

Recommissioning and Retro-commissioning Standard Scope of Work

Re-/retro-commissioning (RCx/ReCx) aims to systematically evaluate and optimize the performance of existing building systems so they operate together as intended. RCx/ReCx is focused on identifying and correcting operational deficiencies, control and sequencing issues and maintenance gaps. The ultimate objectives being to reduce energy use, peak demand and GHG emissions, to improve occupant comfort, and to improve system reliability.

To be eligible for funding under Hydro Ottawa's Ottawa Retrofit Accelerator (ORA) Program, recommissioning (RCx) or retro-commissioning (ReCx) activities must address the following scope items (or include a rationale for exclusion when relevant). Hydro Ottawa reserves the right to accept or deny recommissioning studies based on our determination of whether scope items have been met.

Facility Eligibility

- Building use types must be a commercial, institutional or multi-unit residential building (over 4 stories or 600 m² horizontal footprint). Federally owned buildings are not eligible for this program.
- Buildings must be located in Hydro Ottawa's service territory.
- Minimum building floorspace area of 20,000 ft².
- Minimum 12 consecutive months of building utility consumption data (e.g. electricity, natural gas, district energy, net metering).
- Functional Building Automation System (BAS)/Direct Digital Controls (DDC) strongly preferred. Should a BAS/DDC not be present, strong rationale for acceptance must be provided.

Eligible Costs

- Soft costs associated with
 - Consulting services to deliver all three phases of recommissioning or retro-commissioning
 - Developing reports and supporting documentation associated with accessing funding for the Ottawa Retrofit Accelerator program
 - Training and orientation of building operations staff
 - Calibrating equipment and building automation systems
- Purchase of software to integrate or improve performance of building automation systems

Ineligible Costs

- Purchase or replacement of equipment
- Monitoring and evaluation activities, beyond the 1-month minimum requirement for the program
- Cost associated strictly with complying with other funding programs
- Only approved vendors may bill the Ottawa Retrofit Accelerator

Application Requirements

- **Initial approval:** Prior to Investigation Stage

- Confirmation of facility eligibility
- Scope of work and estimated total project budget
 - Costs and activities at the Investigation stage.
 - Forecasted activities and estimated costs for Implementation and Persistence stage.
- Confirmation of the recognized RCx/ReCx standard(s) will form the foundation of the project activities.
- Confirmation that the methodology to estimate greenhouse gas emissions (GHGs), electricity and fossil fuel-based utilities will be in line with the Science Based Target Initiative (SBTI) Scope 1 and Scope 2 emissions.
- Signed agreement between the RCx/ReCx Provider and the building Owner or Operator
- Building owner authorization.
- Summary of any/all confirmed and anticipated funding sources (not to exceed 100% of project costs)
- NOTE: The results of an ASHRAE L2 audit or Carbon Pathway Study completed within 5-years may be used to inform this stage.
- **Stage-gate approval: Following completion of Investigation stage and before moving on to Implementation and Persistence**
 - Investigation Report compliant with program requirements (see below).
 - RCx/ReCx Provider's scope of work and budget for Implementation and Persistence stage. (An early forecast of these activities and costs will have been submitted during the initial application. Identify whether/how those costs have changed since then.)
 - Confirmation of the Owner's acceptance of RCx/ReCx Vendor's proposal for Implementation and Persistence.
 - Based on the results of the investigation stage, Hydro Ottawa may approve, deny or adjust funding for the Implementation and Persistence stage.

Program Objectives

The objective of this program is to support re-commissioning or retro-commissioning projects that will provide good value to building owners, focus on results, generate real, persistent savings and improvements, and be rigorous.

Application

- Engage an ORA qualified RCx/ReCx provider to deliver the project.
- Identify eligible target buildings with potential for GHG-emissions reductions, utility savings and cost savings.
- Submit an acceptable funding application to Hydro Ottawa.

Investigation

- Undertake an ORA-compliant RCx/ReCx investigation to evaluate the operation of the major building systems and identify no/low-cost opportunities to improve their performance, saving energy, operating costs and/or emissions.

- Submit an acceptable Investigation Report to Hydro Ottawa, identifying the investigations that were completed and the opportunities that were identified, as well as a plan for Implementation and Persistence.

Implementation and Persistence

- Implement improvements to address opportunities identified during the Investigation.
- Take steps to ensure that those improvements will persist over time.
- Confirm the impact of the implemented improvements, using one month of data.
- Submit an acceptable Implementation and Persistence Report to Hydro Ottawa.

Eligible Activities and Documentation Requirements

<h2>Investigation</h2>	
<p>Required Activities:</p> <p>NOTE: The results of a recently completed ASHRAE L2 audit or Carbon Pathway Study can be used to inform this stage.</p> <ul style="list-style-type: none"> • Benchmark the energy use and GHG emissions of the facility, using at least 12 months of data, entered in ENERGY STAR Portfolio Manager (ESPM). • Identify the Owner’s objectives and operational requirements. • Plan the investigation, define the scope. • Conduct a thorough investigation to identify opportunities to improve performance, to reduce energy use and GHG emissions, and/or to improve comfort, indoor air quality and system reliability. Activities are expected to include, as appropriate: <ul style="list-style-type: none"> ○ Visit site, observe and evaluate the condition of systems and equipment ○ Interview operations staff ○ Review existing documentation ○ Review operations and trends on the automation system ○ Conduct functional tests and/or point-to-point verification ○ Check sensor calibration • Identify potential next steps and actions to address the identified opportunities. • Estimate the cost of those actions, where appropriate. • Identify any incentives that could help offset those costs, where appropriate. • Estimate the energy savings and GHG emissions reduction potential from the identified opportunities. 	<p>Optional, Eligible Activities:</p> <ul style="list-style-type: none"> • A pre-screening analysis on a set of buildings (portfolio) to help target those that offer the greatest GHG emissions, utility savings, and cost-reduction potential. • Water System Optimization

Investigation

- Review the identified opportunities with the Owner and operations team and agree on which will be implemented.
- Identify appropriate activities to ensure the persistence of implemented actions over time.
- Develop an Investigation Report, complying with the requirements below.
- Develop a proposal for Implementation and Persistence activities.

Required Documentation:

- A report outlining
 - The baseline building performance.
 - Summary of The activities undertaken as part of the investigation.
 - The opportunities identified and activities required to achieve them.
 - Anticipated reduction in GHGs and utility consumption (electricity, fuel based energy, water). An estimate of utility savings in kWh, m3, L, tonnes GHG or other as appropriate. Identify and describe which emissions are included in the scope of this study, using Science Based Target Initiative (SBTI) scope definitions. Must include Scope 1 and Scope 2 emissions.
 - Other benefits that may accrue from the identified opportunities (comfort, air quality, etc).
 - The required investment (in Canadian dollars) to generate these savings.
 - An expression of the financial return on that investment, such as simple payback (in years).
- Updated budget for the Implementation and Persistence stage, including listing all other funding sources targeted with no more than 100% of costs covered.
- Program documentation requirements:
 - Complete Data Collection Tracking Sheet provided by Hydro Ottawa (potential opportunities)
 - Enter all applicable data into ENERGY STAR Portfolio Manager (ESPM), including ESPM property identification number, audit type, date of audit, building type, postal code, floorspace (m2), number of low income units (if applicable), potential energy savings (PJ), and potential GHG savings.

Implementation and Persistence

<p><i>Required Activities</i> (Must include or must seek and receive an exception from Hydro Ottawa)</p>	<p>Optional, Eligible Activities:</p>
<ul style="list-style-type: none"> ● Take appropriate actions to achieve the benefits of opportunities identified in the Investigation. All no/low-cost opportunities are expected to be implemented. If some opportunities are deemed unfeasible or impractical, explain why. Appropriate activities will vary, depending on the building, equipment, systems and opportunities, but will typically include some combination of the following: <ul style="list-style-type: none"> ○ Repairing non-functional devices, such as valves, linkages or dampers ○ Adjusting setpoints and schedules ○ Adjusting controls sequences or BAS programming ○ Recalibrating sensors ○ Rebalancing air or hydronic systems ○ Further investigations needed to fully diagnose complex issues, if/where needed ○ Other operational or occupant behaviour changes ● Take (or make arrangements to take) appropriate actions to ensure the persistence of the implemented measures. Appropriate persistence activities will vary, depending on the opportunities, but will typically include some combination of the following: <ul style="list-style-type: none"> ○ Training or coaching for operations staff ○ Establishing new standard operating procedures ○ Documenting new setpoints, schedules or sequences (updating Systems Manuals, etc) ○ Setting operational or performance targets and/or establishing regular reporting ○ Ongoing monitoring or periodic checks ○ Occupant awareness programs ● Use one month’s data – from utility bills, submeters, the BAS and/or manual recordings – to measure the impact and results of implemented measures. 	<ul style="list-style-type: none"> ● Water System Optimization ● Occupant behavioral measures
<p>Required Documentation</p> <ul style="list-style-type: none"> ● Implementation and Persistence report, including: <ul style="list-style-type: none"> ○ Summary of implemented measures (update to potential opportunities table) ○ Summary of measured results and impact of implemented measures. 	<p>Optional, Eligible Documentation:</p> <ul style="list-style-type: none"> ● Copies of updated documents, such as Systems

Implementation and Persistence

<ul style="list-style-type: none"> ○ Summary of recommended Persistence measures, including the status of each ● Confirmation that applicable data has been updated in ESPM. ● Confirmation of the Owner’s intention to continue implementing recommended Persistence measures. ● Data collection tracking sheet provided by Hydro Ottawa (measured data) 	<p>Manual or Sequences of Operation.</p> <ul style="list-style-type: none"> ● Documentation related to training delivered
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Accepted standards

- ASHRAE Standard 230-2022, Commissioning Process for Existing Buildings and Systems.
- LEED® Building Operations & Maintenance (O+M)
- NEBB Procedural Standards for Building Systems Commissioning
- Other standards may be accepted on request