

Red River College optimizes its Princess Street Campus

Located in the Exchange District, Red River College's (RRC) Princess Street Campus is home to approximately 200 staff and 2,000 students studying modern media, information technology, and business. The state-of-the-art facility has a sophisticated building energy management system and is the largest C-2000* building in Canada.

RRC underwent **retrocommissioning (RCx)** investigative studies that were funded by Manitoba Hydro's Commercial Building Optimization Program (CBOP). The investigation process focuses on documentation and training to help improve the energy efficiency of commercial buildings and identify energy saving opportunities.

Through retrocommissioning, the facility's equipment and operations are assessed through functional testing, analysis of the energy management system data, and observation of the daily operations. Team meetings are held with the customer, consulting engineer, and Manitoba Hydro to discuss the measures found in the investigative studies.

RRC was responsible for implementing all of the measures that have a two-year payback or less. The customer and the CBOP team decided that it was in the customer's best interest to implement other measures found in the investigative studies.

Manitoba Hydro's CBOP program helped the new facility run more efficiently and worked with RRC's building operators to ensure that the building's systems were working harmoniously.

"We participated in this program to reduce our utility costs, do our part for the environment, and save money, so that we can spend it on other worthwhile projects. It's actually been dramatic how much power we've saved, about 15 per cent in the last year on our utility budget including our electricity and gas."

– Kris Jardine, Facility Manager, RRC

*Federal government initiative to promote energy efficiency and environmental responsibility in commercial construction. C-2000 advocated building performance in a holistic sense. An important premise of C-2000 is that superior building performance is most cost-effectively achieved through improved design processes rather than the application of capital-intensive technologies.



Results

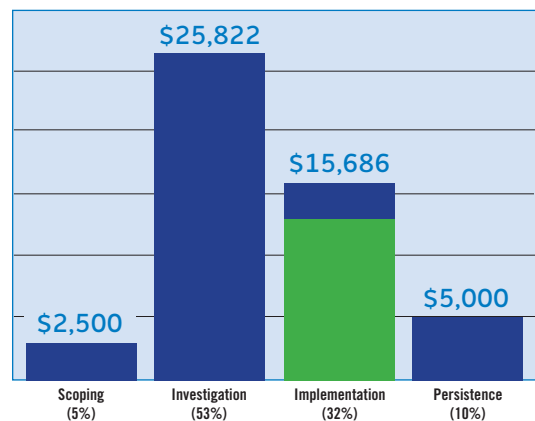
Energy savings: Electricity 101,628 kW.h/yr
Natural gas 89,221 m³/yr

Annual savings: \$37,482/yr

Payback period (including incentive): 3 months

Power Smart incentive: \$38,416

Cost breakdown

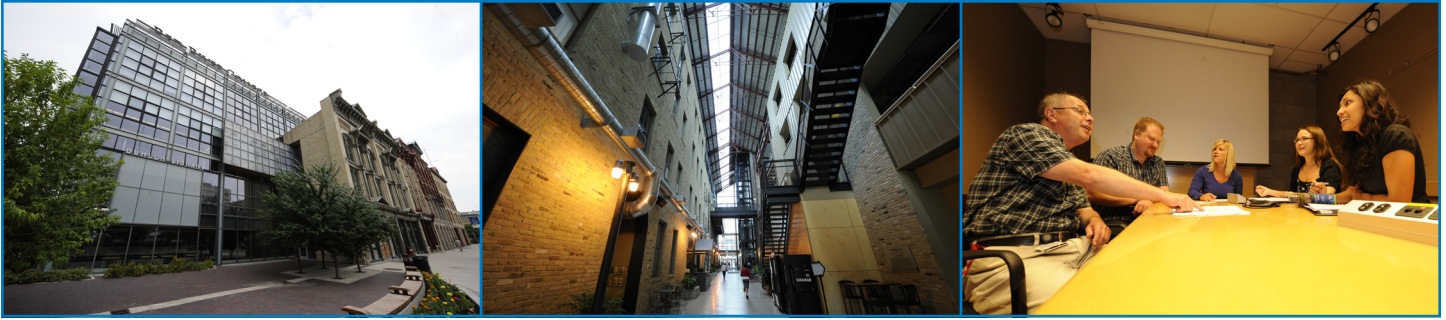


Total project cost: \$49,008

Manitoba Hydro (78%)
Red River College – Princess Street Campus (22%)



*Manitoba Hydro is a licensee of the Trademark and Official Mark.



RCx winning measures

Reduce over-ventilation and eliminate simultaneous heating and cooling

The current system was being manually overridden and was not working as design intended. The delivered air temperature reset was overridden and the heating/cooling valves operated independently to maintain a constant delivered air temperature. The result was over-ventilation as well as simultaneous heating and cooling. Restoring the original sequence of operations of the building energy management system will allow the system to trim energy use as it was designed.

Annual savings \$27,157 Payback: less than two months

Optimize thermal efficiency of boilers

Building energy management trends indicated that the boiler return water temperature was set too high. Reducing the return water temperature will enable boilers to operate at higher thermal efficiencies.

Annual savings \$2,820 Payback: less than six months

Reset fan coil supply air

Current supply air temperature is manually set for each room in response to staff requests. This overrides the daytime supply air temperature reset schedule and nighttime temperature set points. Restoring the design sequence of operation will allow temperature conditions to be based on occupancy and nighttime closure. The design sequence will also allow classrooms to quickly recover when occupancy resumes.

Annual savings \$6,062 Payback: less than one year

Retrocommission CO₂ sensors

CO₂ sensors had not been recalibrated since their installation. Without recalibration, the CO₂ sensors were unreliable and not used to their full intent. The result was continuous ventilation of the classrooms regardless of occupancy. Restoration of the design sequence of operation will prevent over-ventilation and reduce the energy required to precondition the supply air.

Annual savings \$1,443 Payback: less than two years

“Even as a newly designed and constructed building, Red River College, Princess Street Campus benefited from the retrocommissioning effort. The Facility Manager recognized that both the building operation and energy use had fallen off-track and needed attention to provide both student comfort and lower energy costs. The energy savings and operational improvements for this six-year-old facility were as impressive as for a 60-year-old facility.”

Alex Fleming, P.Eng., CMVP
President – Demand Side Energy Consultants Inc.

Visit our website for tools and guidelines about retrocommissioning

- What is retrocommissioning;
- Glossary of terms;
- Common opportunities identified;
- View more case studies;
- How to take part in the program.

CBOP Team

Customer: Red River College, Princess Street Campus

RCx Consultant: Demand Side Energy

Power Smart Incentive Program:
 Commercial Building Optimization (CBOP)

For more information on Power Smart for Business, contact:
 Phone: 360-3676 in Winnipeg or 1 888 MBHYDRO (1-888-624-9376)
www.hydro.mb.ca/psfb

