



## City of Toronto Civic Centres

Metro Hall, City Hall, North York Civic Centre, East York Civic Centre, Scarborough Civic Centre

### AT A GLANCE

#### The facility:

- Fourteen city-owned buildings

#### Service: Performance Design Build

#### Upgrades:

- Installed integrated building automation systems in City Hall, North York Civic Centre and Scarborough Civic Centre, enabling central management and control through the City's WAN.
- Installed CO<sub>2</sub> sensors to regulate demand control ventilation and introduced variable frequency drives on ventilation fans in Metro Hall.
- Converted 20,000 32-watt lighting fixtures in Metro Hall by implementing innovative 25-watt fluorescent tubes and upgrading to electronic ballasts.
- Introduced induction lighting for North York Civic Centre's atrium - fluorescent lighting with 100,000 hour life burn time for locations where changing tubes is difficult.
- Building envelope upgrades in each facility.
- Power factor optimization.

## Toronto's Civic Centres prove to be ENVIRONMENTAL LEADERS

"Toronto Hydro Energy Services proposed a plan that will see us realize substantial budgetary and environmental benefits for years to come."

**Jim Kamstra**, Manager, Energy and Waste Management Office, City of Toronto

The City of Toronto's environmental plan calls for at least a 15% reduction in energy consumption in city-owned facilities. The work on the Civic Centres represents substantial long-term energy savings for the city and provides significant environmental benefits. Toronto Hydro Energy Services Inc. was contracted to provide Performance Design Build services for the \$4.2 million Civic Centres project.

### Full turnkey project services

Having performed an energy audit and feasibility study, Toronto Hydro Energy Services has extensive knowledge of the facilities. All proposed energy efficiency improvements were fully quantified in terms of energy savings and environmental benefits. Under the Performance Design Build service, Toronto Hydro Energy Services provided full turnkey project services to implement the proposed measures and post-implementation monitoring and verification of results - 85% of the energy savings are guaranteed in the first year in the first year without additional insurance premium.

### Significant greenhouse gas savings

The work on the Civic Centres is not just about saving money. It's also about contributing to Toronto's environmental plan and Kyoto Protocol targets. When all measures are implemented, the project will reduce annual electricity use by 6,730,000 kWh and annual natural gas consumption

by over 100,000 cubic metres. These reductions along with the use of renewable energy through solar wall heating, will eliminate 2,200 tonnes of harmful CO<sub>2</sub> emissions annually. Carbon dioxide is one of the main contributors to smog and greenhouse gases.

### Metro Hall first to use 25-watt lighting

Energy efficient lighting retrofits deliver immediate energy savings as lighting fixtures are refitted with lower wattage lighting. In the case of Metro Hall, approximately 20,000 32-watt fluorescent tubes were replaced with 25-watt tubes. This difference in wattage has little impact on the building's operation yet had a significant effect on electricity use. From this single measure, electricity savings are over \$10,000 per year. Metro Hall is the first installation in the city to use this new technology.

### Ventilation controls installed

Optimizing a building's ventilation needs with the intake of external air and the output of heated or cooled air helps save on heating costs. At Metro Hall, CO<sub>2</sub> sensors now trigger building ventilation controls. Rather than continuously pumping external air through HVAC components, interior air quality controls and variable speed ventilation fans have been upgraded to enable better control and optimum air exchange contributing to a reduction in energy consumption and improved building conditions.

Continued on reverse...

# CITY OF TORONTO CIVIC CENTRES

## AT A GLANCE continued...

### Upgrades:

- Proposed solar wall to displace heating provided by non-renewable energy at the Police Garage and Scadding Court Community Centre.

### Results:

**Project cost:** \$4.2 million

**Annual savings:** \$525,000 (85% of the energy savings are guaranteed in the first year without additional insurance premium. 6,730,000 kWh in electricity 100,000 cubic metres in natural gas 2,200 tonnes in CO<sub>2</sub> emissions)

**Payback:** 7.6 years



**“Toronto Hydro Energy Services has extensive experience in energy management and they proposed a variety of solutions and new technologies that were attractive to the city from both an energy conservation and environmental perspective.”**

**Elena Gruia**, P.Eng., Project Manager, Energy and Waste Management Office, City of Toronto

## Integration of building automation systems

Building automation systems are vital for effective use of utilities as they aid in the management of heating, ventilation and air conditioning systems. Toronto Hydro Energy Services upgraded the existing building automation systems in each of the major buildings to take advantage of the latest technological advances. The systems at various facilities were integrated to give building managers the ability to manage multiple buildings from a single location. Now the building automation systems can be accessed from anywhere in the city where a building manager can sign on to the city's wide area network.

## Bringing in renewable green energy

Renewable energy played a role in the proposed energy improvements. Solar wall technology, which heats air as it's passed through a perforated sheet metal wall adjacent to the building, is a relatively low-tech method of incorporating renewable energy in a building's heating plant. A solar wall solution is being designed and installed by Toronto Hydro Energy Services for the Police Garage and Scadding Court Community Centre.

## High profile, high impact project

Buildings such as City Hall, Metro Hall and the Civic Centres are facilities where the community interacts with municipal government and it's critical that services are not disrupted as the project progresses. Improving the energy efficiency of public buildings establishes a high-profile example

of environmental leadership. With the significant cost-saving benefits of this project on display in public buildings, private facilities managers and building owners may be inspired to follow suit.

As Chris Tyrrell, General Manager of Toronto Hydro Energy Services, points out, “This project demonstrates the type of energy efficiency improvements, environmental benefits and sustainable energy savings that are possible when facility managers can take a longer-term view and invest in energy-saving capital improvements that will continue to pay dividends well beyond the initial payback period.” Thanks to the work of Toronto Hydro Energy Services, Toronto's Civic Centres are set to make a solid contribution to the city's finances and environmental goals in the years ahead.



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