

# FARADAY

## Case Study

### Briton House Retirement Centre Reduces Lighting Costs by 72%



Lighting technology has come a long way since the Briton House was built in 1971. With the dramatic rise in electricity costs the management were looking for ways to reduce their power use, save energy costs and cut maintenance costs. They turned to new technology.

Faraday Lighting was retained to audit, analyse, recommend and implement new lighting solutions that cut energy use, reduced the variety of lamps, cut maintenance costs, and maintain safety and aesthetics. This included delivering a level of light colour and quality acceptable for use in a seniors retirement facility.

The existing lighting was a mix of different fixtures and lamps. There were T12 and T8 fluorescent fixtures in four foot and eight foot lengths in various locations. The fluorescent fixtures had several different ballasts and increased ballast failures resulted in high maintenance and disposal costs. There were incandescent lamps in the stairwells operating 24 hours a day, 7 days a week, constantly burning out. In a number of the common areas there was a mixed bag of PL CFL, halogen PAR 38 and MR16 lamps. The underground parking had a combination of T12 fluorescent fixtures and metal halide canopy fixtures. In the dining room there were chandeliers with incandescent lamps.

### Energy Management Goals

- Drop overall lighting energy costs by at least 50%
- Reduce maintenance costs of replacing PL & T8 lamps
- Maintain high-level of building security, inside & out and improve aesthetics with lighting solutions
- Brighten up parking garage with single solution
- Achieve a payback period of two years or less

### Initial Lighting Energy Consumption

Common Areas > 229,543 kWh

Entertainment Areas > 34,748 kWh

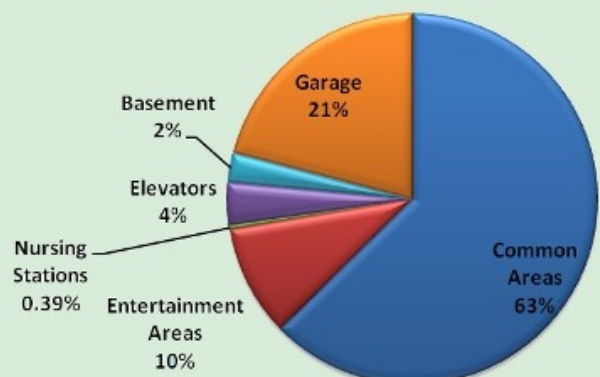
Nursing Stations > 1,401 kWh

Elevators & Lobbies > 13,245 kWh

Basement > 9,223 kWh

Garage > 75,046 kWh

**Total Consumption > 363,206 kWh**



Energy Use BEFORE		Energy Use AFTER		Energy Drop
PL Fluorescent	78,198 kWh	PAR 30 LED	22,557 kWh	72 %
	10.2 kW		2.9 kW	
T8 TUBES	79,856 kWh	T8 LED TUBES	38,018 kWh	52 %
	9.1 kW		4.3 kW	
T12 TUBES	35,784 kWh	T8 LED TUBES	11,430 kWh	68 %
	4.1 kW		1.3 kW	
MR16 & PAR LAMPS	62,459 kWh	MR16 & PAR LED LAMPS	11,682 kWh	81 %
	7.8 kW		1.47 kW	
HID-METAL HALIDE	24,258 kWh	T8 LED Fixtures	7,358 kWh	70 %
	2.8 kW		0.84 kW	
HID - HPS	657 kWh	DHID Retrofit	219 kWh	67 %
	150 watts		50 watts	
INCANDESCENT	66,226 kWh	LED A19 Lamps	7,726 kWh	88 %
	7.5 kW		0.88 kW	
CHANDELIER	15,768 kWh	LED Lamps	3,153 kWh	80 %
	1.8 kW		0.36 kW	
TOTAL	363,206 kWh	TOTAL	102,143 kWh	72 %
	43.45 kW		12.1 kW	

## Implementing LED Technologies

In the parking garage, old T12 fixtures and HID fixtures were directly replaced with 4' vapour tight T8 LED fixtures. In the balance of the project, fixtures were preserved and upgraded with LED or DHID technology. Fluorescent ceiling fixtures had their ballasts removed and were rewired to receive the T8 LED lamps at half the wattage and twice the life expectancy. The existing PL and PAR pot lights were retrofitted in place, limiting waste the need to repaint ceilings. Changing the incandescent bulbs in the stairwells and chandeliers cut an additional 71,115 kWh. All of the upgrades were eligible for rebates from Toronto Hydro under the OPA's save-ON-energy program.

## The Results

Upgrading the lighting resulted in energy savings of \$31,360 per year. Maintenance costs were reduced by \$12,380 over five years. The OPA rebate covered 30% of the project cost. The Briton House improved lighting and safety throughout the building while energy use for lighting was reduced by 72%. Total savings over five years was \$196,905. Because the installation was completed by Briton House staff the ROI on the project was exceptional at

96% and the payback period was 13 months.



Replacing the metal halide fixtures in the underground parking with T8 LED fixtures provided a whiter light and cut 16,900 kWh.

Energy Saved **72%**

Energy Savings per **\$31,360**

Total Savings Over 5 Years **\$196,905**

Decrease in Electricity Demand **31 KW**

Decrease in Electricity Consumption **261,063 kWh**

## Kwh Savings by Fixture Type

