

April 21, 2009

Cool It, Power It, Grow It The Greening of Toronto City Hall

Background

The City's "Climate Change, Clean Air and Sustainable Energy Action Plan: Moving from Framework to Action" included recommendations for City Hall: 1) to connect to Enwave Deep Lake Water Cooling (DLWC); 2) to purchase green power, 3) to implement energy efficiency and sustainability upgrades for the first phase of a sustainability showcase.

The City of Toronto is committed to showcasing City Hall as a sustainable building to reduce its environmental footprint. Over the years many measures have been implemented to reduce energy use and cost while improving the indoor environment and waste diversion rate.

Sustainable measures:

Implemented Measures	Present Initiatives (2009)	Future Plans
<ul style="list-style-type: none"> • T8 fluorescent lamps and occupancy controls • Window reflective film • Energy efficient motors • Zone lighting control in the council chamber • Green roof pilot project • Water saving fixtures • Web-based lighting control system • Web-based Building Automation System • LED Christmas lights • Elevator upgrades • Improved recycling program: paper, batteries, mobile phone, ink-cartridge • Green bin • Organic fertilizer 	<ul style="list-style-type: none"> • Lighting tied to security system • Wireless lighting control for 1st & 2nd floor • Mechanical upgrades • Podium LED outdoor lights • Green roof • Update operations and maintenance manuals • Environmental policy • Plastic bottled water ban • Deep lake water cooling • Electricity from green power • BOMA BEST (ie. GoGreen) certification 	<ul style="list-style-type: none"> • Variable axis wind turbine • Low-E window replacement • Indoor LED flood/spot lights • Pursue LEED-EB certification for City Hall • Target LEED Gold certification for the Nathan Phillip Square • 'Zero Waste' building

Key points:

- The recycling program has increased the waste diversion rate to 93% in 2008.
- Implemented energy efficiency measures have reduced the energy use and carbon dioxide (CO₂) emissions by approximately 20% in 2008 compared to year 2000.

- Cooling City Hall with Enwave's Deep Lake Water Cooling (DLWC) to displace conventional electricity is an important step to a clean and renewable energy.
 - ▶ DLWC will reduce the CO₂ emissions by approximately 325 tonnes (a 75% reduction as compared to conventional electric chillers.) This is equivalent to taking 70 vehicles off the road.
- Signing on for Bullfrog green power for all electricity use at City Hall is another step to rely fully on clean, emission-free wind and low-impact hydro generated renewable energy.
 - ▶ The green power from Bullfrog will reduce the emissions footprint by over 4,000 tonnes of CO₂, which is approximately equivalent to taking 770 vehicles off the road.
 - ▶ This green power purchase also reduces emissions of sulphur dioxide (SO₂) by 12,000 kg and nitrogen oxide (NO) by 5,000 kg.
 - ▶ CO₂ is the primary greenhouse gas that causes climate change and SO₂ and NO are major contributors to smog.
- Both DLWC and the green power purchase will assist the City's goal of reducing 6% greenhouse gas emissions from the 1990 levels by 2012; 30% by 2020; and 80% by 2050.
- By supporting clean and renewable power, the City of Toronto is taking a leadership role in the fight against climate change and air pollution and promotes further development of green power generation in Ontario.
- The green roof at City Hall has a number of economic and environmental advantages; reduction in stormwater runoff, reduction in energy consumption, reduction in the urban heat island effect and associated cooling costs, beautification of City Hall, and the creation of more natural green spaces.
- City Hall was recently approved to receive the BOMA BEST (Building Environmental Standards) certification which identifies City Hall as a building that is being operated in such a manner that meets a high standard of environmental performance and management.
- Completing the 2009 initiatives will reduce the CO₂ emissions at City Hall from 123 kg/m² to 25 kg/m²; a significant 80% less than year 2000! This compares well to the City's other civic centres where CO₂ emissions averaged 95 kg/m².

The City of Toronto has undertaken various initiatives to reduce greenhouse gas emissions such as retrofits of City-owned buildings, Deep Lake Water Cooling, solar energy walls and solar heating in pools to name a few. We are greening our fleet, watching our waste, and cleaning our air. For more information on what the City is doing visit <http://www.toronto.ca/livegreen>.

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