



Recommissioning (RCx)

Case Study - Office Tower

Royal Bank Office, Winnipeg (MB)



Built in 1965, the Royal Bank office building in downtown Winnipeg is one of the first modern high-rises built in Manitoba. The 17-storey building of 20,000 m² accommodates about 1,000 employees and its annual energy bill before the RCx was about \$294,000. Completed in 2009, the RCx reduced the bill by 20% and focused mainly on the following electromechanical systems:

- Two natural gas boilers, each with a capacity of 2,930 kW (299 hp)
- Ten air handling units with a total capacity of 69,500 L/s (147,000 ft³/min)
- Two chillers with a total capacity of 430 tonnes

Measurement and verification (M&V): additional savings!

After the RCx implementation phase, the M&V carried out during the year resulted in new discoveries that generated additional electricity savings of 800 GJ.

Reduced water consumption: a significant spinoff!

In addition to the RCx measures outlined in this case study, the overall project included some water consumption reduction measures that benefited the owner. As shown below, the savings were substantial:

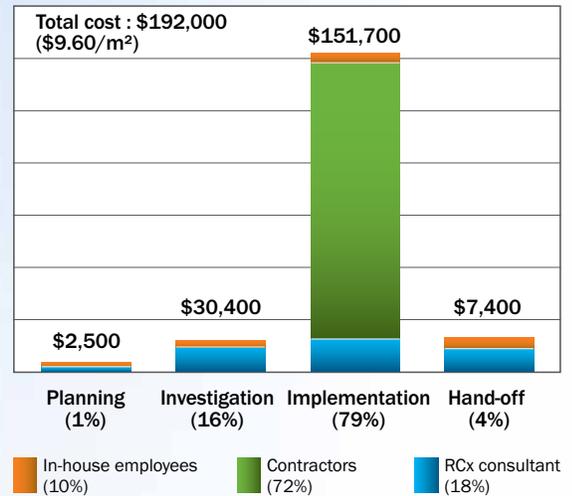
- Water consumption reduction: 15,000 m³ (64%)
- Monetary savings: \$45,000/year

Measures implemented to reduce water consumption, in addition to the RCx measures, helped to achieve **BOMA BEST** environmental certification.

Results

- Energy savings¹ 6,652 GJ/year (25%)
(75% natural gas, 25% electricity)
- Monetary savings² \$59,000/year
- GHG reduction 363 t CO₂ e/year
(equivalent to 66 cars)
- Simple payback period³ 3.3 years

Cost breakdown



¹ Savings verified by an independent third party in accordance with the International Performance Monitoring & Verification Protocol (IPMVP) and standardized according to weather conditions.

² Monetary savings do not include non-energy impacts (NEIs) such as extended service life of equipment or increased comfort for tenants.

³ Includes all costs for the four phases of the project.

| RCx winning measures | | Annual savings |
|--|--|--|
| 1 | Optimization of ventilation systems Both ventilation systems were functioning continuously at constant loads. The operating hours were reduced and rescheduled based on occupancy rates and outdoor temperatures, resulting in natural gas and electricity savings. Cost: \$97,500 Payback: 2.9 years | 3,727 GJ/year \$33,075/year |
| 2 | Installation of CO₂ sensors The sensors regulate the return air CO ₂ level and modulate the opening of outside air dampers when CO ₂ concentrations rise, resulting in natural gas savings. Cost: \$30,000 Payback: 1.8 years | 1,779 GJ/year \$16,300/year |
| 3 | Setpoints modification of day and night setback The direct digital command (DDC) is reprogrammed to maintain a 23°C (74°F) cooling setpoint and a 21°C (70°F) heating setpoint during daytime and to reduce night loads, resulting in natural gas savings. Cost: \$7,900 Payback: 2.9 years | 298 GJ/year \$2,700/year |
| Other RCx measures Cost: \$56,600 Payback: 8.2 years | | 848 GJ/year \$6,925/year |

NB: Costs and payback periods include only implementation phase materials and labour.

“Building energy performance trending through monthly energy consumption and costs indicates that the overall energy and water conservations, as a result of the Commercial Building Optimization Program (CBOP) of Manitoba Hydro and in-house efficient operations efforts exceed preliminary calculations. We are quite satisfied with the results and the project’s impact on our daily operations!”

Sue Ziemski, Property Manager
 Canadian Real Estate Investment Trust (CREIT)
 Toronto (ON), Canada

Free tools and guides

- > Is your building a good candidate?
- > How do you start a project?
- > What grants are available?

 www.canmetenergy.nrcan.gc.ca/eng/rcx.html

Stakeholders

Building owner and manager:
 Canadian Real Estate Investment Trust (CREIT)
RCx consultant:
 Demand Side Energy
Collaborator:
 Manitoba Hydro

Produced by CanmetENERGY

© Her Majesty the Queen in Right of Canada, 2011.

Catalogue no.: M154-47/2011E

ISBN: 978-1-100-18604-7

For information regarding reproduction rights, please contact Public Works and Government Services Canada at: 613-996-6886 or at : copyright.droitdauteur@pwgsc-tps.gc.ca