

Continuous Optimization Program

Recommission your building—service provider scope of work

FROM THE C.OP “RECOMMISSION YOUR BUILDING” AGREEMENT:

5. Service Provider Scope of Work

This Scope of Work sets forth the professional services and technical assistance the Service Provider will supply for the Program.

- 5.1** If the Applicant has entered into a prior Program Services Funding for Commercial Buildings Agreement with BC Hydro (the “Previous Agreement”), any historical continuous optimization project documentation from activities undertaken under the Previous Agreement will be used to guide activities under this Agreement. The Applicant acknowledges and agrees that ascertaining the condition of and re-establishing the successful operation of installed measures under the Previous Agreement (the “Previous Measures”) from the C.Op project is an important aspect of matters undertaken under this Agreement. The Applicant will report to BC Hydro on all C.Op Previous Measures in its reporting under this Agreement. If Previous Measures are no longer operational, the cost of re-establishing the Previous Measures may be included as part of the Bundle of Measures contemplated under this Agreement.

5.2 Investigation Phase

The Service Provider will conduct a rigorous and comprehensive on-site investigation and analysis of the building operations, seeking to identify deficiencies and potential optimization in the operation of the building energy consuming systems and related controls. Although the identification of major retrofits is encouraged, the goal of the Program is to optimize existing equipment with minimal repairs and upgrades. If applicable, review of previously installed measures would be conducted during this phase.

The tasks include, without limitation:

- a.** arrange a kick-off meeting with the Applicant and appropriate facility staff to discuss any facility access and security issues, and to communicate the approach for the investigation process, including data acquisition. Coordinate the meeting with BC Hydro and/or FortisBC’s Program Representative.
- b.** gather information to define the Facility’s Owner’s Operating Requirements (OOR), including operational schedules, implementation limitations, etc. Gather operational and maintenance information. Gather facility documentation (plans, equipment schedules, schematic flow diagrams, specifications, equipment lists etc.) to help understand the original design intent and its relevancy to the Applicant’s current operating requirements.
- c.** investigate, and analyze the general types of systems:
 - i** Central Plant(s) including the following general types of equipment:
 - Chillers/Heat recovery chillers
 - Cooling towers
 - Boilers
 - Pumps
 - Control systems
 - Heat pumps

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- ii** Central Air Handler(s)
 - Fans
 - Chilled water coils and valves
 - Hot water coils and valves
 - Dampers
 - Heat recovery
 - Control systems, including VFDs and outside air and economizer control
- iii** Zonal HVAC
 - HVAC delivery to the space (air and/or water distribution, whether dual duct,
 - VAV terminals with re-heat, hydronic, etc.)
 - Control systems for HVAC delivery and zonal temperature control
- iv** Major Unitary Systems
 - Water source heat pumps
 - Rooftop package units (15 tons or over)
 - Controls
- v** Lighting Systems
 - Interior lighting controls
 - Exterior lighting controls
- vi** Refrigeration Systems
 - Controls
- vii** Domestic Hot Water Systems
 - Heat pumps/Heaters/Boilers
 - Circulation pumps
 - Controls

For similar equipment having similar operating schedules and serving similar occupancy types, sampling may be used for purposes of problem identification and baseline documentation/data collection.

- d.** gather operational and functional performance data to assess equipment operation and to identify deficiencies and measures for improvement. Gather data to quantify building operation, and deficiencies using the appropriate methods for the building including the Building Automation System (“BAS”) to trend data, monitoring with portable data loggers, and on-site measurements. Any costs associated with this process are the responsibility of the Applicant.
- e** use engineering calculations or simulation models to estimate the potential energy and demand impacts of implementing the identified measures for each utility (electricity, gas, steam, etc.).
- f** record and track investigation findings including potential measures for implementation, energy savings, estimated implementation costs, and initial payback calculations.
- g** prepare draft Recommissioning Report using the Program’s template and submit to the Applicant. Support each finding with data that clearly indicates the deficiency or problem, including engineering calculations, trend or portable logger data plots and files, functional test results, site visit reports, screenshot of BAS graphics and photographs, as appropriate. These should be generated during the investigation process. The Recommissioning Report should provide information to assist the Applicant with implementation, including: recommendations for how to implement the selected measures, proposed scope of work, budget estimates or bid costs from contractor(s) for the selected measures, proposed Service Provider assistance (if chosen by Applicant), and the appropriate methods for verifying measures are operating as intended.

- h** meet with the Applicant, to present the initial findings of the Recommissioning Report, and assist the Applicant in selecting measures for implementation.
- i** submit Recommissioning Report (signed and stamped), Recommissioning Workbook and savings calculations. Report and workbook must outline the Applicant's selected measures for implementation.

5.3 Implementation Phase

Note: Program funding is not available for activities undertaken during the Implementation Phase, as such the scope below is optional.

Depending on the complexity of the proposed measures, the Service Provider should recommend for the following scope of work to be included in the implementation. Service Provider involvement would provide implementation leadership and oversight to ensure the measure intent is met.

- a.** the Service Provider shall develop an Implementation Plan, to establish the level of additional Service Provider assistance desired or warranted for each potential measure. Additional implementation assistance may include: preparing detailed scopes of work, writing detailed control sequences and schematics, working with in-house staff to implement and optimize measures, or providing full turn-key implementation services. As appropriate, total estimated costs should detail out Applicant contractor costs and Service Provider implementation assistance costs. It is encouraged that the basis for cost calculations be documented.
- b.** prior to work starting, review the contractor bids ensuring that the contractor scope of work adequately reflects the intent of the original recommendations developed by the Applicant and Service Provider, and include verification of performance sufficient to meet the Applicant's requirements for proof of improvement. If needed, answer questions that arise during implementation and provide clarification or advice on measures being implemented.

5.4 Completion Phase

The tasks for the Completion Phase include, without limitation:

- a.** verify completion of each measure and update the Recommissioning Report with final implemented measures including final savings, costs, and payback calculations. To support the updated Recommissioning Workbook (with Completion Phase Summary Table), selected measures with significant savings potential should have verification data demonstrating that the measures are operating as intended along with updated savings calculations. When feasible, verification data should include trends or functional test results, though other methods, such as copies of invoices, site visit reports, and before/after photos/screenshots, may be acceptable.
- b.** conduct an in-house training presentation for the Applicant and the appropriate building operations personnel covering the new documentation, measures that were implemented, and requirements for ongoing maintenance and monitoring. Document the attendance of the building operations staff.
- c.** submit the updated Recommissioning Report (signed and stamped, including the customer training form) and updated Recommissioning Workbook (with Completion Phase Summary Table) to document the implemented measures, including, but not limited to: date of completion of each measure, new or improved sequences of operation, the energy savings impact of the measures, the requirements for ongoing maintenance and monitoring of the measures, and contact information for the Service Provider, in-house staff, and contractors responsible for implementation.

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