



St. Thomas Elgin General Hospital, one of the most energy-efficient hospitals in Ontario, saves approximately \$125,000 in energy costs annually.

CASE STUDY

✓ St. Thomas Elgin General Hospital

PROJECT STATS

- Lighting and equipment retrofit
- Annual savings: \$125,000
- Incentive: \$10,000



PROJECT

Implement a comprehensive energy and facility renewal program aimed at reducing electricity, natural gas and water use, while simultaneously upgrading the hospital's infrastructure.

BACKGROUND

St. Thomas-Elgin General Hospital (STEGH) is a 425,682-square foot, 166-bed facility servicing more than 89,000 residents in the surrounding area. STEGH's management team wanted to do more to reduce energy usage and improve the facility's infrastructure; its goal was a healthier hospital.

An initial facilities review by Honeywell, which evaluated opportunities for improvements in energy efficiency and facility renewal, determined that for an older hospital, STEGH was already doing a good job.

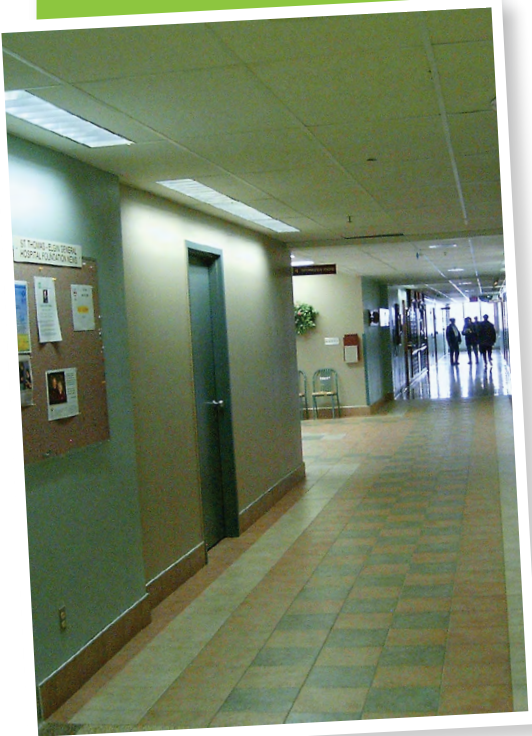
Typically, the total annual energy consumption benchmarks in hospitals are expressed in equivalent kilowatt-hours per square foot (ekWh/ft²) and, in older facilities, range from 55 to as high as 150, with an average of approximately 70. STEGH had a total annual energy consumption of 56.3 ekWh/ft², which was low and indicated that the hospital was already quite energy efficient.

In spite of that achievement, STEGH wanted further improvements to the quality of their existing facilities. This was accomplished with additional improvements to its lighting systems, mechanical systems, control systems, water systems and building envelope.

"Improving the care we provide our patients is at the root of everything we do," says Paul Collins, STEGH's president and CEO. "The condition of our facility is a key part of this. The energy-efficiency upgrades will go a long way in enhancing the indoor environment for our patients and staff and reduce our operating costs at the same time."

IMPLEMENTATION

In March 2007, STEGH partnered with Honeywell to complete the improvements. Construction started in June, and the work was set up under a guaranteed performance contract. The turnkey program included evaluation, engineering, procurement, implementation, commissioning, training, communications and awareness, monitoring and verification, and an annual savings guarantee.



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The improvements are expected to yield annual savings of approximately \$125,000, making STEGH one of the most energy-efficient hospitals in Ontario.

A joint requirements team was formed, and regular project update meetings held, to ensure both parties understood the goals and objectives of the program and had the required input into the solution that was eventually developed.

This solution included considerations that go beyond technology and moved into communication and awareness, aimed at engaging staff and developing a culture of conservation. Various communications and events were held to keep staff informed of the project's progress. Information was also shared with the local community at a media event that announced the details of the program.

The project included various lighting controls, mechanical, building envelope and water measures.

Of particular interest to the hospital was the replacement of an old R11 chiller with a new 250-ton, environmentally friendly machine. Two chilled water loops were installed to meet this requirement. This provided the flexibility to use the chiller plant more efficiently by allowing one more-efficient chiller to handle the whole facility during shoulder periods, as well as provide backup capacity for the whole hospital.

In total, 33 measures were implemented at STEGH. All of the measures were completed by the end of December 2008.

FINANCING

Like most hospitals, STEGH has many healthcare-related priorities and was challenged to find ways to provide the funds to deal with deferred maintenance and improved energy efficiency. With the performance-based contracting model, Honeywell guaranteed that the facility improvements would generate enough energy and operational savings annually to meet the hospital's financial needs.

Under the arrangement, the annual savings that the upgrades produce throughout the agreement's 15-year term are guaranteed.

The resulting project leveraged the hospital's planned investment, resulting in a larger program with a 10-year simple payback.

FINANCIAL INCENTIVES

The local electric utility, St. Thomas Energy Inc., worked with the project team by maximizing the available funding through the Electricity Retrofit Incentive Program. STEGH received more than \$10,000 from the program for this project. St. Thomas Energy Inc. also assisted by providing ongoing financial incentive information.

INSTALLATION HIGHLIGHTS

Lighting

- Many of the older T12 lighting fixtures had already been retrofitted. The remaining T12 lighting was converted to new generation T8 lamps with electronic ballasts.
- Selected fixtures were fitted with specular reflector conversion kits.
- New 2x4 recessed fixtures (two lamps) replaced existing 2x4 recessed fixtures which had three lamps.
- Existing incandescent exit light fixtures were replaced with new LED-based fixtures.

Control System Measures

The existing automated controls were optimized for more efficient operation. This included:

- Optimizing fan system operation.
- Adjusting ventilation to match occupancy.
- Optimizing controls for energy efficiency.

Mechanical System Measures

- New zone dampers were added in selected areas to provide air flow and ventilation control to unoccupied areas while maintaining air flow to occupied areas served by the same unit.
- Variable speed drives were installed in numerous applications, such as pumping systems, kitchen hood and cooling tower fan, to reduce electricity use.

- A single new natural gas oven was installed to replace the electric ovens.
- A new 250-ton chiller was installed that uses an environmentally friendly refrigerant, connecting the two chilled water loops to provide a central plant redundancy and upgrading the chiller plant capacity.

Building Envelope Measures

Building envelope upgrades included the replacement of door sweeps and seals and adding caulking to reduce outside air infiltration.

WATER MEASURES

Existing plumbing fixtures were upgraded with low-flow equipment to reduce water use and reduce maintenance.

RESULTS

STEGH is currently in the first year of savings, and the initial utility analysis of the construction period and first-year savings indicates the hospital is on track to meet the guaranteed savings commitment.

LESSONS LEARNED

Although STEGH began the project as an energy-efficient hospital, the management team realized there was still room for improvement. This energy and facility renewal program has been a catalyst for more green initiatives within STEGH. The hospital's staff members have since implemented a Green Team, a committee focused on environmentally responsible working practices at the hospital, such as recycling.

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St. Thomas Elgin participated in ERIIP in 2008.