Office of Energy Efficiency
Energy Innovators Initiative

Energy Innovators Case Study

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Steven Campbell, Executive Director, Kenneth E. Spencer Memorial Home

ENERGY EFFICIENCY AT THE KENNETH E. SPENCER MEMORIAL HOME

Background

The Kenneth E. Spencer Memorial Home in Moncton, New Brunswick, is a 200-bed, long-term health-care facility owned by Atlantic Baptist Senior Citizens' Homes Inc. This registered not-for-profit corporation comprises 10 facilities, which range in size from 10 to 200 beds, and offers full-service long-term care, assisted-living units and apartments for independent seniors.

The Kenneth E. Spencer Memorial Home offers a superb example of management personnel recognizing the potential benefits of energy-efficiency upgrades and of taking action to realize these benefits. A variety of building-structure and system components were investigated, redesigned and upgraded as part of a two-year building-improvement program. The result has been substantially reduced energy costs and a more comfortable environment for the facility's occupants.

Another benefit has been reduced greenhouse gas emissions. As part of the Energy Innovators Initiative, a federal government program administered by Natural Resources Canada, Kenneth E. Spencer Memorial Home has committed to reducing its greenhouse gas emissions, thereby contributing to Canada's emissions reduction goals as set out in the Kyoto Protocol.

Canada agreed to reduce its greenhouse gas emissions by six percent from 1990 levels by the period 2008–2012, and the Government of Canada has launched many initiatives to help Canadians become more energy efficient.

To date, more than 750 registered Energy Innovators have made commitments that will help protect the environment and result in enormous collective energy and cost savings.

Kenneth E. Spencer Memorial Home

Why Undertake an Energy Management Project?

Steven Campbell, Executive Director of the Kenneth E. Spencer Memorial Home, is part of the management team that decided to proceed with this and other similar projects for facilities owned by Atlantic Baptist Senior Citizens' Homes Inc. He realized that an investment in energy management would have both short-term and lasting benefits, and this is precisely what made the project so attractive.

"Overall, the job was pretty straightforward," Steven Campbell explains. "Conceive an idea, garner support, get the idea financed, hire the right people to manage it and then take action. Lastly and most importantly, reap the benefits!"

Scale of Project Allowed Several Energy-Saving Opportunities

Although straightforward, the building renovation project at the Kenneth E. Spencer Memorial Home was extensive, and was thus able to take advantage of many energy-saving opportunities. A committee of technical, management and staff representatives oversaw the following stages of the project (see Table 1).

The management team investigated how to finance the work and whether to hire an energy performance contractor. In the end, a government-backed loan at a reasonable interest rate was secured

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and, under the guidance of a good architectural design firm supported by quality engineers, the project was implemented by local contractors.

Table 1

Project Stage	Time Span Required
Definition of project requirements	1–3 months
Selection of architects and engineers	3–4 months
Arranging of loan financing	4–6 months
Project planning and design meetings	3–7 months
Selection of contractors	7–28 months
Project construction meetings	7–28 months
Development and implementation of staff/resident awareness program	2–28 months

Upgrades at the Kenneth E. Spencer Memorial Home

Management at the Kenneth E. Spencer Memorial Home demonstrated long-term vision by considering the benefits of investing in energy management. The facility was originally built in 1973 and was twice the size 10 years later, so it is not surprising that some of the systems and building components were due for a technology upgrade. The building's energy source is electricity, so the energy costs are generally high, and the recent increase in demand charges prompted management to look at energy costs more closely. The project had two phases implemented over two years, as shown in Table 2.

Table 2

Phase 1	Approximate Cost	Benefits
Window replacement in many areas with vinyl double glazing and limited number of operable windows	$400,000	• Fewer drafts • Energy savings • Improved occupant comfort
3-in. Styrofoam™ roof insulation	$100,000	• Energy savings
Phase 2	**Approximate Cost**	**Benefits**
Convert to T-8 fluorescent lamps and electronic ballasts, with many new fixtures	$400,000	• Better lighting • Energy and maintenance savings • Reduced electrical demand charge
Upgrade ventilation and air-conditioning systems (increased air circulation) and add air conditioning to some new areas	$300,000	• Greatly improved indoor air quality • Improved HVAC control • Improved tenant comfort • Energy savings
HVAC computer control system, including numerous sensors for temperature and humidity, and a new humidification system	$80,000	• Improved indoor air quality • Improved HVAC control • Greatly improved tenant comfort • Energy savings
Domestic hot water (DHW) system redesign and consolidation	$40,000	• Improved DHW service • Energy and demand charge savings
Secondary lighting systems upgraded (e.g., LED exit lights and occupancy sensors)	$60,000	• Improved ambience • Energy savings
New lighting control system	$50,000	• Improved ambience • Energy savings

Savings generated by the energy retrofits have been estimated at 640 000 kWh per year, or about 23 percent of the original energy costs prior to the retrofits. This saves roughly $50,000 annually. It also reduces greenhouse gas carbon dioxide emissions by about 500 tonnes annually. Because the retrofits are quite recent, however, data confirming the savings is limited. Several changes to the building actually resulted in increased energy costs that are now offset by the energy-conserving retrofits. This included improved ventilation, air conditioning, lighting and humidity control.

Overall, $2.75 million was spent on the facility-improvement program, although this included some interior renovations and other cosmetic upgrades. The energy-related renovations cost $1.4 million – still a big expenditure, but one that will pay for itself over time.

Although upgrading windows is difficult to rationalize on the basis of energy savings alone, in some cases it can be easily justified based on improved space comfort levels. Similarly, installing additional roof insulation may be too expensive to justify on its own, but in this case the roof was at the end of its useful life and the upgrade was easily justified once the re-roofing cost that had to be incurred was recognized. This kind of rationalization is typical for most building-envelope retrofits. In most cases, it is easy to find upgrade opportunities that pay for themselves within months or a few years at most.

At the Kenneth E. Spencer Memorial Home, new lighting and HVAC (heating, ventilating and air conditioning) controls alone will save thousands of dollars each month, and some of the retrofits were not particularly expensive. Energy savings were often the sole reason for undertaking a retrofit project.

Residents are pleased with the improved level of comfort in the buildings, and the accountants are happy with the reduced energy costs. One outstanding success of the project was the replication potential of the lighting upgrade. After analysing the benefits of upgrading lighting, the potential for improvement was so great that the nine other facilities owned by Atlantic Baptist Senior Citizens' Homes Inc. were immediately upgraded.

Learn More

There are many reasons to make energy management projects a priority, and plenty of assistance is available to anyone wanting to learn more. It is not difficult to find a facility just like yours that is already reaping the benefits of an energy management project.

Readers are invited to contact the following:

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The Office of Energy Efficiency of Natural Resources Canada is a dynamic organization with a mandate to renew, strengthen and expand Canada's commitment to energy efficiency in order to help address the challenges of climate change.

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