

Carbon Pathway Study Standard Scope of Work

To be eligible for funding under Hydro Ottawa's Ottawa Retrofit Accelerator (ORA) Program, carbon pathway studies must address (or dismiss with justification to the satisfaction of Hydro Ottawa) all of the following scope items. Scope items above and beyond this list may be included, but will not be funded by the ORA program, and are solely the responsibility of the end customer. Hydro Ottawa reserves the right to review and accept or deny carbon pathway studies based on our determination of whether scope items have been met.

General Requirements

- Meet all requirements (or provide justification for exclusion) of an ASHRAE Level II Energy Audit
- Identify and describe which emissions are included in the scope of this study, using Science Based Target Initiative (SBTI) scope definitions. Must at minimum include Scope 1 and Scope 2 emissions, and should consider and include Scope 3 where possible/appropriate, or justify any exclusions. Where emissions or specific loads are outside of the owner's control (e.g. restaurant cooking) and must be excluded, this should be clearly stated and justified.
- Identify any items of this scope of work that are not relevant for the target building, and provide justification for exclusion.

Review and Analysis

- Review and normalize utility data and other relevant inputs to provide both an energy use breakdown and GHG emissions breakdown, including total annual energy usage and GHG emissions. This should also identify a baseline year to benchmark future progress, taking into account anomalies in building operations (e.g. COVID 19 impacts, etc.).
- Enter all applicable data into EnergyStar Portfolio Manager (ESPM) and include results, 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.
- Review existing capital plans, reserve fund studies and/or equipment lists to identify planned, or likely replacement timelines.
- Review existing electrical infrastructure, including service capacity. Consult with Local Distribution Company if necessary.
- Evaluate the onsite potential for distributed energy resources (DERs) such as renewable generation, storage, etc. to support decarbonization, cost effectiveness, or other energy management goals. Where DERs are not feasible, this should be stated.
- Complete, as required, any necessary modeling to determine cost, energy impacts, and emissions impacts of suggested measures, as outlined in this scope of work. Note - this does not refer to detailed, calibrated modeling for design purposes, which is beyond this scope of work.

Pathways to decarbonization

- Provide one or multiple pathway(s) to the efficient and economical avoidance, removal, or as a last result offset, of **all** in scope GHG emissions, including the removal of **all** non-renewable fossil fuel combustion on-site and in district energy supply. Where residual combustion is required for backup, this should be

- quantified and limited as much as possible. “Hard to eliminate” loads (e.g. process loads, restaurant cooking, etc.) should be identified and quantified.
- The pathway(s) should include a list of Carbon Reduction Measures (CRMs) and Energy Reduction Measures (ECMs) that:
 - Identify emissions reductions and energy savings;
 - Identify capital cost estimates and operating cost estimates, taking into account rising carbon pricing that is not less than the Federal Government’s projected carbon pricing;
 - Compare suggested measures (and associated savings and costs) to like-for-like replacement, or lowest-cost replacement, as applicable;
 - Evaluate the replacement of inefficient systems such as electric-resistant heating in favour of technologies such as heat pumps.
 - The pathway(s) should recommend near term (1-3 years), medium term (3-7 years) and long term (7+ years) actions, aligned with existing Carbon Reduction Targets of the customer (eg. Net-Zero pledges) and/or existing capital plans and end-of-life equipment replacement. Sufficient information should be provided to support updating capital plans or reserve fund studies as appropriate.

Other Requirements

- Identify relevant funding/financing programs to support implementation of recommended actions. This should look at both measure specific support, and overall support.
- Identify any relevant certification programs (such as BOMA BEST, CaGBC Zero Carbon Building Standards, etc.) for consideration.