Continuous optimization program

Application form

All participants must complete sections A through H for each building of interest, including the preferred building characteristics checklist.

- List of BC Hydro Continuous Optimization Recommissioning Service Providers can be found on the BC Hydro website at **Continuous optimization (bchydro.com)**

Completed forms must be submitted to your Key Account Manager or Regional Energy Manager along with a proposal from your Service Provider.

A. Customer information			
Legal company name: (required for the agreement)		Company contact:	Date: (dd–mm–yy)
Contact title	Phone: ( ) –	Cell: ( ) –	Email address:
Corporate head office address:		City:	Postal code:
GST #			

B. Facility information			
Facility name:		Facility contact:	Phone: ( ) –
Facility address:		City:	Postal code:

Building type

☐ Medium office	☐ Large hotel (>100,000 ft²)	☐ Warehouse/wholesale
☐ Large office (>100,000 ft²)	☐ Hospital	☐ Refrigerated warehouse/wholesale
☐ Medium non–food retail (50,000 – 100,000 ft²)	☐ Nursing home	☐ Arena
☐ Large non – food retail (>100,000 ft²)	☐ School (>25,000 ft²)	☐ Pool
☐ Food retail (e.g. supermarkets, grocery stores)	☐ University/college	☐ Courthouse
☐ Medium hotel/motel (50,000 – 100,000 ft²)	☐ Restaurant	☐ Other:

Year built	Building size (ft²)	Primary energy source for space heating:[1]
		☐ Electricity ☐ Natural gas ☐ Purchased thermal energy[2] ☐ Other[3]

Building Automation System (BAS) manufacturer:	Latest BAS upgrade date (Year/Month):
Select your Electric utility: ☐ BC Hydro ☐ FortisBC	

[1] If the primary energy source for space heating is other than electricity or natural gas please complete **C. Thermal energy worksheet** below.

[2] Purchased thermal energy refers to the thermal energy produced from a utility company.

[3] Other may include oil, propane, biomass or any other fuel source used to generate thermal energy and/or electricity.

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C. Thermal energy worksheet (if applicable)

Is natural gas or electricity the primary space heating fuel source? ☐ Yes ☐ No

If no, what is the primary fuel source? (e.g. oil, propane, biomass)

Do you purchase thermal energy from a third party that uses natural gas as its primary fuel source? (e.g. district energy, steam, geothermal)

☐ Yes ☐ No If yes, please provide contact information below.

Thermal energy company information

Company name:

D. Building controls

Does the building have a computerized Building Automation Systems (BAS)?	☐ Yes ☐ No
Is the BAS robust enough to use as a data acquisition tool during recommissioning?	
○ BAS is able to trend and store large amounts of data at short frequencies (two minutes or less) for long periods of time without slowing down the normal control functions of the system.	☐ Yes ☐ No
○ BAS is web-based allowing the commissioning provider to look at building data in real time from an internet connection at any time.	☐ Yes ☐ No
Are trend data files conducive to spreadsheet analysis? (multiple points possible in each test-based file export, limited missing or bad data included).	☐ Yes ☐ No
Can the BAS be accessed remotely, and (limited) access be given to the BC Hydro and FortisBC program managers and program service provider?	☐ Yes ☐ No

Comments:

E. Available and up-to-date building documentation

Does the building have complete, up-to-date documentation of the following items:	
As-built mechanical and electrical drawings including piping and riser diagrams	☐ Yes ☐ No
An equipment list with nameplate information and dates of installation	☐ Yes ☐ No
As-built control system documentation: ○ points list ○ sequences of operation ○ user's manual ○ control drawings with as-built sensor locations	☐ Yes ☐ No
Testing, adjusting and balancing reports	☐ Yes ☐ No
Operation and maintenance manuals	☐ Yes ☐ No
Pump and fan curves	☐ Yes ☐ No
Copy of current service contracts	☐ Yes ☐ No
Equipment warranties still in effect	☐ Yes ☐ No

Comments:

F. Owner support and the in-house champion

Is the building owner involved and supportive of the recommissioning process?	☐ Yes ☐ No
Does the recommissioning project have a technically savvy in-house champion that will help facilitate the process?	☐ Yes ☐ No
Does the owner have an investment history in energy efficiency and sound O&M practices that indicate a progressive management philosophy and commitment to improving building operations?	☐ Yes ☐ No
Are major retrofit projects or major tenant improvements planned within the next one to two years? If yes, please list the planned projects, along with a brief description, in the comments section below.	☐ Yes ☐ No
Are there future plans to transfer the management of operations and maintenance activities to an entirely new staff or an outsourced company?	☐ Yes ☐ No

Comments:

G. Maximum investment responsibility

Upon completion of the Investigation Phase, the Applicant will review the findings and select a bundle of reasonable conservation measures for implementation. Reasonable conservation measures (the "Bundle of Measures") are defined as those that do not adversely affect occupant/tenant comfort and/or the operation of the Facility. The Bundle of Measures will be derived from all energy sources (e.g. electricity plus other fuels).

The Applicant is required to implement the Bundle of Measures that pays back in two years or less.

The program guideline for the customer Maximum Investment Responsibility is $0.25/ft^2 of building area for the following building:

Applicant's investment responsibility ($0.25/ft^2 x building ft^2) for the Bundle of Measures will not exceed:	Total $

H. Service provider proposal information

Service provider company name:			
Project cost $		Project completion date: (dd-mm-yy)	

Please indicate the preferred method of payment. Please check one:

☐ Traditional: Applicant pays service provider and BC Hydro reimburses applicant.

☐ Direct: Service provider invoices BC Hydro c/o the applicant and payment is made directly to service provider

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Preferred building characteristics checklist

When developing the scope and budget for a recommissioning project, the following building characteristics should be considered. These characteristics are not meant to eliminate buildings from going through a recommissioning process but rather help determine what may bolster or create barriers to the cost–effectiveness of a project. For owners with a portfolio of buildings, understanding these characteristics can help you prioritize which buildings to recommission first, based on cost–effectiveness. A checklist follows.

1. MECHANICAL EQUIPMENT AGE AND CONDITION

The cost–effectiveness of a recommissioning project partly depends on the age of the equipment, systems and controls.

Poor candidates – Buildings with equipment that is broken or in need of major upgrades.

Good candidates – Buildings with equipment and systems less than 12 years old, or several years from the end of their useful life (well maintained equipment can often last well beyond the typical 15 year replacement life cycle), the recommissioning process is appropriate.

A Recommissioning Service Provider can do a quick assessment of the mechanical and electrical systems to determine how well the facility is maintained and operated. Buildings with newer equipment that is not well maintained or that have excessive deferred maintenance issues may indicate a lack of funding capability by the owner(s) or a lack of commitment to sound operations and maintenance (O&M) practices.

2. BUILDING STAFF PARTICIPATION

The cost–effectiveness of a project may be greatly increased when skilled building staff perform some of the recommissioning tasks such as maintenance and simple repairs such as coil cleaning, filter changes, belt tightening, broken linkages and damper blades.

Building staff can also help minimize costs by helping to set up the trend logs, potentially setting and removing data loggers and implementing some of the less complicated measures.

It is recommended that the building owner or manager assign a senior building technician to work with the recommissioning provider as it is important for building staff to be available to provide information about the building's operating strategies, maintenance procedures and perceived problems.

3. BUILDINGS WITH ENERGY MANAGEMENT CONTROL SYSTEMS (EMCS)

Buildings with computerized EMCS are preferable recommissioning candidates to those with purely pneumatic systems. This is due to the following factors:

- The building automation system (BAS) can be used as a data acquisition tool during recommissioning; a pneumatic system cannot. (Example: evaluating operational problems with individual VAV boxes that are pneumatically controlled would be extremely time consuming and costly.)
- Operational improvements can be easier and less costly to implement through the BAS compared to making physical changes to individual pneumatic controllers. (Example: resetting duct static pressure set point based on VAV box damper position is a cost–effective control strategy through BAS), but may be impractical to implement with a purely pneumatic control system.)
- Pneumatic controls tend to drift out of calibration more frequently than electronic controls, and the energy savings may not be long lasting. Therefore, the increased maintenance cost associated with sensor calibration should be considered to ensure the energy savings identified in the recommissioning project persist over time.

The robustness of the BAS is worth careful examination to understand what it can and cannot do. More robust systems are able to trend and store large amounts of data at short frequencies (two minutes or less) for long periods of time without slowing down the normal control functions of the system.

Some of the most robust systems are also web–based. A web–based system allows the recommissioning provider to look at building data any time. Without adequate trending and data storage capability, the commissioning provider will need to use more portable data loggers and hand–held test equipment than is typically used, which can add time and expense to the project.

4. AVAILABLE AND UP–TO–DATE BUILDING DOCUMENTATION

Clear, complete, up–to–date building documentation expedites the investigation phase of a project. Buildings that lack good documentation, especially with regard to the mechanical and control systems can increase costs. The checklist under E above provides a list of typical documentation needed during the recommissioning process.

5. OWNER SUPPORT AND THE IN–HOUSE CHAMPION

An involved, supportive owner in combination with a technically savvy in–house champion can help lead to a project's success. It is recommended to assign an in–house champion such an energy manager, or facility or property manager, to work as a facilitator.

6. FUTURE BUILDING PROJECTS AND CHANGES

When developing a recommissioning project scope, it is wise for the recommissioning provider to understand what the building owner's plans might be for the future. For example, if an owner is considering retrofit projects or major tenant improvements in the near future (within the next year or two) it may be advantageous to wait for these activities to occur before going forward with a full retro– commissioning project.

On the other hand, depending on what the improvements are, the retro– commissioning project can be designed to have a commissioning component to ensure that new installations are specified, installed, operate as intended and integrate completely with the existing systems in the building.

It may be highly beneficial to recommission some of the systems before a major retrofit in cases where reducing loads may lead to downsizing equipment included in the retrofit. Another consideration is how the operations and maintenance will be accomplished in the future. How this is done can affect the persistence of the benefit realized as a result of the project. Questions about plans for outsourcing the maintenance and staff turnover can affect the training and documentation scope for the project.