



## CASE STUDY | CENTENNIAL COLLEGE

# SUBSTANTIAL SAVINGS AND QUICK PAYBACK

With the majority of its facilities built in the 1970s and 1980s, Toronto's Centennial College was primed to realize substantial energy savings by upgrading technology to current levels. An energy audit conducted by Toronto Hydro Energy Services in 2004 revealed several opportunities for improvement, with substantial savings coming from two measures – power factor correction and an energy efficient lighting retrofit. In fact, these two measures accounted for approximately 70% of the annual cost savings. Furthermore, when available incentives are taken into account, the payback on investment for these measures is a low 2.9 years.

### INCENTIVES LOWER OVERALL COSTS

Like any public institution relying on government funding, Centennial College must manage its resources carefully. Energy management is no different. With energy prices on the rise and growing concern about the environment, there is pressure on institutions to implement energy efficiencies. "Toronto Hydro Energy Services did an excellent job of presenting the opportunities for improvement and their respective cost and greenhouse gas savings. They also sourced all the available incentives, bringing down the overall project cost and lowering the payback period to just 3.1 years," explains Tyrone Gangoo, Manager, Plant Services, Facilities & Services, Centennial College.

### DELIVERING AS PROMISED

All measures were implemented before classes resumed in the fall and already the retrofit of existing lighting to newer, more efficient T-8 technology and the introduction of occupancy sensors to better manage lighting use are delivering the savings as

**"Besides the environmental benefits, the energy efficiency measures proposed by Toronto Hydro Energy Services simply made good economic sense."**

*Tyrone Gangoo, Manager, Plant Services, Facilities & Services, Centennial College*

promised. As Gangoo points out, "We have an annual energy budget of approximately \$2 million and we expect to see savings of about 10% annually from all the implemented improvements – a significant difference. In addition, we've reduced our environmental footprint by 1,441 tonnes of CO2 annually – that's the equivalent of taking 424 cars off the road!"



*More than 3,320 lighting fixtures were upgraded to T-8 electronic fluorescent lighting throughout the 4 campuses saving 778, 100 kWh in electricity annually with no change in light levels.*



*Power factor corrections at all four facilities improved power quality significantly and resulted in \$38, 780 in annual cost savings. This low cost improvement has a payback period of less than 2.3 years.*

## AT A GLANCE

### THE FACILITY:

Centennial College encompasses four campuses and seven satellite locations, representing approximately 1.082 million square feet. Home to some 12,000 full-time and 28,000 part-time students, the college operates 14 hours a day, 6 days per week, for most of the year.

### SERVICE:

Energy audit and energy efficiency retrofit.

### UPGRADES:

- Retrofitted existing T-12 lighting to more energy efficient T-8 technology without sacrificing lighting levels, replacing 4, 278 fixtures including HID, Incandescent ETC with higher efficiency alternative fixtures in three campuses and one residence.
- Introduced ultrasonic occupancy sensors at three sites.
- At 941 Progress Avenue Campus, converted the fan system to variable frequency drives to better match fan operation to air quality and comfort needs, and replaced the electric hot water heater with a high-efficiency natural gas boiler.
- Fine-tuned existing Building Automation Systems to optimize efficiency of new measures.
- Installed capacitor banks to improve power factor at all buildings.

### RESULTS:

**Project cost:** \$748,594

**Incentives:** \$141,152 (City of Toronto - \$129,201 and Enbridge- \$11,951)

**Annual cost savings:** \$196,055

**Annual electricity savings:** 1,433,608 kWh

**Annual natural gas savings:** 19,598 m3

**Annual greenhouse gas savings:** 1,441 tonnes of CO<sub>2</sub> equivalent to removing 424 cars off the road

**Payback:** 3.1 years