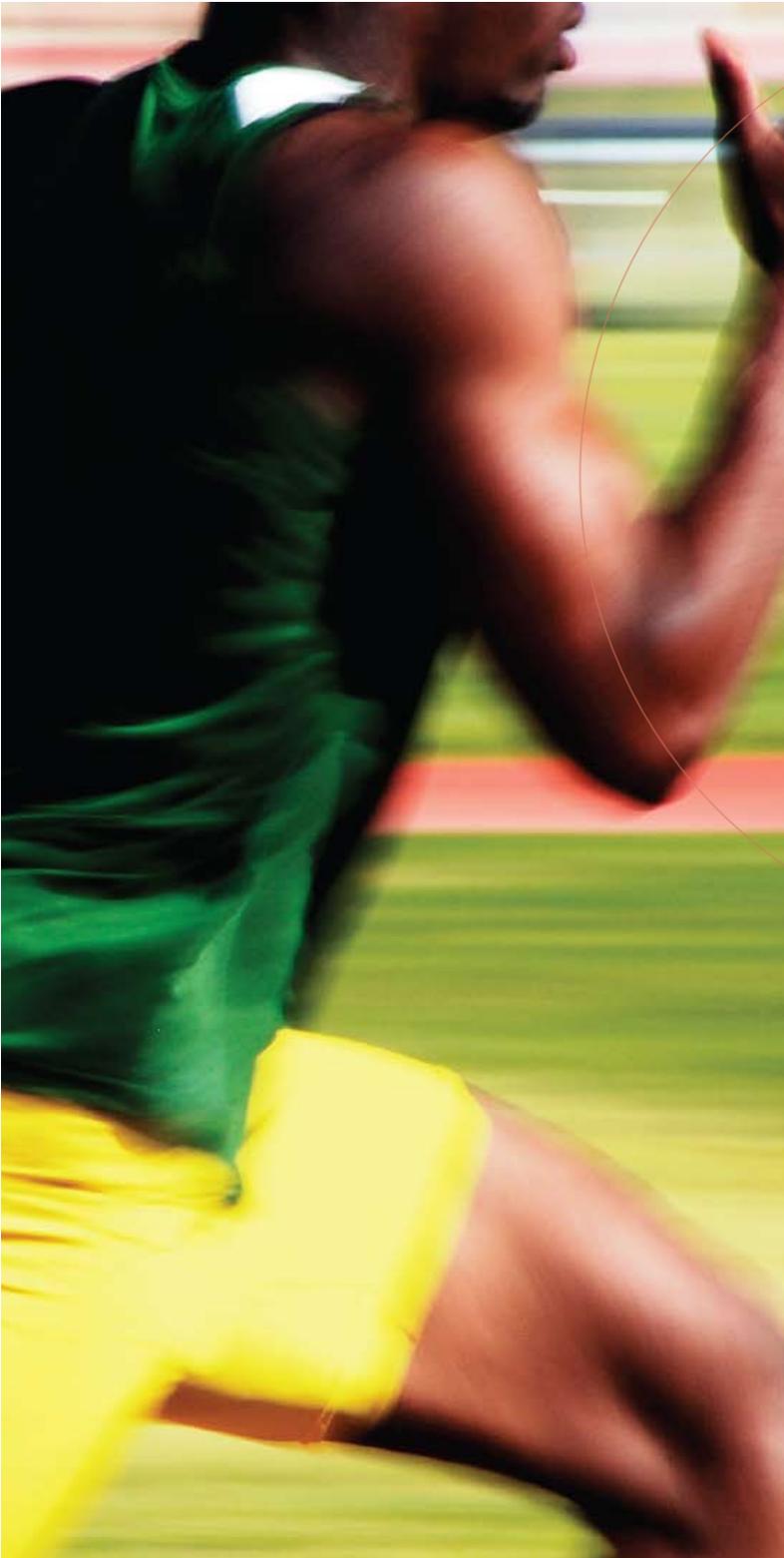


EnerSmart Programs

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Performance Contracting



Tired of
chasing capital
for infrastructure
upgrades?

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contracting

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Performance Contracting

Summary

Hamilton Health Sciences is implementing one of the largest energy saving retrofit projects ever undertaken in a Canadian hospital. A performance contract with Johnson Controls has made it possible for Hamilton Health Sciences to carry out about \$50 million in facility improvements without touching the hospital's capital budget. The expected savings from the 10-year performance contract will be used to offset the cost of the improvements.

Background

Hamilton Health Sciences is Ontario's second largest hospital corporation. With six unique hospitals, a cancer centre, and an affiliation with McMaster University's Faculty of Health Sciences, it offers leading edge care to more than 2.2 million residents of Hamilton and central southwestern Ontario. By investing more than \$500 million to upgrade clinical care and research capability, the hospital is transforming the region's health care with modern clinical environments, latest medical technologies and state-of-the-art research facilities.

Energy and engineering staff at the hospital faced a whole array of building needs across multiple facilities. Most of the basic technologies ranged in age from 25 to 50 years. Some of the older systems were simply falling apart while others did not offer the best efficiencies or operating performance.

Challenges included:

- Heating and cooling equipment at or near end of life
- Ventilation systems in need of updating
- Unreliable medical air and vacuum systems
- Inefficient lighting systems
- Outdated building automation systems

In addition, Hamilton Health Sciences was already using tri-generation (the simultaneous production of power, heat and cooling) at three of their campuses. Managers were keen to maximize the energy saving performance of these installations.

With an ambitious redevelopment program underway, capital for other building needs was understandably tight. So facility managers looked for an alternative avenue to finance these essential building improvements.



Solution

Performance contracting offered a proven solution that was already delivering results for other Canadian hospitals. After a bidding process, Hamilton Health Sciences selected Johnson Controls. Union Gas provided assistance for five engineering studies that determined baseline energy and water consumption, identified upgrade opportunities and estimated the potential for efficiency gains. The performance contract is expected to create about \$50 million in savings. If additional savings are generated, Hamilton Health Sciences will keep the extra. Hamilton Health Sciences obtained third-party financing to fund the improvements.

The extensive retrofits include:

- New, more efficient boiler plants at Chedoke and Hamilton General campuses
- Complete HVAC retrofit at McMaster University Medical Centre (MUMC) and a partial HVAC replacement at Henderson Hospital
- All lighting replaced at Hamilton General; mechanical and common space lighting replaced at other campuses
- Replace and re-zone existing HVAC systems through the use of Building Automation Systems (BAS) that allow for individual occupancy and temperature control of zones
- Installing up-to-date and interconnected BAS at all sites for centralized monitoring and control
- Replacing medical air and medical vacuum systems
- New air handling units and new heat recovery systems at the Henderson Site
- Replacing old chillers with high efficiency chillers featuring environmentally-friendly refrigerant
- New chiller plant and chiller controls at Hamilton General
- Expanded use of cogeneration heat recovery to provide heating and air conditioning at MUMC, Henderson and General Sites

Business Benefits

- Cost of improvements offset by energy and operational savings over ten years
- Upgrades complement redevelopment projects – adding both capacity and efficiency
- Heat recovery improvements optimize the benefits of existing investments in tri-generation
- Equipment will continue to deliver savings and other benefits beyond contract payback period

Performance contracting can ensure the energy, utility and operational savings can pay for capital improvements. This solution may help preserve hospital capital for investments in clinical technologies, facilities redevelopment



Environmental Benefits

- 3.7 million m³ annual natural gas savings
- 26 million kilowatt hours in annual electricity savings
- 66,000 m³ in annual water savings
- Reducing greenhouse gases equivalent to removing the emissions from 4,500 cars every year
- Better and healthier indoor environment for staff and patients

Taking a comprehensive approach to the retrofit saved project costs, minimized disruption and meant that short payback items could help pay for longer-term measures. This approach also ensured that systems and equipment are standardized and work together more effectively, reducing long-term operating and maintenance costs.

The work, started in Spring of 2007, will be completed in 2010. By the first summer, Hamilton Health Sciences was already seeing energy savings exceeding original estimates. For instance, natural gas use dropped by more than 50 percent at one campus.

The facilities makeover has obvious patient benefits – the new Building Automation Systems provide air volume and temperature control in 1,300 zones, letting occupants control their rooms individually. Additional ventilation system redundancy ensures operating rooms can be used with minimal downtime.

Of course, new equipment and systems are of little use if they are not run properly. Under their agreement, Johnson Controls will train Hamilton Health Sciences staff to use, monitor and maintain equipment and systems to achieve sustainable savings.



Any organization that suffers from capital constraints can benefit from performance contracting. Other organizations that can employ this innovative funding approach include:

- Colleges and universities
- Municipalities
- School boards
- Public sector agencies

Wins & Highlights

- About \$50 million in upgrades paid for by utility savings over 10 years
- Share of savings goes to operating budget each year
- Modern and efficient building systems increase staff and patient comfort and well-being
- Union Gas provided \$200,000 in assistance from its EnerSmart program

Is performance contracting right for your facility?

Performance contracting is best suited where:

- Proposed work is large in scope and costs
- Energy bills are high
- A wide range of areas have been identified for energy efficiency improvement
- A defined payback period can be supported by cost benefit analysis
- The life span for improvements substantially exceeds the payback period
- Alternative procurement mechanisms can be used

Energy audits and engineering analyses



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Performance Contracting

One hospital
used performance
contracting to
carry out
one of
**Canada's
largest hospital
energy retrofits**



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Performance Contracting



“Senior management has to juggle requests far exceeding capital resources. So, if we need close to \$50 million for building renewal, and can finance it out of the energy we were wasting, the decision is really very easy to make.”

Chris Cuthbert
Energy Manager
Hamilton Health Sciences, Hamilton, Ontario

Visit uniongas.com/enertalkhhs for our EnerTalk video on the Hamilton Health Sciences retrofit project.

Union Gas - Working with you

Hugh Cumming and Scott Edmunds from Union Gas have been working closely with utility managers at Hamilton Health Sciences to implement energy efficiency solutions. As a result of this partnership, Union Gas provided \$200,000 in funding for the Hamilton Health Sciences retrofit projects under its EnerSmart program.

Call the energy advisors at Union Gas

If you would like to learn more about Union Gas' EnerSmart support for energy audits, feasibility studies and installation of energy efficient equipment, contact your Account Manager or visit enersmart.com/largebusiness

EnerSmart. For the profit in energy efficiency.™



Energy efficiency projects pay you year after year!