BC Hydro
Power smart

# Continuous Optimization Program: Round 2 Program Offers

The Continuous Optimization (C.Op) Program captures savings related to improved operations in large commercial buildings, primarily focused on optimizing heating ventilation and air-conditioning (HVAC) systems by making improvements to the Building Automation System (BAS).

Round 1 of C.Op was initiated in 2008 and accepted final applications in 2016, with a total of over 550 buildings participating during that time. The Round 1 offer was comprised of two components provided through a 5 year agreement:

1. Recommissioning (RCx) consultants to identify potential conservation measures.
2. An Energy Management Information System (EMIS) to quantify savings and provide feedback to the customer to facilitate ongoing energy management activities.

Round 2 will provide a change in focus, with two different offers; Standard Recommissioning, and Automated Recommissioning. Until further notice, these offers will only be available for buildings that have completed Round 1. A Round 1 project is complete 5 years after the conservation measures were implemented (please note that actual invitations for specific buildings will be emailed to customers 4 years after conservation measures were implemented, to get the ball rolling). The Round 1 investigation and measures will continue to be a focus in Round 2, with RCx consultants confirming the ongoing viability of measures implemented in Round 1, or alternatively suggesting ways to reactivate measures if required. Also, measures that were discovered in Round 1 but which did not become part of the implementation plan will also be revisited in case they are now cost effective. Finally, the RCx consultants will attempt to find new measures or address issues that were not discovered in Round 1.

One important change in both Round 2 offers is with respect to timelines. The Investigation phase is still allocated up to 12 months, but the subsequent Implementation phase will now also be 12 months, dated from the end of the Investigation phase (and no longer aligned with the customer's fiscal year end).

## Offer 1: Standard Recommissioning

Standard Recommissioning is for customers who would like to re-assess their building performance after the annual renewal phase of their Round 1 project is complete (5 years after the conservation measures were implemented). The offer is to have an approved RCx consultant conduct a follow up assessment of the building. The RCx consultant scope of work will be substantially the same as in Round 1, except the Coaching component will be removed. There will be no program support for 3rd party EMIS vendors for Round 2.

### Important aspects of the Standard RCx offer:

**Incentives**

- 50% of RCx costs up to 5¢/ft$^2$.
- Single payment only, at end of Completion.
- As in Round 1, customers must commit to implement found measures that bundle up to a cap of either 25¢/ft$^2$ or a 2 year simple payback.

**Application process**

- Only invited buildings meeting the program eligibility criteria of Round 1 electricity savings greater than 50,000 kWh and greater than 5%.
- Customer to submit application form and RCx consultant proposal.

**The EMIS strategy is migrating to reflect market transformation. 3rd party EMIS licenses will no longer be supported.**

- C.Op participants have had a long and well supported run with this technology. They well understand the value proposition, and can choose whether or not to incorporate an EMIS into their operations.
- EMIS has become a commodity service, and the number of vendors will increase (abetted by the proliferation of smart meter interval data in BC and other jurisdictions). There is no longer any need to limit customer selection to the currently approved program vendors.
- Although the EMIS will no longer be supported by the program, ***it will be mandatory that customers provide proof that there is program access to whole building interval data*** (as in Round 1 to support ongoing M&V and evaluation activities), either through the BC Hydro smart meter, or through a historical EMIS contract (does not need to be an approved EMIS vendor), or any other means to store interval data that can subsequently be provided to BC Hydro upon request.

**The Coaching phase will be removed.**

- "Removed" means the program agreement will no longer specifically call out deliverables for this part of the project. Note that the Coaching sessions were historically based on the EMIS reporting, which will no longer be a mandatory part of the program.
- Along with the EMIS, Coaching was one of the components that made the C.Op program unique in North America, and helped put the "Continuous" in Continuous Optimization. Like EMIS technology, customers and trade allies alike have had an opportunity to test the waters of a post-implementation service offer.
- It will be up to customers to determine which aspect of Coaching was of value, and whether or not to continue to contract for it.
- It will be up to RCx consultants to decide whether to include Coaching related activities in their proposals in the future.

## Offer 2: Automated Recommissioning

Automated Recommissioning (ARCx) is for customers who choose to be on the leading edge of innovation by incorporating the next generation of software being used to drive energy conservation in commercial building operations. While the EMIS software used in Round 1 of C.Op focused on whole building energy use via the interval data provided by electric and gas utility meters, ARCx software leverages the data provided by the Building Automation System. This next round of technology development can be thought of as shifting from intelligence embodied in the recommissioning consultant's years of experience and expertise, to intelligence embodied in software tools. The most recent and widely available ARCx software is Fault Detection and Diagnostics (FDD) software. It is expected that there will be other types of ARCx software developed in the future.

## Important aspects of the Automated RCx offer:

**Incentives**

- 50% of combined RCx + ARCx software costs up to 10¢/ft$^2$.
- Single payment only, at end of Completion.
- As in Round 1, customers must commit to implement found measures that bundle up to a cap of either 25¢/ft$^2$ or a 2 year simple payback.

**The approved RCx consultant will be the lead service provider on the project for BC Hydro deliverables. The ARCx software will be positioned as an extra tool in the RCx consultant's toolkit.**

- RCx consultants will be well positioned to understand the intent of the Power Smart program, the deliverables, and how the ARCx software can augment the effort.
- The RCx consultant will be responsible for interpreting and quantifying the energy savings associated with the ARCx software.

**The customer will contract directly with the ARCx software vendor for the software license fees.**

- It is important to note that while the RCx consultant will be prime for the purposes of the BC Hydro project, it is neither appropriate nor desirable to make the RCx consultant responsible for the ARCx system over the longer term.

**Buy-in from Facilities is an important aspect of this offer. Proof of Facilities commitment will be required as part of the customer's application to the program.**

- There may be other "sponsors" at the customer's building required for an ARCx installation to succeed (e.g. IT), but Facilities is considered to be the prime player in terms of ongoing action items.
- Facilities must demonstrate its commitment to the ARCx project through the following:
    - A list of all the FMO staff / positions who would be involved in some way in the project.
    - Some evidence that the folks listed in the previous point attended an "Introduction to ARCx" type of presentation, whether it be generic or vendor specific. This could be a simple list of attendees with signatures, along with the date, and who presented what.
    - A designated "champion", or go-to person at the site level who will be responsible for ensuring any unforeseen roadblocks will be addressed. It is intended that this person be from the FMO department.
    - Process flow chart for dealing with the associated ARCx generated actions items (e.g. FDD alerts), e.g. a Visio "swim lane" diagram showing the different people and/or departments who would be involved, and a more detailed view on the steps required. In particular, it should indicate how the work orders are generated and processed. The purpose of this is to demonstrate that any process change and/or change management issues have been considered by the relevant parties.
    - The application must be signed by both the Director of Facilities and designated "champion" / site level representative.
- Energy Managers may have to "sell" the concept to the Facilities Director, in order to ensure they are on board.

**ARCx software will be subject to review by a Technical Advisory Group (TAG) which will make recommendations to program staff regarding approved software.**

- The TAG is expected to be comprised of the currently active RCx consultants and other interested parties, but excluding ARCx software vendors.

**BC Hydro incentives will be a lump sum reimbursement to the customer applied on a one time basis, based on building size.**

- In the new program offer, the customer will contract directly with both the RCx consultant and ARCx software vendor.
- Having customers contract directly with the ARCx software vendors will allow the program to quickly and easily add additional (approved) vendors.
- It won't be possible to switch ARCx vendors during the C.Op project, as the installation & set-up costs of switching will be prohibitive.
- The program will not dictate the amount going to either the RCx consultant or ARCx software provider. Bottom line is the customer will be in control of what consultant they want, what software they want, and where they want to put the emphasis.
- The single reimbursement will reduce the number of customer touch points, and help streamline program operations.

**Coaching will not be a required deliverable.**

- (see Standard Recommissioning discussion above)

## The ARCx Application Process

**Customer application to BC Hydro.**

- The application will be completed and include two pieces:
    - First, a proposal from both the selected RCx consultant and ARCx software vendor (previously reviewed and approved by the customer), with costs and timeline. The proposals can be combined or separate, but should demonstrate an understanding of how the scope of work is delineated between the two parties.
    - Second, the customer must augment the proposal with the "commitment from Facilities" component discussed above.

**The ARCx software vendor proposal should contain a comprehensive plan to install, deploy, and support the software.**

- The ARCx software vendor proposal to the customer should include the following items:
    - Overview of the existing BAS architecture, hardware and memory capacity, including any required BAS system upgrades.
    - Provide an overview of the intended method of accessing BAS data, including additional hardware, software, and labour requirements to complete the installation. Include the proposed method of data storage.
    - Specifically identify any required customer and/or BAS service contractor involvement.
    - Provide a list of proposed analytics (e.g. list of applicable FDD expert rules), and the associated building systems / components that will be served by the analysis.

- Discuss the approach to training, including on-site hours, number of sessions and intended audience. Also outline any additional "no cost" training tools (e.g. webinars).
- Provide costs and schedule (e.g. installation costs, monthly or annual license fees, etc.).

## Recommissioning Activities

**RCx consultant and/or ARCx software vendor installs ARCx software.**

- Each RCx consultant will need to be trained in each ARCx software package they work with. It is expected that each consultant will be motivated to learn the package if it will be part of the implementation, and it is also expected that ARCx software vendors will be motivated to ensure their "representatives" or implementation partners do a good job.
- There is no equivalent to the "baseline data collection" phase of Round 1.
- FDD software will likely start to generate fault alarms from the time it is originally set up. The challenge will be to determine which faults are responded to (subject to both customer prioritization for maintenance purposes AND C.Op prioritization as part of the customer commitment to implement the 2-year payback bundle of measures).
- The RCx consultant will receive and interpret the faults, liaise with the customer to ensure faults are prioritized correctly, diagnosed, and acted on as required. In this context, they will be required to determine which faults, and subsequent fixes and costs, the customer will be allowed to draw down their maximum investment responsibility (the $\$0.25/ft^2$ implementation cap in the agreement).
- Only measures that bundle to less than 2 years simple payback (the current program requirement) will be allowed to satisfy program requirements. That would inherently limit the field to measures with energy savings. There would be no limit to the faults the customer could respond to, only a limit to the measures they could claim against their maximum investment responsibility. The RCx consultant will make this determination, subject to C.Op review.
- The RCx consultant is also required to quantify the annual gas and electrical savings (to be claimed by the C.Op program).

**RCx consultant conducts Investigation phase**

- This is the same scope of work as Round 1, still using the Findings Workbook and with a final deliverable of the RCx Investigation Report.
- Also as per Round 1, the Master List of Findings should be submitted for BC Hydro review prior to proceeding to the next phase.
- The Findings will include the accumulated faults (fixed or not), along with the calculated energy savings and maintenance costs.
- Previous FDD implementation costs will be deducted from the customer's investment responsibility, and incorporated into the 2-year simple payback calculation, when the RCx consultant meets with the customer to determine the subsequent implementation bundle.
- The Findings are not limited to FDD, but also include additional items as per a Standard RCx project. For projects from Round 1, this will be at minimum a review of the previous Investigation Report items, but must also include a search for new measures (probably starting with the items in the previous report that were not cost effective at that time).

**Customer implements measures**

- There will be two types of implemented measures. The traditional measures identified during the Investigation phase without the ARCx software, and issues identified by the ARCx software.
- It is expected the FDD software will have some means of tracking identification and completion dates for individual measures.

**RCx consultant completes the RCx Final report.**

- As in Round 1, the intent of the document is to finalize the savings calculations and costs after the identified measures have been implemented, reflecting any changes to the Investigation phase estimates due to implementation issues.
- To BC Hydro, this is the most important document in the process, as it will be the claim to the project savings.
- This last deliverable will trigger the BC Hydro reimbursement.

**Ongoing FDD reporting**

- Ongoing FDD reporting will be used to ascertain what faults were identified, and if/when the faults were corrected.
- This report should confirm / demonstrate the involvement of the Facilities staff in fixing the faults.

**Annual Review**

- C.Op will reserve the right to conduct an annual review with any of the customer, RCx consultant, and/or FDD vendor to see how the project is progressing.

## Regarding FMO buy-in:

"The key challenges remain of transforming the way buildings are designed, controlled, operated and maintained. As noted there is a lack of common definition or industry standards of what constitutes FDD capabilities within control systems in larger buildings. In smaller commercial buildings, effective control strategies are not obvious to many building operators. Limited attention by owners often means that potential problems with equipment performance are not acknowledged until something breaks or there is a loud enough occupant complaint about temperature and/or ventilation conditions. This is true for all sizes and types of commercial buildings. **The mere presence of FDD information is not sufficient to cause actions to take place in many buildings. Transformation of owner/operator attitudes toward building performance is the critical ingredient in realizing the potential of FDD functionality.** This is not a new observation or conclusion. It is a reminder of what remains to be done in the overall building performance market."

Frey, Donald. Smith, Vernon. Architectural Energy Corporation. 2008. *Advanced Automated HVAC Fault Detection And Diagnostics Commercialization Program.* California Energy Commission. Publication number: CEC-500-2013-054.

http://www.energy.ca.gov/2013publications/CEC-500-2013-054/CEC-500-2013-054.pdf