

LEADERSHIP IN ENERGY EFFICIENCY AT MISSISSAUGA CIVIC CENTRE



In 2012, the Mississauga Civic Centre energy management team set the goal of achieving the Town Hall Challenge energy intensity target of 20 equivalent kilowatt-hours per square foot by 2015. They reached this goal in 2013, and by 2015 had reduced total energy use by 17% compared with 2012. The team is now aiming higher still, working towards a new target of 15 ekWh/ft² (51 kBtu/ft²) by 2020.

Location: Mississauga, Ontario • City population: 766,000 • Building size: 465,185 ft² • Year built: 1987

City of Mississauga:
Founding Member of
Mayors' Megawatt
Challenge since 2003



**1990 Governor General's
Award of Merit**
(Royal Architectural
Institute of Canada)



**National winner
Town Hall Challenge
(2015)**



**2015 Living City
Energy Efficiency
Leadership Award**



The Civic Centre houses Mississauga's city hall, central library, Art Gallery of Mississauga, a conservatory, and a wedding chapel. Facilities include underground parking and an outdoor ice rink. The City of Mississauga already had an enviable record of achieving substantial savings at many of its facilities. The energy management team took on the Town Hall Challenge as motivation to achieve deeper savings at the Civic Centre.

About the Mayors' Megawatt Challenge and Town Hall Challenge

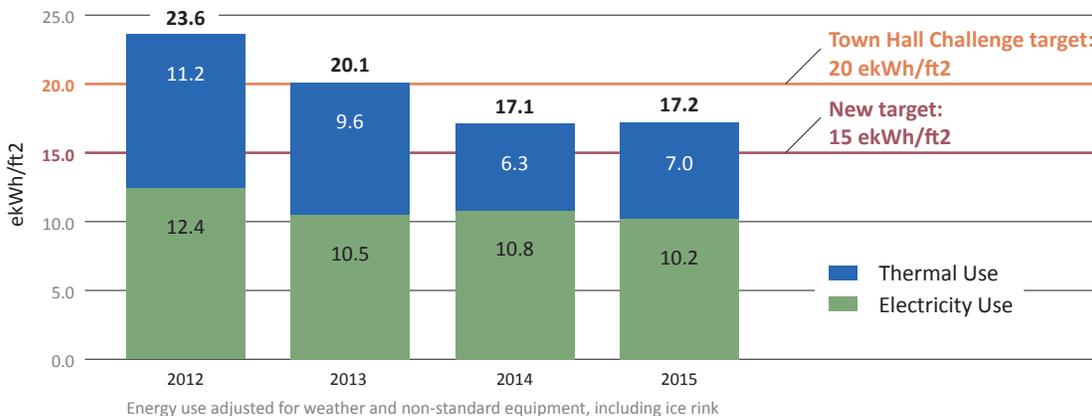


Since 2003, Toronto and Region Conservation's **Mayors' Megawatt Challenge** has been

bringing together leading municipalities to achieve exceptional levels of energy and environmental performance in municipal buildings.

The **Town Hall Challenge** (a project under the Mayors' Megawatt Challenge) was conducted from 2012-2015, with municipalities across Canada invited to work towards a target of 20 ekWh/ft² (68 kBtu/ft²) of total energy use by the year 2015. The initiative led to substantial energy efficiency improvements in participating buildings, several of which (including Mississauga Civic Centre) met the target.

Mississauga Civic Centre Total Energy Use Intensity



“Energy conservation is a municipal priority for cost, efficiency, leadership and environmental reasons.”

— Hazel McCallion,
former Mayor of Mississauga,
founding sponsor of the Mayors'
Megawatt Challenge (2003)

“Moving beyond benchmarking and Energy Star scores, the new approach of standard energy targets for different building types is transforming energy efficiency in commercial and institutional buildings by helping make the business case, and focusing the effort on improvements.”

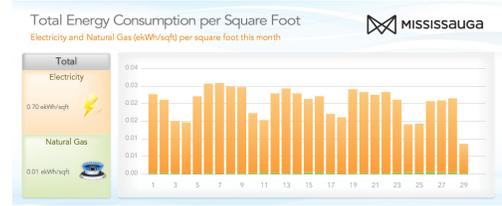
— Ian Jarvis, President, Enerlife Consulting



Achieving 20 by '15 at Mississauga Civic Centre

1. Using Data to Focus Action

After energy use was normalized for factors such as energy sources, space types and special equipment to allow comparison with the target, **energy analysis** and **benchmarking** served to link the patterns of energy usage with the operation of the building, which in turn pointed to areas of energy waste and opportunities to reduce consumption. The team used interval metering, sub-meter data and data loggers to dig deeper into identified areas of opportunity. The City has now launched a pilot real-time Energy Dashboard at the Civic Centre, displaying daily, weekly and monthly energy and water use and other related information. The dashboard will be deployed at other City facilities in the near future.



2. Squeezing Efficiency from Operations

Interval metering highlighted unoccupied electricity demand as a primary area of potential savings. Night audits and data-logging loads directed changes to operating periods. It also identified unexpected winter electricity use, which has since been set back during unoccupied periods. Ongoing monitoring helps the energy management team identify and address seasonal inefficiencies.



“As City of Mississauga employees, we know that the Town Hall Challenge is supported by senior management. This corporate commitment helps maintain enthusiasm and keep our efforts focused on continuous improvement.”

— Shalini Srivastava-Modi, Energy Management Coordinator, City of Mississauga



“At City of Mississauga we take our pledge to sustainability very seriously and this competition gave us the opportunity to prove it. We seek any opportunity to save energy and reduce the negative impact on environment and we encourage initiatives that target energy conservation and GHG reduction”.

— Raj Sheth, Director, Facilities and Property Management, City of Mississauga

Continuous optimization makes it possible to achieve and sustain deep energy savings. Operational improvements at the Civic Centre include:

- **Recommissioning**
 - Smart Building Automation System (BAS) control strategies (including HVAC and lighting)
 - Optimized schedules and setpoints
 - Tuning of chilled water valves
 - Installation and calibration of occupancy sensors
- **Maintenance**
 - Diagnostic equipment monitoring
 - Service contracts supporting energy efficiency
 - Regular O&M assessments
- **Asset renewal**
 - Energy efficient life-cycle replacement (rather than like-for-like)
- **Training**
 - One-on-one BAS training
 - Dollars to \$ense energy management workshops

3. Smart Investment in Capital Retrofits

Capital upgrades at the Civic Centre have also played a role in meeting and exceeding the Town Hall Challenge target. The original heating plant was supplemented with an efficient condensing boiler, and the old chillers were replaced with energy efficient machines. Inefficient lighting has been retrofitted with LEDs. Current projects include variable speed drives, chilled water valve replacement and computer room cooling. The Facility Asset Management Program includes chiller control optimization, further LED lighting, and high efficiency motors on supply fans and the cooling tower.



4. People Power

The City of Mississauga employs a team approach, involving energy management and asset management personnel, project managers, and operations staff who participate in monthly meetings focused on continuous improvement. Building occupants are engaged through a number of initiatives such as the **energy awareness** eLearning video for all staff, recruitment of Energy Champions, and development of the Green Leaders program. The **Energy Champions program** has over 30 members who spread the word about the Town Hall Challenge, assist staff in understanding goals and achieving targets, and help raise awareness and motivation to maintain efficient operations.



Joe Salema,
Operator



Douglas Hughes,
Operator

“Our success at the Civic Centre shows that combining modern technology with people engagement is the key to significantly lowering energy and water consumption. As we continue in this direction, we are confident our conservation achievements will keep increasing.”

— Daniela Paraschiv,
Manager, Energy
Management, City of
Mississauga

