. The need to provide education opportunities for other members of the Board of Directors; and
 - h. Any other matters relevant to participation in the educational program.
4. Where the Chair of the Board of Directors requests to participate in an external education program, such request shall be considered by the Chair of the Governance and Management Resources Committee who will determine whether such request shall be approved.



3 **Approved by the Board of Directors on:
November 22, 2007**

5. The corporation will also fund the participation of one director per year for a recognized director education program providing director certification. Priority for approval of participation of a director shall be provided first to the Chair of the Board of Directors, then to committee chairs followed by other members of the Board of Directors. The Chair shall determine which director shall be permitted to attend the director education program in a given year at the cost of the corporation.
6. For the purposes of this policy, participation and attendance at an external education program shall include receipt of educational information by electronic means.
7. Where the Chair approves the participation of a director at an external education program, such approval may be on the basis of funding of all expenses related to the participation of the director in the external education program (including travel, accommodation and program registration expenses) or on the basis of an agreed sharing of costs.
8. The payment or reimbursement of expenses incurred by the director in connection with the attendance or participation in an external education program shall be subject to any policies or guidelines established by the Board of Directors. No remuneration shall be paid to a director for participation or attendance at an external education program.



ANNEX "A"

CODE OF BUSINESS CONDUCT

Hydro Ottawa Limited
EB-2019-0261
Exhibit 1
Tab 4
Schedule 1
Attachment L
ORIGINAL



OUR VISION

Hydro Ottawa – a leading
partner in a smart
energy future.

OUR MISSION

To create long-term
value for our shareholder,
benefitting our customers
and the communities
we serve.

CONTENTS

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INTRODUCTION

WHY DO WE HAVE A CODE OF BUSINESS CONDUCT?

Every day, individuals at Hydro Ottawa¹ strive to make the right choices in accordance with applicable laws and regulations, contractual commitments, company policies, professional standards, our standards of business conduct and our organizational values of Teamwork, Integrity, Excellence and Service. We do this because we know that *how* we accomplish our objectives, individually and as a company, is as important as *what* we achieve. And that by living our values, we strengthen both the employee experience and our business outcomes.

¹ The reference to Hydro Ottawa and/or company in the Code should be read as referring to Hydro Ottawa Holding Inc. and all of its subsidiaries and/or affiliates.

The Code of Business Conduct (also referred to as ‘the Code’) helps us make the right choices by:

- ▶ Guiding us as we make decisions and take action.
- ▶ Helping us understand where personal choices can be in conflict with our standards of business conduct, our values and our obligations to the company and each other.
- ▶ Providing examples of behaviours and attitudes that further define our values and the standard of business conduct required of each and every one of us.
- ▶ Describing a high standard that can be applied to any situation, including situations not specifically addressed in the Code.
- ▶ Setting specific, ethical direction and expectations.
- ▶ Explaining what we can do when we experience or observe non-compliance with the Code.

The Code outlines general principles of appropriate business conduct, with examples², rather than attempting to cover every situation we may possibly encounter. It is not a substitute for the use of sound judgement, and the seeking of advice as required, in assessing a particular situation.

WHO DOES THE CODE APPLY TO?

The Code applies to all employees of Hydro Ottawa, members of the Boards of Directors and, to the extent feasible, our external business partners – agents, representatives, consultants, contractors, vendors and suppliers.

The Code is not intended to conflict with our commitments to employees as stated in our collective agreements, terms and conditions of employment or contracts, nor with the professional standards by which certain of our employees and Board members are bound.

² As time progresses, examples may be added, removed or updated to reflect best practices and changes in the workplace; any such changes will be posted on the Intranet.

SPECIFIC ROLES

Each and every one of us has the responsibility to model the behaviours and attitudes that are outlined in the Code.

All Employees and Board Members

All employees and Board members are required to know, understand and apply the Code, as well as the related policies that apply to them. They must all complete any required training on the Code, acknowledge receipt of the Code and training, and report non-compliance with the Code in accordance with the Compliance section of the Code.

Additional Roles for People Leaders

The importance of seeking the advice of your direct supervisor is stressed throughout the Code. As such, the company places added expectations on those with direct reports; we expect that they will:

- ▶ Respond when their advice regarding the Code is sought, making it comfortable for advice to be sought; and seek guidance from their next level of management or Human Resources when required, to ensure the advice provided is sound.
- ▶ Ensure that their direct reports understand the Code and the impact of individual behaviour on the company, both positive and negative.
- ▶ Agree, in writing, to abide by the Code. This also applies to all Board members.
- ▶ Champion the Code; ensure that any required training on the Code and applicable documents are completed.
- ▶ Support those who report non-compliance with the Code.
- ▶ Always address issues of non-compliance promptly by taking the opportunity to coach the individual on how to demonstrate the right behaviours or by involving their next level of management or Human Resources as appropriate.

Additional Roles for Executive and Senior Management

Executives and senior management are responsible, in addition to all of the above, for establishing internal controls, ensuring that monitoring of compliance is in place, reviewing this Code on a regular basis to ensure it includes all necessary references, and ensuring that appropriate action is taken to investigate suspected or actual non-compliance and that appropriate actions are taken when non-compliance occurs.

**ASK
YOURSELF
THESE
QUESTIONS:**

Annual Recombitment

Board members, members of the executive team, senior management and those in key financial positions are required to recommit to the Code, in writing, on an annual basis.

WHEN THE CODE DOES NOT HAVE AN ANSWER

Codes of business conduct cannot address every possible situation. However, our Code sets a standard against which all situations can be assessed.

Ask yourself these questions:

Does this feel right? Does it make me feel uncomfortable?

Would I be proud to tell someone what I have decided or done?

Am I adhering to the letter and spirit of the laws, regulations and contracts that may be involved?

Is there any specific guidance in the Code, or in company policies? If not, does the Code and/or a policy give me a sense of the standard that I must apply in this situation?



If, after reading the Code and considering these questions, you are uncertain how to act or react in a given situation, or sense you may be in contravention of the Code if you take a certain action, speak to your direct supervisor, your next level of management or Human Resources without delay.

While all the laws and regulations, and contractual commitments, as well as all the policies that apply to us as individuals and as a company are not specifically described in the code the company requires compliance with all applicable laws and regulations and company policies. In situations where the law, policy and the Code appear to be different, each of us must always comply with the highest standard.



OUR ORGANIZATIONAL VALUES

This section includes the definitions for our organizational values and examples of associated behaviours and attitudes, provided by our employees, which describe what our values look like in action. Our values are the 'TIES' that link our conduct to our vision and our mission; they speak to who we are and the kind of business we want.

TEAMWORK

Teamwork is getting the job done through cooperation.

Working as a team means sharing our knowledge and skills, and willingly supporting each other. It's striving toward a common goal, while respecting each other's viewpoints and opinions, and acknowledging each other's contributions.



You are living the value of teamwork when you demonstrate behaviours and attitudes like these:

- ▶ Ensure clarity of team goals by communicating them at the outset and/or confirming your understanding.
- ▶ Trust colleagues to fulfill their responsibilities.
- ▶ Encourage and provide honest, courteous and constructive feedback, identifying what works and offering alternatives for what does not.
- ▶ Listen to what others have to say, and take the time to understand their reasons.
- ▶ Respect the workspace of others and the necessary limitations when working in open concept areas and make use of collaboration spaces, quiet rooms or meeting rooms when working with others.
- ▶ Seek information and ideas from across the company, leveraging and relying on the diverse experience, background and knowledge of all team members.
- ▶ Willingly share workload; adapt your schedule/duties for team members who are away and participate positively in discussions and completion of tasks.
- ▶ Share information and ideas with those who need to know.
- ▶ Respect other people's time and schedules, and be on time for meetings.
- ▶ Celebrate the achievement of milestones.
- ▶ Participate in activities that bring people together, to build team spirit.
- ▶ Share credit, by promoting and acknowledging the ideas and contribution of all team members.

OUR ORGANIZATIONAL VALUES

INTEGRITY

Integrity is doing what is right.

It means we are trustworthy, we fulfill our commitments with honesty and fairness and we adhere to the highest ethical standards – *no matter what the circumstance*. It's taking responsibility for our actions and being transparent about our business practices.



You are living the value of integrity when you demonstrate behaviours and attitudes like these:

- ▶ Be fair and honest in your dealings with others.
- ▶ Act professionally and be respectful in all of your interactions.
- ▶ Ensure your behaviours and attitudes foster a positive work environment.
- ▶ Do what is right, not what is convenient.
- ▶ Say what you will do and do what you say; promise only what you believe you can deliver – and follow through.
- ▶ Admit when you have made a mistake.
- ▶ Identify when a mistake has been made; don't cover up a mistake that is in your favour.
- ▶ Speak up when you recognize that something is wrong.
- ▶ Lead by example. Walk your own talk – don't tell someone to do something and then do it differently yourself.
- ▶ Give a full day's work for a full day's pay.
- ▶ Declare any potential or actual conflict of interest.
- ▶ Protect confidential or sensitive information.
- ▶ Let people know what you can and cannot tell them and respect that you may not be privy to certain information.
- ▶ Ensure that those who need to understand our business practices are given clear and transparent explanations.

EXCELLENCE

**Excellence is achieved
through our commitment to
quality, safety and learning.**

It means using our assets effectively to achieve the best possible outcomes, protecting the environment and caring for our employees by maintaining a positive and safe workplace. It means embracing innovation and continuous improvement, and developing our talent.



You are living the value of excellence when you demonstrate behaviours and attitudes like these:

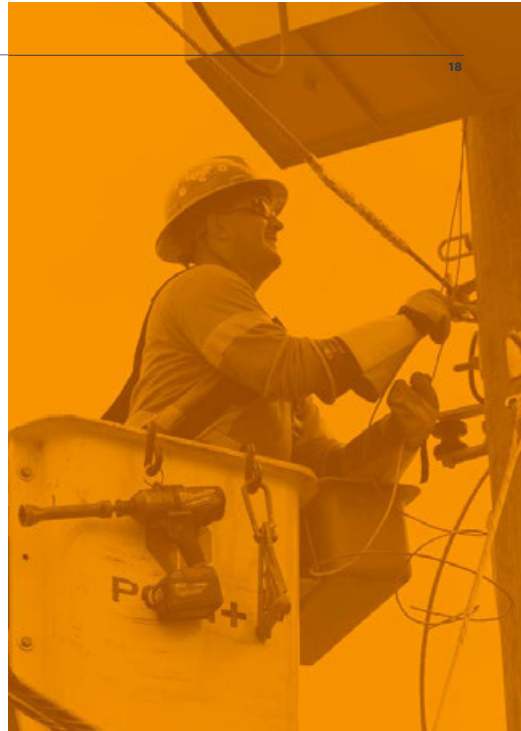
- ▶ Follow and encourage others to follow safety, environmental, and quality standards.
- ▶ Report to work fit for duty, free from any impairment, to work safely.
- ▶ Give and/or take assignments that develop new skills.
- ▶ Be proactive about learning and stay informed.
- ▶ Help others learn and perform, through proper instruction and documentation, coaching and mentoring.
- ▶ Keep company assets in good working order; identify when assets are not working properly.
- ▶ Ensure that your work is thorough, accurate and in line with what is needed. Take ownership, and take steps to ensure quality work.
- ▶ Be creative and innovative, while effectively managing any associated risks.
- ▶ Always think about what can be done to add value to your work.
- ▶ Identify best practices – do not be satisfied with the status quo.
- ▶ Recognize and make use of diversity.

OUR ORGANIZATIONAL VALUES

SERVICE

Service is what we say and do to ensure satisfaction.

It's all the actions and interactions that meet or exceed the expectations of our customers, our shareholder, our community and our colleagues. Satisfaction is rooted in being treated fairly and with respect, and being kept informed. Through effective service, we increase trust and recognition of the value we provide.



You are living the value of excellence when you demonstrate behaviours and attitudes like these:

- ▶ Take time to understand what the person wants - see yourself as an ambassador in every situation.
- ▶ Treat co-workers as valued customers.
- ▶ Ensure you provide/have the proper resources to provide good service.
- ▶ Respond to requests clearly, accurately and in a timely manner; acknowledge needs and follow through on your commitments. If your response will be delayed, explain why.
- ▶ Monitor products and services so you know there is a problem before the customer knows - and keep the customer informed.
- ▶ When providing service, listen fully and with interest, and don't use terminology that the person may not understand.
- ▶ Address the person you are serving professionally; be honest, fair, objective and sensitive, without jeopardizing the company's interests.
- ▶ Whenever possible address the customer's issue during the first contact.
- ▶ Ask customers and other stakeholders for feedback and provide convenient avenues for feedback.
- ▶ Clearly and politely explain a policy when it conflicts with what the person wants, while working towards a solution.

Hydro Ottawa Limited

EB-2019-0261

Exhibit 1

Tab 4

Schedule 1

Attachment L

ORIGINAL

Page 20 of 52



OUR STANDARDS OF BUSINESS CONDUCT

This section provides guidance and direction regarding key responsibilities and accountabilities, including specific required behaviours and attitudes that align with our organizational values. We are all responsible and accountable to disclose any concerns we have, and decline involvement in any decision or action that is contrary to these expected behaviours and attitudes.

SAFETY

A fundamental component of Hydro Ottawa's commitment to operating efficiently and effectively is the high priority we place on protecting the health and safety of our employees, contractors, subcontractors, external business partners, visitors, customers and our community.

We acknowledge that, integral to business success, is the establishment and continuous improvement of a safe workplace. We expect individuals to reduce potential harm by complying with all applicable laws, regulations, policies, procedures, guidelines, and work instructions and immediately reporting any situation that compromises safety.

As part of our concern for safety, Hydro Ottawa will not allow any employee, contractor, subcontractor or external business partner to work for or with the company if there is any reason to believe that individual safety or the safety of others is compromised or likely to be compromised.

We are committed to minimizing the risk of injury associated with our operations and the provision of services.



For instance:

- ▶ Come to work fit for duty, free from any impairment, to work safely.
- ▶ Identify, report, and where appropriate, correct workplace hazards.
- ▶ Wear your protective equipment at all times and ensure it is in proper working condition.

³ Alcohol and drugs means any substance, the use of which has the potential to change or adversely affect the way a person thinks, feels or acts including alcohol, cannabis/marijuana, legal and illegal drugs or medications.



- ▶ Do not erode safety through dangerous or careless driving, or by failing to adequately secure items on or in company vehicles.
- ▶ Smoke tobacco only in designated areas, and respect the concerns of others when smoking during work. Smoking is not permitted in the workplace, including garages and company vehicles.
- ▶ Never bring any weapon, or other type of object that could cause fear or physical harm and is not required in the completion of work duties, to any location where Hydro Ottawa work is being performed.
- ▶ Never consume alcohol or drugs³ when operating a vehicle or equipment, or when working in a safety sensitive position as defined in corporate policy.
- ▶ Never attend to your job duties and responsibilities when the consumption of alcohol or the use of any drugs could adversely affect your performance on the job.
- ▶ Never use technological devices when driving, operating equipment or performing safety-sensitive work.
- ▶ Notify your direct supervisor immediately if you feel that your performance or safety is or might be compromised as a result of alcohol or any drugs, including when called into work on an emergency basis.

FINANCIAL ACCOUNTABILITY

We are accountable to our shareholder, and the stewards of significant assets. We must effectively and responsibly use and protect the assets entrusted to us.

PROTECTION OF COMPANY ASSETS⁴

We are all entrusted with protecting our company assets, the assets of our customers, and the assets of our employees and external business partners which are brought into our places of work, from theft, fraud, vandalism, embezzlement and illegal copying of licensed materials.

Additionally, we must protect our assets from neglect – through regular maintenance and care, from waste, from unauthorized use, and from inappropriate disclosure of information, any of which could damage our reputation or our success.

For instance:

- ▶ Only use company assets for activities associated with work; unauthorized personal use of any company asset is not permitted.
- ▶ Do not take company supplies home for personal use, such as pens, paper, electrical tape, batteries, cleaning supplies/tools, etc.
- ▶ If you see someone doing something improper or unsafe with a company asset you must report it to your direct supervisor.
- ▶ Maintain and make use of the systems Hydro Ottawa has in place to manage and safeguard assets and information.
- ▶ Safeguard keys, property access cards, mobile devices and laptops.
- ▶ Ask any unfamiliar, unescorted persons who are not displaying proper identification to identify themselves.
- ▶ Take all steps to protect information against disclosure, recognizing that corporate information and knowledge are amongst our most valuable assets; never share information with anyone who does not have a solid business need to know, and be careful about discussing company business in public venues.
- ▶ Do not make unauthorized or illegal copies of intellectual property belonging to or licensed to Hydro Ottawa.
- ▶ Dispose of assets only when the appropriate Executive or designate has given permission in writing, or when the method for disposal is clearly outlined in a policy.

FINANCIAL DECISIONS

We apply sound business principles and practices, and make decisions about purchases or expenses that are based on merit and value to the company.

For instance:

- ▶ Make purchasing decisions based on pre-set objective criteria and fully disclose all transactions and payments.
- ▶ Conduct thorough cost/value analysis.
- ▶ Ensure that business expenses are reasonable and necessary for business or commercial needs.
- ▶ Obtain approval or pre-authorization before committing Hydro Ottawa funds.
- ▶ Ensure all payments made are appropriate for the level of goods/products and/or services received.
- ▶ Adhere to all legal and accounting standards when making purchases and subsequent payments.
- ▶ Take the necessary steps to ensure that our external business partners are paid in accordance with agreed terms.

4 Assets can be physical or non-physical and include, but are not limited to, cash, properties and their contents, furnishings, corporate, employee and customer information, intellectual property, trademarks, logos, knowhow, ideas, data, software, computing and communication devices, tools and equipment, vehicles, clothing, inventory, supplies and materials, etc.

COMPETING FAIRLY AND PROTECTING COMPETITIVE ADVANTAGE

Hydro Ottawa is committed to running our business in compliance with all competition laws, regulations, standards and practices. Unfair tactics such as bribery, extortion or bid rigging are prohibited.

For instance:

- ▶ Protect our competitive advantage by refraining from discussing, with outsiders, our customer lists or product and service development initiatives, except where there is a solid business requirement.
- ▶ Protect the competitive advantage of our external business partners by not sharing information contained in their bids or quotations with anyone who does not have a solid business need to know.

OWNERSHIP OF WORK PRODUCT

In the course of employment, employees are called upon to engage in various types of research or problem solving for the company. The product of these work efforts produced within the scope of employment belongs exclusively to Hydro Ottawa, whether some or all of the research or problem solving was undertaken while actually at work or not. Work product includes, but is not limited to, computer programs, technical processes, inventions, research methods, know how,

reports or articles and any other form of innovation or development. Patents, rights or copyright, as appropriate, must be assigned to Hydro Ottawa.

APPROPRIATE USE OF LEAVE AND BENEFIT PLANS

Hydro Ottawa provides leave and/or benefit plans for its employees consistent with legislative requirements and respective collective agreements, terms and conditions of employment or contracts. The long-term sustainability of these plans is directly related to the prudent use of each by the employees who participate in the plans. Any misuse may place the plans at risk and may lead to disciplinary action up to and including termination of employment.

For instance:

- ▶ Ensure that all leaves are utilized for the reasons they are intended to cover.
- ▶ Only call in sick if you are completely unable to work. Always discuss the possibility of performing lighter or other duties on days when you are able to perform some work.
- ▶ Always ensure that the benefit expenses and services you claim are accurate and reasonably required.
- ▶ Be a smart consumer and shop around for the best value.
- ▶ Never ask for or accept a receipt from a service provider that does not accurately reflect the expense that you are claiming.

BUSINESS REPORTING AND RECORDS

To meet our financial and legal obligations, and to effectively manage our affairs, we must maintain and produce accurate and reliable records and reports.

FINANCIAL REPORTING

Any records impacting on financial results – such as time entry, sales reports, financial reports and expense reports – must accurately and clearly reflect the true nature of all business transactions. Revenues, expenses, assets and liabilities must all be disclosed, and documents and records must never be altered, hidden, or falsified. Anyone responsible for accounting must be diligent and insist on proper accounting practices.

For instance:

- ▶ Take the necessary steps to ensure there are no errors, misstatements or omissions in accounting documents, systems and analyses.
- ▶ Handle all transactions in a manner that avoids any impropriety or perception of impropriety.
- ▶ Never report financial transactions in a way that unlawfully evades tax or other charges imposed by government.

OPERATIONAL INFORMATION AND RECORDS

Unless making valid corrections, operational information and records must be left intact. When corrections are made, we must make certain that colleagues who are already in possession of the information/record are advised and provided with an appropriate explanation.

USE OF TECHNOLOGY AND SOCIAL MEDIA

Technology is a resource that we must use carefully and ethically, with consideration of our business needs and reputation and with respect for all those associated with Hydro Ottawa.

Hydro Ottawa's systems and the content (business records, data, information, messages, etc.) in those systems are the property of the company. Hydro Ottawa has the right to access, monitor, read and examine any content transmitted and/or stored on its systems/equipment, to ensure productive, ethical, legal and authorized use. This means content in any part of our systems, including the electronic communications system – Internet, Intranet and Email, shared directories and folders, hard drives and portable or removable electronic storage devices – such as compact discs, DVDs and memory sticks. You should not expect that any of your Email, Internet, Intranet or other technology activities on Hydro Ottawa systems which includes, but is not limited to, computers, laptops, tablets and smartphones, or the corresponding content, is private.

Our systems are intended for business purposes. Limited personal use of the electronic communications system – Internet and Email – is permissible, outside of the time you are expected to be working, provided that the time spent and the content of your electronic communications does not interfere with your productivity or the productivity of your colleagues, damages or have the potential to damage the reputation of Hydro Ottawa, negatively impact any individuals or violate the law.

Under no circumstances are you to use Hydro Ottawa systems and equipment which includes, but is not limited to, computers, laptops, tablets and smartphones to access, download, upload, receive or distribute pornographic content or any content that could be considered sexist, racist, discriminatory or hate-based.

Employees are encouraged to be brand ambassadors and proudly champion the Hydro Ottawa brand. If you choose to participate in social media and identify yourself as a Hydro Ottawa employee, always ensure that you are not acting in any manner that is detrimental to the interests and/or reputation of Hydro Ottawa on Internet forums, blogs and social networking sites, including but not limited to, Facebook, YouTube, LinkedIn, Twitter or Instagram. The company regularly monitors such sites.

For instance:

- ▶ Avoid using careless, exaggerated or inaccurate statements in electronic communications, which could be used against Hydro Ottawa.
- ▶ Never share passwords or use personal email accounts for conducting company business.
- ▶ Do not download software, large electronic files from the Internet or any content such as images, stream video or music, as these could impact the performance of our technology by using bandwidth on the network needed for business activities or by introducing viruses into our systems.
- ▶ Pause and think before you post on social media sites and on the Intranet.
- ▶ Use social media only for personal reasons and never for business purposes unless you have been authorized to publish content on behalf of Hydro Ottawa.
- ▶ Do not associate or affiliate yourself with Hydro Ottawa when sending emails or using social media in a way which could reflect negatively on the company.
- ▶ Only install and use software approved by the Information Management and Information Technology Division; and never illegally reproduce software protected by copyright.
- ▶ Report suspicious emails and activities to your direct supervisor or the IT Help Desk immediately.

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AUDITS AND INVESTIGATIONS

We cooperate fully with investigations by authorized internal and external parties, including regulators, law enforcement agencies and auditors. We expect that you will cooperate by providing accurate and factual information to the authorized investigators and that you will never tamper with records or make misleading comments – such as a business rationale designed to mislead – or ask anyone else to do so.

RESPECT FOR INDIVIDUALS

At Hydro Ottawa, we are committed to providing positive, open, collaborative and respectful working environments where:

- ▶ *You feel valued and appreciated.*
- ▶ *The well-being of employees, customers, and external business partners is safeguarded.*
- ▶ *Diversity is welcomed and Inclusion is embraced.*
- ▶ *It is safe to discuss what is not working and focus on solutions.*
- ▶ *Inappropriate or disrespectful behaviour is dealt with according to clearly established standards and in a timely manner.*

DIGNITY AND FAIRNESS

Employees, customers, and external business partners will be treated with dignity and fairness.

Employees will be provided with fair compensation and working conditions in exchange for their performance.

All work locations – including customer premises and locations of Hydro Ottawa sponsored events – will be free from discrimination (treating someone differently based on a category), personal or sexual harassment (making someone feel intimidated, threatened, anxious or persecuted), and any form of direct or veiled threats of violence.

We will respect the dignity of our colleagues and treat them as they would like to be treated.

For instance:

- ▶ Demonstrate respect and dignity by the tone and words you use in writing and in conversation.
- ▶ Do not maliciously gossip about colleagues.
- ▶ Do not tolerate discrimination, harassment, violence or threats of violence, and report such incidents immediately.

If you are in a leadership role, address any such incidents brought to your attention immediately; or, report the incident to the employee's direct supervisor if they do not report to you.

Allow others to respectfully voice their thoughts and opinions without fear of retribution.

Avoid conduct that creates an uncomfortable situation or an unfriendly work environment such as inappropriate comments, jokes, intimidation, bullying or physical contact.

Recognize that certain actions generally considered inoffensive might trouble some individuals, and respect the wishes of those individuals.

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DIVERSITY

Diversity is about recognizing, respecting and valuing differences across an infinite range of unique individual characteristics and experiences. Hydro Ottawa values diverse backgrounds; we appreciate the different perspectives and experiences that everyone brings to the work environment.

For instance:

- ▶ Make it easy for our colleagues who reflect the diverse population of the communities we serve to become part of our company.
- ▶ Foster an inclusive work environment that embraces the diversity of our colleagues.
- ▶ Do not discriminate in hiring and employment practices on grounds prohibited by law.

PROFESSIONALISM

By presenting ourselves professionally, we demonstrate respect for co-workers, customers and business partners, and ensure that Hydro Ottawa's reputation is viewed positively. Professionalism speaks to demeanour, positive attitude, style of dress, tone of voice and use of personal workspace.

For instance:

- ▶ Dress appropriately and professionally for work.
- ▶ If you have been provided with Hydro Ottawa clothing to perform your duties, ensure that it is used for that purpose, is clean and in good condition and meets all safety standards.
- ▶ Speak at a volume that does not impact the productivity of others or result in others hearing confidential information; use collaboration spaces, quiet rooms or meeting rooms as required.
- ▶ Promote a clean and tidy work environment, and avoid inappropriate or excessive office decorations.
- ▶ Use collaboration spaces, quiet rooms and meeting rooms as per established guidelines.
- ▶ Promote the company positively, both internally and externally, in appropriate forums. Do not share personal negative viewpoints about Hydro Ottawa, other employees, our customers or external business partners in any public forum, including, but not limited to, social networking sites such as Facebook, YouTube, LinkedIn, Twitter and Instagram.

ENVIRONMENTAL PROTECTION

We are committed to being a responsible corporate citizen, and making the community in which we do business a better place to live. We believe that business growth and achievements must be shared with respect for and protection of the environment.

As such, we strive to continuously reduce the impact of our own operations on the environment and the communities we serve, as well as improve our environmental performance. We are dedicated to protecting and preserving the environment where we operate by following all applicable laws, regulations, policies, procedures, guidelines and work instructions and reporting any incidents that could impact the environment.

We will design, build and operate our facilities to make efficient use of resources, prevent pollution and reduce environmental effects to the extent that is reasonably achievable.

For instance:

- ▶ Look for ways to reduce the company's carbon footprint and improve the company's energy efficiency and waste management and recycling.
- ▶ Ensure that you understand the environmental impact of your work activities, and factor that impact into decisions.

- ▶ Take responsibility and accountability for contributing individually to reducing our environmental impact.
- ▶ Make all efforts to reduce, reuse and recycle.
- ▶ Only allow a corporate vehicle to idle when it is absolutely necessary.

MAKE ALL EFFORTS TO REDUCE, REUSE AND RECYCLE.

CONFIDENTIALITY AND PRIVACY

Respecting the privacy of our employees, customers and external business partners is critical to our success and to building effective business relationships; these individuals have entrusted us with sensitive information.

We have a responsibility to effectively manage the collection, access, use and disclosure of all sensitive information, and to only use such information for the purpose for which it was originally collected unless otherwise authorized. We must also safeguard sensitive information against theft, loss, destruction, unauthorized access or misuse.

This obligation and responsibility to protect and not divulge the Company's proprietary and confidential information continues after your employment with Hydro Ottawa ends.

Report breaches of confidentiality and privacy immediately to your direct supervisor.

For instance:

- ▶ Know what information must be kept confidential; ask your direct supervisor when in doubt.
- ▶ Do not disclose personal and confidential information about customers to anyone inside or outside the company, unless it is authorized for the performance of their work.
- ▶ Do not discuss and/or disclose confidential company information except with those who have a solid business need to know.
- ▶ Respect and maintain the confidentiality of employees' personal information about compensation, performance, disabilities or illness, etc., disclosing this information only to those who have a solid business reason to know.
- ▶ Ensure that personal, sensitive and/or confidential information is not inadvertently distributed to inappropriate parties through access to computer system folders, email, etc.
- ▶ Protect personal and confidential information by ensuring it is properly stored and locked when working in an open environment.

OFF DUTY CONDUCT

We respect the personal lives of employees outside of the workplace.

Employees must be mindful, however, that they are accountable for their actions outside of the workplace to the extent that it can negatively affect Hydro Ottawa's business, reputation or work environment.

For instance:

- ▶ Do not use corporate vehicles to do personal errands.
- ▶ Do not wear corporately issued work clothing if going out after work.
- ▶ Do not wear corporately issued work or branded clothing if working at another company as a second job or if self-employed.
- ▶ When wearing corporately branded clothing in public, be a good brand ambassador and refrain from acting in a manner that could be detrimental to the reputation of Hydro Ottawa.



CONFLICT OF INTEREST

Many situations could involve a conflict of interest, or the appearance of such.

Conflict of interest includes any situation or action that places you or could be perceived as placing you in conflict with Hydro Ottawa's interests, or impairs or could be perceived to impair your objectivity.

It is important to place the Company's interests before our personal interests. Also, remember that the perception of a conflict of interest can be just as damaging as an actual conflict of interest.

For instance:

- ▶ Base any business decision on Hydro Ottawa's best interests.
- ▶ Ensure that your primary loyalty in the performance of your duties is to Hydro Ottawa.
- ▶ Derive no personal benefit from any business decision made on behalf of Hydro Ottawa.
- ▶ Do not use, for your personal gain or reasons, or for the personal gain or reasons of your family, friends or another

business, any information obtained while performing duties at Hydro Ottawa which is not available to the public at large.

- ▶ Do not participate in any discussion or decision that could have, or be perceived to have, a benefit for you, your family members, your friends or another business in which you have personal interest.
- ▶ Inform your direct supervisor when you know that members of your family are employees or advisors of companies that have a business relationship with Hydro Ottawa.
- ▶ Decline involvement in awarding contracts to, or purchasing any goods and/or services from, business partners with whom you have a personal relationship.
- ▶ Inform your direct supervisor immediately if any new situation or business decision made by Hydro Ottawa places you, has the potential to place you, or could be perceived to place you in a conflict of interest.

PERSONAL INVESTMENTS

When you are aware that you or your family members (spouse, children or other relatives) invest directly in a business that competes with or sells goods and/or services to Hydro Ottawa, including circumstances where

there is control or direction over an investment without directly holding it, disclosure is necessary to avoid conflict of interest. Advise your direct supervisor; where the investment or control is significant our legal counsel should also be advised. By disclosing this information, Hydro Ottawa can ensure that you are not placed in a conflict of interest situation such as influencing the awarding of a contract, overseeing work done by that company or participating in any discussions or decisions about that company.

INSIDER INFORMATION

You are not permitted to purchase – either directly or through an agent or associate – any assets or interests based on confidential knowledge gained while performing duties related to Hydro Ottawa.

EXTERNAL EMPLOYMENT

Any employment or services provided outside Hydro Ottawa, i.e., self-employment or work for pay or business interests, must not interfere in any way with your availability, productivity and performance at Hydro Ottawa, nor can it

conflict with Hydro Ottawa interests. This would include using Hydro Ottawa assets, soliciting business for your own company from Hydro Ottawa customers or working for a company that competes with or provides services to Hydro Ottawa, without our company giving explicit permission.

For instance:

- ▶ Never identify yourself as a Hydro Ottawa employee when performing work for your own company or another company.
- ▶ Never refer Hydro Ottawa customers to other companies unless you are referring to a company on an approved Hydro Ottawa list.
- ▶ Do not perform paid work for another organization during working hours at Hydro Ottawa.
- ▶ Do not allow colleagues or customers from another organization where you work to contact you during working hours at Hydro Ottawa.
- ▶ Do not promote the products or services of another organization, including your own company, during working hours at Hydro Ottawa.
- ▶ Do not use company tools, vehicles, equipment, clothing, intellectual property and/or supplies for external employment.



EMPLOYMENT OF FAMILY MEMBERS

As with conflicts of monetary interest, Hydro Ottawa employees and Board members must maintain objectivity, and the perception of objectivity, when dealing with human resources issues and immediate family members. An immediate family member is defined as: parent (natural, step, or in-laws), spouse and son or daughter (natural, step, or in-laws).

An employee whose family member is employed by a contractor who performs work for Hydro Ottawa must notify their direct supervisor if the employee is directly or indirectly responsible for the hiring or oversight of the work to be performed by the contractor.

For instance:

- ▶ Do not place yourself, or allow yourself to be placed, in a position where you supervise, directly or indirectly, or influence the recruitment, hiring, pay or performance rating of any immediate family member.
- ▶ Inform your direct supervisor if you know that a family member is applying for employment with Hydro Ottawa.
- ▶ Do not pressure another employee to hire or contract with a family member, friend or relative.
- ▶ Maintain a professional relationship during work hours with a family member who also works for Hydro Ottawa.
- ▶ Abide by the Guidelines for Employees Dealing With Entities That Employ Family Members.

SERVICE ON BOARDS OF DIRECTORS

Membership on boards is encouraged, particularly boards of charitable and non-profit organizations or family businesses, when the organization is not in conflict with our company.

In certain cases, Hydro Ottawa will ask an employee to serve on a board as part of their duties, officially representing our company. You may not serve as a director, trustee, consultant or agent of any organization that competes with, provides goods or services to, or buys goods or services from Hydro Ottawa – not including the purchase of electricity services, unless expressly authorized by Hydro Ottawa.

PROFESSIONAL ASSOCIATIONS

Individuals are encouraged to contribute to the promotion and development of their profession. You may be officially representing Hydro Ottawa, as part of your duties, or you may join for personal interest.

While involvement in associations can enhance the reputation of Hydro Ottawa and provide access to innovative solutions and useful information, there are some considerations.



1

Your direct supervisor must approve any worktime for attendance at association meetings or to complete association work.

2

If you are not officially representing Hydro Ottawa, you must make it clear that you are speaking on behalf of yourself and not as a spokesperson or representative of our company.

3

Information shared with other members of a professional association cannot include proprietary or confidential information.

VOLUNTEERISM

Volunteering in the community is encouraged. There may be circumstances where use of Hydro Ottawa time or assets is authorized.

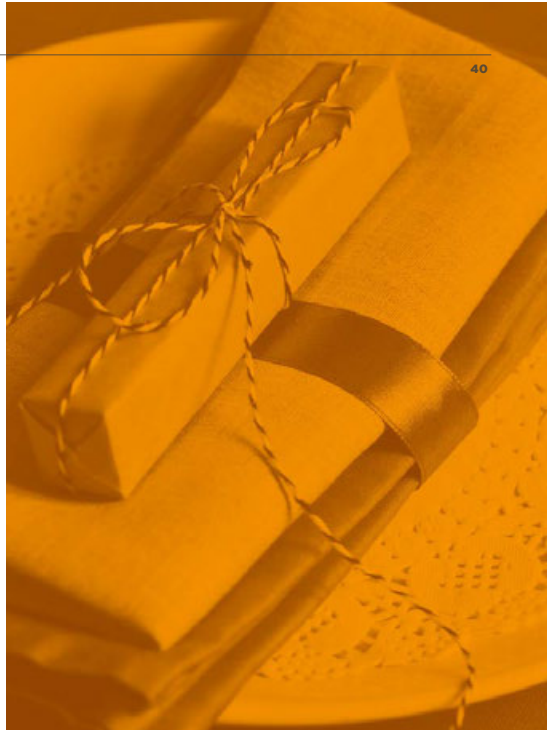
Request approval from your direct supervisor, who will need to seek authorization from executive or senior management.

POLITICAL OR CHARITABLE ACTIVITY

As a private citizen, you may participate in any level of political or charitable activity on your own time, but those activities must not interfere or conflict with your duties at Hydro Ottawa or involve the use of any Hydro Ottawa assets unless expressly authorized.

For instance:

- ▶ Make it clear, while involved in politics, that your comments and actions are your own, and not those of Hydro Ottawa.
- ▶ Apply for a leave of absence, without pay, before running for political office.



ACCEPTING/GIVING GIFTS AND ENTERTAINMENT

Accepting or giving gifts and/or entertainment – including meals, beverages, invitations to social outings, accommodation and travel – may compromise or appear to compromise your ability to make decisions that are in the best interest of Hydro Ottawa.

It is acceptable, on occasion, to accept or give a gift or accept or offer entertainment when there is a business benefit to Hydro Ottawa. It is not acceptable to accept anything from business partners or customers that could be seen as potentially compromising fair decision-making.

Seek the advice of your direct supervisor, your next level of management or Human Resources if you are in any way unsure if you should accept or give any gift or offer of entertainment.

Before you accept or give anything, ask yourself:

Is the gift or entertainment of limited value?

What is the benefit to Hydro Ottawa?

Is the offer infrequent?

Is there a pre-existing business relationship?

Are the value and the reason for the gift or entertainment appropriate considering the situation, the people involved and your role at Hydro Ottawa?

Is there an obligation or reciprocity implied for either party?

Would you be comfortable telling your direct supervisor, peers or family about the gift or entertainment?

Is the gift or entertainment compatible with normal business practices?

Would Hydro Ottawa be embarrassed if the gift or entertainment was publicly disclosed; could it be perceived as a bribe or kickback?

EXAMPLES AND GUIDELINES:

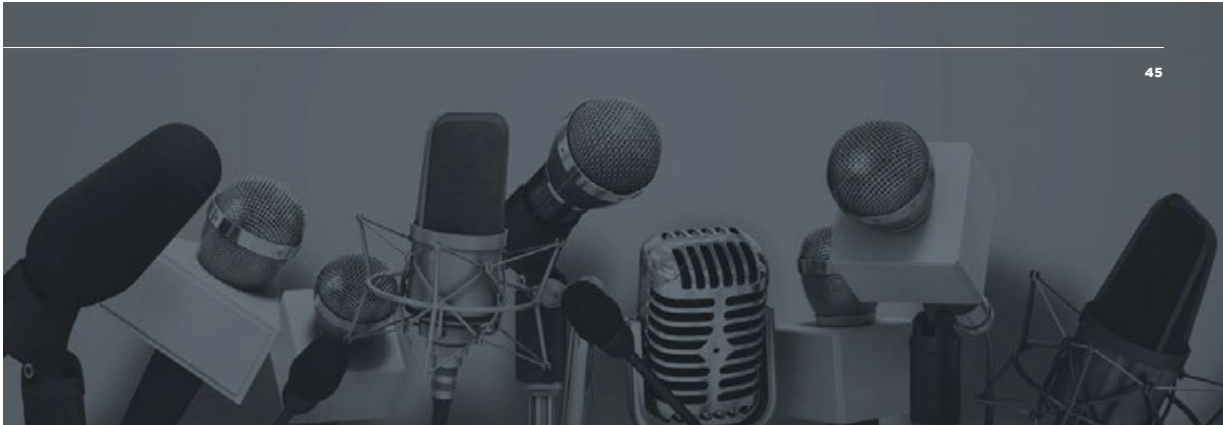
EXAMPLES	GUIDELINES
You are offered a monetary gift – cash, loan or a discount that is not available to all other employees.	Do not accept it. Such an offer should be reported to your direct supervisor in writing.
You are offered sports or cultural events tickets.	If there is a good business case for attending the event with the giver, accepting these tickets is appropriate, provided it is fully disclosed to your direct supervisor, in writing and in advance of the event. If the giver will not be present, do not accept the tickets. If this is not possible, provide the gift to Human Resources as a prize for an employee draw or at a company event.
You are offered a gift or form of entertainment from an external party who is active in the procurement process.	Do not accept it. This is clearly unacceptable. Such an offer should be reported to your direct supervisor immediately, in writing.
You are offered a gift of alcohol or an alcohol-related gift card/certificate.	Do not accept it.
You are offered alcohol at an event or by an external party at a meal.	You may accept it as long as the offer is infrequent and the amount is reasonable.
An external party offers to pay for your expenses, including travel, to a trade show or to view a product.	Do not accept it. If it is appropriate for you to attend, Hydro Ottawa will cover your expenses and arrange for you to attend.

EXAMPLES	GUIDELINES
A holiday gift basket or gift card/certificate from an external party arrives for you, either at work or at home.	Share the gift with your colleagues within your work group, or provide the gift to Human Resources as a prize for an employee draw or at a company event.
An external party's representative calls and offers to take you and your spouse or "plus one" out to dinner that evening to discuss their newest products.	You may accept the invitation for yourself only so long as the invitation is reasonable and infrequent.
You understand that an external party is willing to provide gifts to support a Hydro Ottawa holiday party, golf tournament, etc.	You should neither solicit nor accept gifts from an external party unless the event is directly benefiting a charitable organization; written permission from your Division Chief should be obtained.
You are asked to solicit support for a local sports team or local event by using your position at Hydro Ottawa.	You should not use your position at Hydro Ottawa to influence others. Any requests for support should be discussed with your direct supervisor.
You are asked by your direct supervisor to support a cause or event that is not sanctioned by Hydro Ottawa.	Do not feel compelled to support the cause or event.
You are speaking publicly at a conference on behalf of Hydro Ottawa to an external organization or professional association.	Only accept reasonable honorariums or gifts. It may be acceptable for the organization to pay for travel and/or accommodations, provided the purpose of the event is not to solicit business from Hydro Ottawa.

OUR STANDARD OF BUSINESS CONDUCT

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EXAMPLES	GUIDELINES
You are invited to attend a golf tournament or other similar type of event.	You should discuss the invitation with your direct supervisor. If there is a good business reason, your attendance may be approved. Where possible and appropriate, Hydro Ottawa may pay for your fees.
You are attending a golf tournament on behalf of Hydro Ottawa and win the tournament or a prize for some other accomplishment.	Only accept prizes of a limited value. Otherwise, decline the prize.
You attend a golf tournament, trade show, conference, etc. during working hours and there is a raffle for prizes/cash.	Only accept prizes of a limited value. Otherwise, decline the prize.
You are offered a free fishing trip, ski trip, etc by an external party.	You are not permitted to accept such offers.
You are offered promotional items from an external party.	You may only accept promotional items with a limited value.
You will be entertaining an external party.	Only Senior Management Team and Executive Management Team members are permitted to host external clients and will be reimbursed as per company policy.
You are offered to attend free training.	You should discuss the invitation with your direct supervisor. If there is a good business reason, your attendance may be approved. If approved, Hydro Ottawa will pay for the transportation and accommodation, if any. The invitation should be declined if it is during a tendering process.



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DEALING WITH THE MEDIA

Hydro Ottawa respects the right of the public to know what we do and how we do it.

The Chief Customer Officer is responsible for Hydro Ottawa's relationship with the media (or designate). As a general rule they are the corporate spokesperson for the company.

For instance:

- ▶ Refer all media enquiries to the Chief Customer Officer and do not speak on behalf of Hydro Ottawa unless expressly authorized to do so.
- ▶ Do not discuss Hydro Ottawa matters with a member of the media "off the record" or "for background purposes" unless expressly authorized to do so by the Chief Customer Officer.
- ▶ Have external communications, such as advertising and articles for publication in journals, reviewed by the Chief Customer Officer before release.



COMPLIANCE WITH THE CODE

Hydro Ottawa is committed to holding itself to the highest standard. All employees and members of the Board of Directors are expected to uphold the standards in the Code.

**REPORTING NON-COMPLIANCE/
POTENTIAL NON-COMPLIANCE**

Hydro Ottawa expects its employees to be honest in every situation.

If you inadvertently fail to comply with the Code, report it to your direct supervisor immediately.

You must report any non-compliance immediately, and you must be willing to cooperate during any resulting investigation. Advise your direct supervisor immediately if you witness non-compliance, or suspect non-compliance has occurred.

Should the witnessed/suspected non-compliance involve your direct supervisor, you should endeavour to speak with him/her first to clarify the situation; but if you are not comfortable with that course of action, or it does not result in satisfaction, then report the situation to a higher level of management.

Individuals are encouraged to always address non-compliance internally before taking further action. Speak to your direct supervisor, your next level of management, or Human Resources.

If you feel that your attempts to address the non-compliance internally have not been responded to appropriately or you are not comfortable with such an approach, you may access the **Business Conduct Hotline**, the external reporting mechanism established by Hydro Ottawa through an independent third party provider. The third party provider will keep the identity of individuals who make a report confidential, except where prohibited by law.

Mischievous, frivolous or malicious allegations are, in themselves, breaches of the Code.

Hydro Ottawa will not tolerate any reprisal, retaliation or disciplinary action against an employee or Board member who responsibly reported, in good faith, a breach or suspected breach.

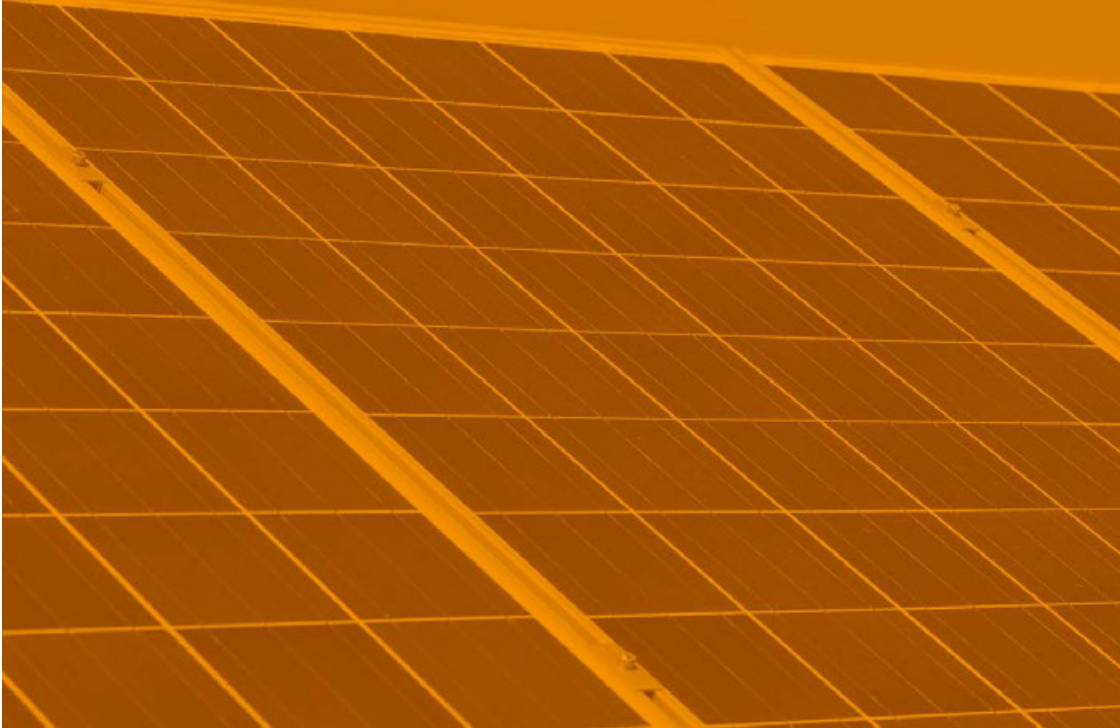
Employees who bring forward cases of suspected non-compliance will be informed at the conclusion of the investigation that the matter was looked into, whether or not a violation occurred and that appropriate action was taken, if any, however, the details of the action taken may not always be shared.

CONSEQUENCES FOR NON-COMPLIANCE

Non-compliance with the Code will be assessed on a case-by-case basis, and may lead to disciplinary action, up to and including termination of employment.

When a violation of law has occurred, or is thought to have occurred, the appropriate law-enforcement authority will be notified.

Effective January, 1, 2019, any prior Codes of Conduct, as well as any prior agreements which contradict the intent of the standards described and implied in this Code of Business Conduct, where the agreements were written or oral, expressed or implied, are terminated and cancelled, and superseded by this Code of Business Conduct. In the event that any provision or section in this Code, in part or whole, is deemed invalid or unenforceable by a court of competent jurisdiction, such invalidity or unenforceability shall attach only to the said provision or section, or part thereof, and the remainder of this Code shall be in full force and effect.







**Approved by the Board of Directors:
April 15, 2005
Revised on: None**

HYDRO OTTAWA HOLDING INC (HOHI)

Directors Conflict of Interest and Conduct Guidelines

Hydro Ottawa relies upon the high ethical standards and good judgment of its Directors to uphold the values of Hydro Ottawa Holding Inc and its subsidiary companies: Hydro Ottawa Limited, Energy Ottawa Inc. and Telecom Ottawa, to be known herein, collectively, as 'Hydro Ottawa' or 'the Company'. Conflict of interest can take several forms, not all of which are listed in this document. These guidelines are intended to provide support for Directors in regards to a conflict of interest and provide direction regarding conduct as related to corporate values and ethical standards. The Board of Directors of Hydro Ottawa Holding Inc. and all of its subsidiaries hereby adopts the following Directors Conflict of Interest and Conduct Guidelines. These guidelines apply in conjunction with the Hydro Ottawa Code of Conduct. The Board's Governance and Management Resources Committee is to oversee the review and revision of these Guidelines, and the Code of Conduct.

Principles

All Directors shall act in accordance with the provisions of the Ontario Business Corporations Act, the Shareholder's Declaration and common law. They shall:

- a) demonstrate an understanding of their specific roles and act upon them,
- b) serve, and be observed to be acting honestly and in good faith,
- c) demonstrate loyalty to the Company and act only to enhance its reputation,
- d) demonstrate an interest in and a commitment to the goals of the Company,
- e) respect and preserve the confidentiality of corporate information, and
- f) uphold the spirit and letter of all applicable federal and provincial statutes and regulations, the Code of Conduct and the policies of the Company.

Provisions Governing Director's Conduct:

- a) The Business Corporations Act - Section 132
- b) Shareholder's Declaration - Section 3.7
- c) Hydro Ottawa by-law - Section 3.11

Confidentiality

1. Directors shall maintain the confidentiality of information related to the Company or which comes to them through their professional duties with the Company, unless required to disclose by law.

2. Directors shall act at all times to uphold the standards of confidentiality set for all employees and Directors of the Company. This includes reporting any employee or Director known to be



**Approved by the Board of Directors:
April 15, 2005
Revised on: None**

sharing information regarding Company affairs outside of that which is made available to the public or demanded by law, and alerting management to potential sources of inappropriate corporate disclosure.

3. Board members shall not disclose any business discussed within their capacity as a Director, nor shall they offer personal opinion to the media or to the shareholder of Hydro Ottawa regarding its business dealings or personnel, outside of that approved by the Chairman of the Board of Directors.

Business and Personal Conduct

All Directors shall demonstrate an appreciation of the fiduciary duties of a Director by acting in good faith, and demonstrating the highest standards of business conduct. They shall enhance the reputation of Hydro Ottawa through their timeliness, accuracy of their input and openness in the appropriate sharing of their knowledge and skills. Directors shall devote sufficient time to their duties. Directors shall treat each other, Hydro Ottawa staff and shareholders with respect and courtesy.

To ensure accuracy of information and safeguard corporate interests all dealings with the media should be through designated Company spokespersons. Directors designated as spokespersons shall work with the Director, Shareholder and Investor Relations to finalize message content.

Conflicts of Interest

Conflict of Interest

A broad definition of 'conflict of interest' is any action or condition that compromises the objectivity of decision-making in relation to the Company. A conflict of interest can occur when a Director's personal, professional or business interest is adverse to, or appears to be adverse to the best interests of the Company. A conflict can occur where there is an opportunity to further the Director's private interests, or those of a member of his or her family, through the Director's relationship with Hydro Ottawa. Any situation that involves, or may involve, a conflict of interest with Hydro Ottawa should be promptly disclosed to the Governance Committee and dealt with in the manner described below.

The perception of wrongdoing can be as damaging as an actual transgression. Therefore, Directors shall take all possible steps to ensure the public cannot be given the impression of any benefit ascribing to a Director or a member of his or her family through the Director's association with Hydro Ottawa regardless of any real or anticipated benefit to the Company.

Although it would not be possible to describe every situation in which a conflict of interest may arise, the Board of Directors have adopted the following guidelines for dealing with specific situations:



**Approved by the Board of Directors:
April 15, 2005
Revised on: None**

1. Except for approved expenses for Board or Board related activities, no amounts are to be paid to Directors beyond the amount stipulated by the Shareholder Declaration as fair compensation for the role of Director. Expenses for Board or Board related activities shall be subject to the same guidelines as apply to management.
2. Directors and their spouses shall not be involved in either the actual performance of services or direct supervision of performance of services or the manufacture of goods, of anyone else under contract to Hydro Ottawa while they are serving as a Director of Hydro Ottawa.
3. Where a Director is involved with a charity that receives money from Hydro Ottawa they shall excuse themselves from any vote or presentation that could result in a benefit to the charity.
4. Directors shall not use Hydro Ottawa corporate assets, resources or information except in connection with Company business.

Reporting of Interests by Directors

1. Directors, and nominees for the position of Director, must declare to the Hydro Ottawa Board of Directors:
 - a. if they are receiving compensation from any contract or transaction with Hydro Ottawa outside of their relationship as a Director (for example as an investor in a company supplying a service to Hydro Ottawa);
 - b. if they could receive compensation in the future from any contract or transaction with Hydro Ottawa outside of their relationship as a Director. (This includes any organizations that are potential targets for acquisition or organizations that are potential acquirers of one of the Hydro Ottawa subsidiaries, or any portion thereof);
 - c. the nature and extent of any financial interest they hold, or that they are aware is held by a family member, in any party that is known to have applied to, or is entering into, or is currently in a business relationship with Hydro Ottawa; and
 - d. all other boards and advisory councils they serve upon.
2. This information shall be restated by all Directors annually and updated as they become aware of new business relationships.
3. Directors must keep the Board informed of any corporate or charitable/non-profit Directorships they accept during their tenure with Hydro Ottawa as they occur.
4. It is the responsibility of each Director to declare a conflict of interest or the potential for the perception of a conflict of interest as soon as they are aware of it.



**Approved by the Board of Directors:
April 15, 2005
Revised on: None**

Governance and Management Resources Committee

1. In the event of any inconsistency between the provisions of these Guidelines and the Code of Conduct, these Guidelines shall prevail.
2. Any matter that could be perceived as a conflict of interest will be considered by the Governance and Management Resources Committee who will review the situation and recommend an appropriate course of action.
3. The Governance and Management Resources Committee may determine that a conflict of interest exists based on more stringent standards than the preceding guidelines where the Governance and Management Resources Committee considers it to be appropriate.
4. The Governance and Management Resources Committee will report to the Board of Directors in regards to the facts they were presented with and their recommendations. The contract or transaction must then be considered and the Governance and Management Resources Committee's recommendations approved by the Board of Directors. The interested Director, after providing the Board of Directors and/or Governance and Management Resources Committee with any required information, shall remove himself or herself from the room when the matter is discussed and voted upon.

Compliance

Signature of this document shall indicate a willingness to abide by its contents.

Signature

Name (in print)

Date



1 **Approved by the Board of Directors on:**
 April 13, 2006
Basis of Reporting Approved by Shareholder on:
 June 29, 2006

HYDRO OTTAWA HOLDING INC
(HOHI)

Related Party Transaction Disclosure
Policy and Process

Process

1. Directors and their spouses are not to be involved in the performance or supervision of the performance of any work undertaken for Hydro Ottawa or its subsidiaries. The *Directors Conflict of Interest and Conduct Guidelines* require that directors declare to the Board of Directors if they receive any compensation or could receive any compensation in the future from any contract or transaction with Hydro. The required disclosure also relates to any transactions involving family members as well as any interest that they or a family member holds in an entity involved in a business relationship with Hydro Ottawa and its subsidiaries. Any matter that could be contrary to the Guidelines is to be reported by the director and is addressed to the Governance and Management Resources Committee for consideration. A report of the recommendation made by the Governance and Management Resources Committee is required to be provided to the Board of Directors for consideration and approval;
2. At each meeting of the Board of Directors and each of its committees an agenda item shall be included that requires that Board members make declarations of interest. At this time directors shall be asked to disclose any transactions in which they could have an interest but also to disclose any entities in which they have come to have a financial interest that could be involved in transactions with HOHI or its subsidiary companies;
3. On a semi-annual basis, directors and officers shall be asked to provide to the General Counsel a list of all entities in which they, their spouse or dependant children have an interest either by virtue of the director's employment with the entity or by virtue of being a director, officer or shareholder in such entity. This list shall be provided to the external auditor as part of the annual audit of the company and its subsidiaries. The list of entities created by the disclosure made by directors (including subsequent disclosures made at meetings of the Board of Directors and its committees) shall be placed in the company's enterprise business system and provided to the procurement section of the organization. Any proposed contract with or payment to one of the listed entities shall be reported to the General Counsel and to the Chief Financial Officer to determine compliance with the company's *Code of Conduct* or the *Directors Conflict of Interest and Conduct Guidelines* prior to the transaction being completed or the payment being made. Any transactions or proposed transactions that could infringe these requirements shall be reported to the Governance and Management Resources Committee for consideration.



2 **Approved by the Board of Directors on:**
 April 13, 2006
Basis of Reporting Approved by Shareholder on:
 June 29, 2006

No identified transaction is approved and no payment made unless the General Counsel represents that the *Code of Business Conduct* and the *Directors Conflict of Interest and Conduct Guidelines* do not apply to the transaction or, in the event of any uncertainty, that the Board of Directors has approved the transaction based on a determination that the transaction complies with the requirements;

4. Material related party transactions involving directors, as defined pursuant to Generally Accepted Accounting Principles (GAAP) shall be reported annually to the Audit Committee and to the Board of Directors as part of the presentation of annual financial statements. Notice of the existence of any material related party transactions would also appear as a note in the consolidated financial statements for the company that are presented to the shareholder as represented by the Council of the City of Ottawa.

Policy: Disclosure to the Shareholder

Hydro Ottawa Holding Inc. will disclose annually to the shareholder, through the City Manager, notice of the following related party transactions involving directors of Hydro Ottawa Holding Inc. and of its subsidiary companies. The notice shall include certification by the company of compliance with the restrictions contained in the Shareholder Declaration relating to restrictions on payments to directors, their family members and entities in which directors have a substantive ownership interest:

- (1) Contracts and other transactions in which a director was involved in the delivery of services or the supervision of the delivery of goods or services for Hydro Ottawa Holding Inc. or a subsidiary company outside of the individual's role as a director of Hydro Ottawa Holding Inc. or of a subsidiary;
- (2) Contracts or other transactions with an entity for which a director was a director, officer, shareholder (holding a substantive ownership interest) or otherwise holds a substantive ownership interest in the entity;
- (3) Contracts and other transactions in which the spouse or dependent child of a director was involved in the delivery of goods or services or the supervision of the delivery of goods and services for Hydro Ottawa Holding Inc. or a subsidiary; and
- (4) Contracts and other transactions with an entity for which a director's spouse or dependent child was a director, officer or shareholder (the latter, holding a substantive ownership interest).

The disclosure provided to the City of Ottawa will not include the following contracts and transactions:

- (a) Contracts or transactions that arise because Hydro Ottawa Holding Inc. or its subsidiary provides goods or services in like manner and subject to like conditions applicable to other customers. Examples of such contracts and transactions include electricity distribution goods and services, electricity connection service,



3 **Approved by the Board of Directors on:**
 April 13, 2006
Basis of Reporting Approved by Shareholder on:
 June 29, 2006

- energy audits, energy conservation and demand management consulting services, and broadband telecommunications services;
- (b) Transactions with a charitable or not-for-profit entity where the director, the director's spouse or the director's spouse or dependent child is a director or officer of the entity provided that the director, the director's spouse or dependent child receives no remuneration for being a director or officer of the entity; and
 - (c) Membership dues incurred in the course of business paid by Hydro Ottawa Holding Inc. or its subsidiary for membership in an entity on which a director or officer is a member of the board of directors of the entity

ANNEX "B"

The Business Conduct Hotline allows all Employees and Board Members to express concerns regarding perceived non-compliance with our Code of Business Conduct in a secure and confidential manner.

The Business Conduct Hotline is operated by an external independent third party provider. All reports to the Hotline are taken seriously and will be investigated if they are deemed to have merit.

You can express concerns by telephone, online and by regular mail.

Phone

1-866-505-5037

Live operator or voice mail

Online

clearviewconnects.com

Mail

**P.O. Box 11017
Toronto, Ontario
M1E 1N0**

The Hotline is not meant to replace common sense practices; such as speaking to colleagues, your immediate supervisor or Human Resources about concerns. The Hotline is meant to allow Employees and Board Members to anonymously report concerns when internal channels are not an option.

What is the Business Conduct Hotline?

Hydro Ottawa¹ is committed to fostering an open environment that ensures ethical business conduct at all levels and reflects our shared values of teamwork, integrity, excellence and service. Every employee must lead by example in this endeavor.

For this reason, we have established our Business Conduct Hotline, a third party service that allows Employees and Board Members to anonymously report any concerns they might have related to perceived improper activities in the workplace and/or non-compliance with our Code of Business Conduct.

Why Have a Hotline?

A Hotline provides a supplement to the internal reporting process.

Who Operates the Hotline?

The Hotline is operated by Clearview Strategic Partners, an external and independent third party with extensive experience providing similar services to leading companies in Canada.

Who Can Use the Hotline?

All employees and members of the Board can use the Hotline to express a concern.

Is It Anonymous?

There is no requirement for those using the Hotline to identify themselves in any way, and no attempt will be made to identify anyone accessing the Hotline.

How Do I Use the Hotline?

You can contact the Hotline and express a concern by telephone, with the option of either speaking to a live operator or leaving a voicemail. You can also submit your concern securely online or in writing by mail.

¹The reference to Hydro Ottawa and/or company should be read as referring to Hydro Ottawa Holding Inc., and all of its subsidiaries and/or affiliates.

BUSINESS CONDUCT HOTLINE



What Kinds of Concerns Can I Report on the Hotline?

You can report on all matters relating to the business conduct of Hydro Ottawa, including:

- ▶ Safety
- ▶ Financial Accountability
- ▶ Business Reporting and Records
- ▶ Use of Technology and Social Media
- ▶ Audits and Investigations
- ▶ Respect for Individuals
- ▶ Off Duty Conduct
- ▶ Conflict of Interest
- ▶ Accepting/Giving Gifts and Entertainment
- ▶ Dealing with the Media

When Should I Use the Hotline?

Everyone is encouraged to report instances of perceived impropriety and/or non-compliance internally, by speaking with your immediate supervisor or higher levels of management. You may also speak to Human Resources. However, if you feel your attempts to address your concern through internal channels are not being responded to appropriately, or you are not comfortable with that approach, use the Hotline.

What Happens When I Make a Report?

Your confidential report on the Clearview system automatically triggers an email to one of two individuals: Hydro Ottawa's Director, Internal Audit, Risk and Advisory Services for matters involving all employees; or the Chair of the Audit Committee for matters involving the President and CEO or members of the Board.

Matters Involving Those At or Below the Manager Level

These confidential reports are forwarded by the Director, Internal Audit, Risk and Advisory Services to the Chief Human Resources Officer. Together the Director, Internal Audit, Risk and Advisory Services and the Chief Human Resources Officer determine if an investigation is required, direct the investigation and decide upon action to be taken.

Matters Involving Those Above the Manager Level

These confidential reports are forwarded by the Director, Internal Audit, Risk and Advisory Services to the President and CEO. The President and CEO determines if an investigation is required, directs the investigation and decides upon action to be taken, in consultation with the Director, Internal Audit, Risk and Advisory Services and the Chief Human Resources Officer.

Matters Involving the President and CEO or Board Members

These confidential reports are forwarded by Clearview to the Chair of the Audit Committee. The Audit Committee Chair reviews the report and recommends to the Chair of the Board whether or not an investigation should take place. The Audit Committee Chair recommends to the Board Chair what actions should be taken based on the results of the investigation.

Matters Involving the Audit Committee Chair

The Board Chair oversees all aspects of confidential reports involving the Audit Committee Chair.

If it is determined that a report warrants further investigation, the following applies:

Who Investigates Reports?

If a report is deemed worthy of investigation, an investigator will be appointed; this could be an internal or external investigator.

What Happens If It Becomes Known That I Made a Report?

There will be no reprisal, retaliation or disciplinary action taken against any employee or Board Member who responsibly reports in good faith.

Can I Find Out What Happens to My Report?

Yes, but only if your report is submitted online or to a live operator. You will be assigned a reference number that you can use when following up. With the reference number you can contact Clearview by telephone or online and find out the status of your report.

What If I Am Falsely Accused?

Mischievous, frivolous and malicious allegations made via the Hotline or any other means are in themselves considered breaches of our Code of Business Conduct. As outlined above, there is a systematic process for reviewing the merit of all reports, and for dealing with each report individually and thoroughly.

Will There Be Oversight of the Process?

Yes, the Audit Committee and the Board receive an annual report summarizing all matters raised through the Hotline and the action taken in response.

Effective January 1, 2019

COMPLIANCE PROGRAM

1. INTRODUCTION

As the electricity industry continues to grow and diversify, the volume and scope of compliance and reporting requirements continues to evolve. The compliance divisions of both the OEB and the Independent Electricity System Operator ("IESO") have identified the need for regulated entities and market participants to establish proactive internal compliance programs. In response to this need, in step with the Public Policy Responsiveness performance outcome under the Renewed Regulatory Framework ("RRF"), and in recognition of the organizational efficiencies and customer benefits that would be generated by a well-organized and strategically-deployed compliance program, Hydro Ottawa embarked upon the development and implementation of a comprehensive internal Regulatory Compliance Program ("Program"). This initiative focused on designing a Program that would be effective to manage, informative to the business, and adaptive and resilient to ongoing changes within the business and regulatory environments. A fundamental change was also introduced with respect to how compliance obligations would be managed internally in the future. The former Regulatory Affairs-driven model would be shifted to a company-wide model, wherein compliance monitoring and management would be embedded in day-to-day operations and performance outcomes.

Hydro Ottawa established the following objectives to guide this initiative:

- A fully-integrated, automated, and efficient compliance management platform;
- Clarity in the roles and responsibilities of stakeholders;
- Transparent, understandable, documentable, consistent, and resilient compliance management program and processes;
- Clear links between compliance requirements and associated business processes;
- Proactive, efficient, targeted, and insightful compliance monitoring, assessments, and reports;
- Responsive, adaptive, and effective compliance program;
- Early detection and resolution of compliance risks; and

- A visibly strong compliance culture at all levels of the organization.

In late 2016, Hydro Ottawa's Program began with the identification of the current state of compliance within the organization. Complementary to this process was the establishment of a catalogue of all existing OEB and annual IESO compliance requirements that could be accessed by internal stakeholders.

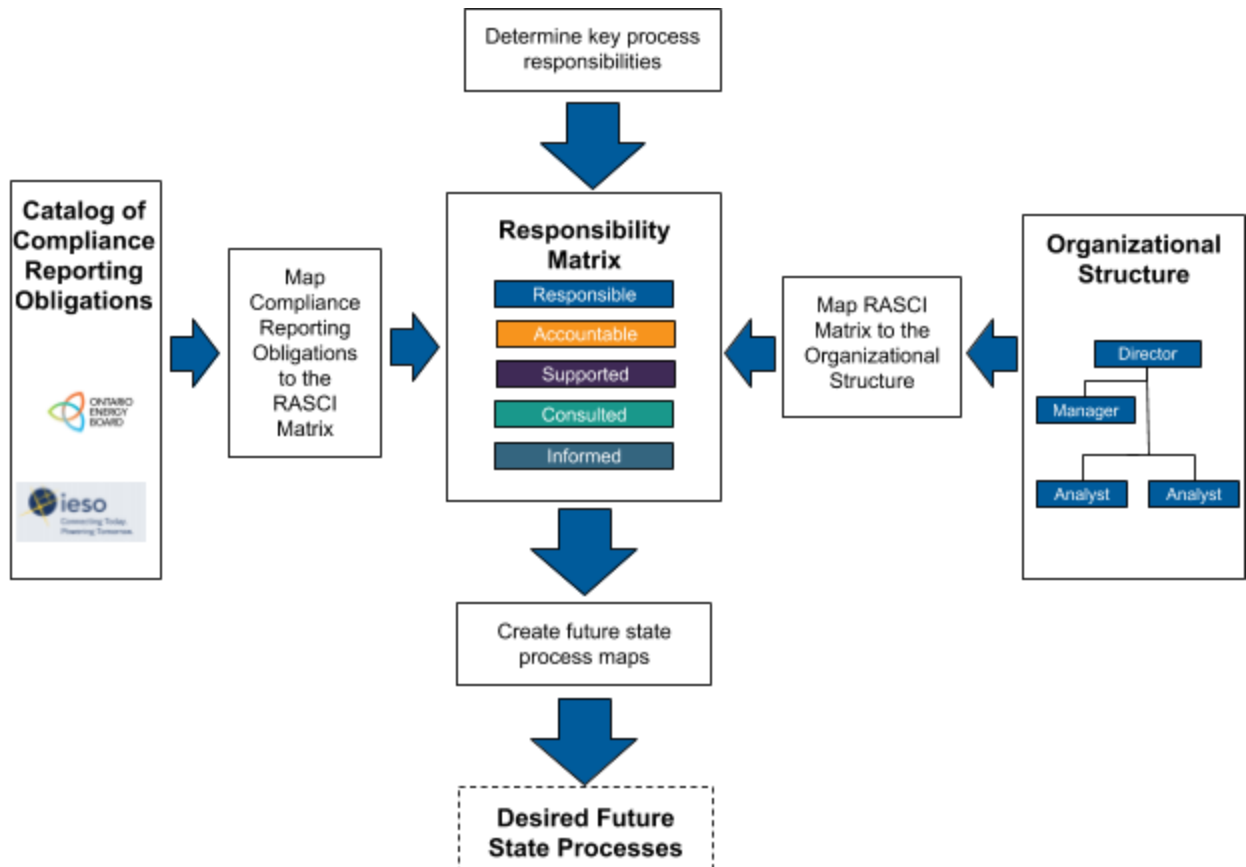
After a fulsome assessment of Hydro Ottawa's then-current compliance practices, the development of the Program began in collaboration with an external consultant. The consultant engaged with internal stakeholders to assess business practices and outcomes, identify gaps, and make recommendations. Within the six-month time frame allotted for the initial assessment, best practices were identified and incorporated into test compliance scenarios cross-functionally as a pilot. This phase of the Program enabled stakeholders to identify further potential opportunities for improvement and, in turn, envision the operational benefits of a well-documented and monitored Program.

2. PROGRAM DETAILS

An inventory was taken of existing OEB and annual IESO compliance requirements, accountabilities for the various compliance requirements were assigned, and the compliance status of each requirement was assessed. Internal stakeholder feedback sessions were also held to discuss Program requirements and obtain feedback on the effectiveness of the proposed process and supporting tools. The insights gained from this exercise informed the Program's design. Additionally, ongoing engagement with internal stakeholders identified potential challenges or barriers to success early on in the process and resulted in more effective outcomes and stakeholder support of the Program objectives and framework.

Figure 1 illustrates the Program design elements:

Figure 1 – Compliance Program Elements



With the draft Program approach in place, a cross-functional pilot was undertaken to test the Program framework across various functions. Utilizing the catalogue of requirements previously developed, internal stakeholders selected a compliance requirement to test. One-on-one meetings were held with individual business units to review the specific regulatory compliance requirements and Hydro Ottawa's proposed approach for managing compliance within the utility. Detailed analysis of data sourcing, documentation, record keeping practices, and employee roles enabled Hydro Ottawa to refine the Program, while at the same time effectively balancing stakeholder and regulatory compliance needs. For example, a key element of the Program that was introduced was the adoption of a Responsible, Accountable, Supporting, Consulted, and Informed matrix ("RASCI matrix") to identify compliance management roles. In consultation with internal stakeholders, each compliance requirement under review established a RASCI matrix,

confirming the positions that were Responsible, Accountable, Supporting, Consulted, and Informed. This approach provided clarity and transparency as to operational compliance roles and requirements, while mitigating the risk of oversights when organizational or business needs changed. A description of the responsibilities within the RASCI matrix is provided in Figure 2 below.

Figure 2 – Compliance Program Best Practices RASCI Matrix

Responsible	Defines who is responsible for completing the process
Accountable	Defines who makes the final decision and has ultimate ownership
Supporting	Defines who will provide help to the responsible members
Consulted	Defines who is not directly involved, but who must be consulted before a decision or action is taken
Informed	Defines those who receive output from the task or who need to be aware that a decision or action has been taken

3. NEXT STEPS

With the Program framework in place, Hydro Ottawa will be focusing on fully implementing and operationalizing the Program across all business functions. A key factor towards achieving an effective and efficient Program is the utilization of appropriate software. As part of Hydro Ottawa's Information Management/Information Technology strategy, Regulatory Affairs plans to examine the feasibility of utilizing new, in-house collaboration platforms as a first and preferred step. Automation of the Program will improve efficiencies and outcomes in the short and longer

1 term. It is expected that fully automating the Program will ensure the objectives underpinning
2 this initiative will be optimized. The introduction of automated compliance tools and the
3 integration of employee education and support materials are examples of enhancements to the
4 Program which Hydro Ottawa intends to pursue during the 2021-2025 rate period.

6 **4. CONCLUSION**

7 Hydro Ottawa is committed to the continued evolution and success of the Program and to
8 ensuring that business practices continue to align with regulatory compliance obligations in a
9 timely, efficient, and effective manner. Guiding this effort are the principles of consistency,
10 continuous improvement, transparency, and the promotion of a strong compliance culture.