



“Review of Demand Side Management (DSM) Framework for Natural Gas Distributors”

COMMENTARY BY TORONTO & REGION CONSERVATION AUTHORITY TO THE ONTARIO ENERGY BOARD

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BACKGROUND

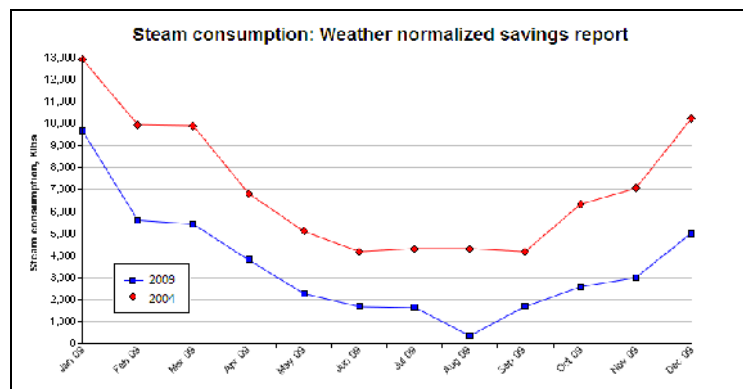
Greening Health Care is one of our Living City programs which we launched in May, 2004. Today, more than twenty Ontario hospital corporations and over 40 hospital sites are members of Greening Health Care. A central element of Greening Health Care is its web based building performance management system developed in Ontario, which now contains one of the largest performance databases in North America. The hospitals use the system to:

- benchmark their energy and water use,
- set targets based on high-performing facilities,
- determine their conservation potential, and
- monitor their monthly energy and water savings.

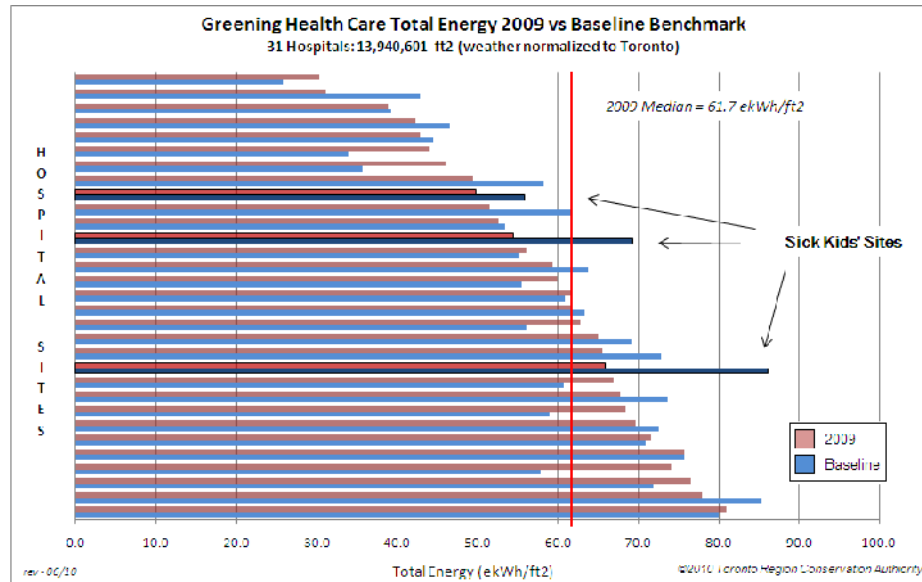
Member hospitals meet quarterly in facilitated workshops and webinars where they receive education in technology and best practices, plan the implementation of improvements, and network knowledge and experiences with each other. Together they form a collaborative community of interest working progressively towards ever higher levels of efficiency and cost savings.

The Hospital for Sick Children (SickKids) in Toronto is one of the founding members of Greening Health Care. Since 2004 it has implemented a range of operational improvements and retrofit projects across all three of its major downtown sites. Its savings have grown each year, and in 2009 its Atrium facility has been recognized for demonstrating a 50% steam use reduction from its 2004 baseline, making it one of the most efficient hospitals in Canada. SickKids’ total energy and water savings for all three sites in 2009 amounted to over \$1,900,000, and their current energy target aims to more than double those annual savings in future years.

SickKids Atrium steam savings report 2009 vs.2004:



For Greening Health Care as a whole, more and more member hospitals are recording double-digit percentage energy savings, together worth tens of millions of dollars annually. As new hospitals join the program they can readily assess their energy performance relative to the Greening Health Care database and top-performing hospitals, set initial targets, and gain immediate access to the accumulated knowledge and experience of the group.



Notwithstanding the energy savings made so far, the benchmark chart shows there is still a wide range of energy use per sq ft among the Greening Health Care hospitals. Many of the facilities in the lower section of the chart are newcomers to Greening Health Care and have considerable room to improve, with savings potential typically worth hundreds of thousands of dollars per year for each hospital.

Greening Health Care exemplifies what we have come to refer to as performance-based conservation. Such programs share the following characteristics:

- Voluntary, collaborative and member directed
- Continuous energy reporting – members have been monitoring their energy performance for many years
- Data-driven – targets and best practices are informed by benchmarking and validated by actual energy savings recorded by the hospitals
- Multi-year commitment – it can take 2 years or more for a new member hospital to demonstrate early success with operational improvements and make the business case for greater investment in conservation
- Continuous improvement – energy conservation evolves from one-time projects to an ongoing management process of individual initiatives working towards higher and higher performance targets

Performance-based conservation complements and enhances more prescriptive DSM programs. It harvests the considerable potential for low cost, high total resource cost (TRC) savings resulting from operational improvements, re-commissioning of building systems, and upgraded controls and automation. By continuously monitoring and reporting on actual energy use and savings achieved, it helps verify that prescriptive measures are properly installed and operated and do indeed realize the estimated savings upon which prescriptive incentives are calculated. Performance-based conservation informs standard-setting, supports rational “bottom up” estimation of conservation potential in each building sector, and reports on overall energy, cost and emissions savings and

progress towards targets using real data, not engineering estimates. It also enables collaboration, competition and accountability among building owners, managers and communities which creates broad market transformation.

Since TRCA introduced this approach seven years ago, performance-based conservation has grown rapidly within Ontario and is being adopted across Canada. TRCA also delivers the Mayors' Megawatt Challenge for municipalities, and helped launch the ongoing Sustainable Schools program. TRCA is working under an agreement with the Canada Green Building Council (CaGBC) to support its national GREEN UP program which uses a similar approach in the commercial office, government/utility company administration buildings, K-12 schools, municipal arenas, bank and credit union branches, and university sectors. TRCA and CaGBC are jointly developing Greening Retail to address the retail sector, and intend to introduce the approach to more building types over time. Using web-based delivery, the approach is fully scalable and potentially accessible to all sectors, buildings and homes across Ontario and beyond.

Performance-based conservation is transforming the market in Ontario and across Canada. In September, 2009 Real Property Association of Canada (REALpac) launched its "20 by '15" target which aims to lower median energy for office buildings by up to one half by 2015. "20 by '15" is derived from the performance metrics developed through the national, performance-based GREEN UP program, and is receiving worldwide attention as a model for deep conservation and emissions reductions. The Government of Canada is considering the results of these performance-based conservation programs in its development of Energy Star for buildings in Canada.

Enbridge Gas Distribution (EGD) has been supporting Greening Health Care and Sustainable Schools since 2006, primarily through its M&T (Measurement & Targeting) program for commercial buildings. Incentives are paid to program participants based upon reports which document actual energy savings achieved and the actions taken to generate the savings, and which are certified by the building owner and an engineer. Any incentives paid under other custom or prescriptive EGD programs are netted off against the recorded savings so there is no double counting. Importantly this program encourages and rewards good management and continuous improvement. For example, SickKids earned incentives for 2006, 2008 and 2009 as it continued with its ongoing energy conservation program, reinforcing the persistence and reliability of performance-based conservation savings.

For 2009, this EGD program support has extended to our Mayors' Megawatt Challenge program and to office buildings and schools participating in performance-based programs.



What we have learned is that:

- performance-based conservation delivers far greater energy savings than had been expected,
- the larger part of the savings is found in low/no cost improvements which are not well addressed by traditional incentive programs,
- successful and sustainable conservation requires management and operational excellence as well as good technology,

- conservation programs have to support building managers with information, tools and resources so that they can recognize and tackle the unique set of conservation opportunities in their facilities,
- benchmarking can identify buildings with high conservation potential, inform target-setting and point to where savings are to be found in each building, and
- monthly savings reporting flags variances in predicted savings, identifies measures which do not perform as intended, verifies savings which have been achieved and guides continuous improvement.

Such specific, timely and accessible information can align and integrate the efforts of all the players involved in building performance, including managers, operators, contractors and designers, enabling them to work together towards higher standards of energy efficiency.

Performance-based programs address the whole building and all its systems, delivering natural gas, electricity and water savings, and thereby providing the opportunity for natural gas and electric utility companies to coordinate their conservation programming for all building sectors.

TRCA's recommendations on the next generation of natural gas conservation programming are based upon expanding and accelerating the proven benefits of performance-based conservation across all buildings and building sectors in Ontario. Our goals are to:

- support provincial policy objectives,
- scale up the level of conservation,
- harvest the considerable untapped potential for energy savings through operational and other low cost improvements,
- deliver verified energy savings to Ontario ratepayers and consumers, and
- develop a rapidly expanding and readily accessible market for Ontario's green products and services

To meet these goals on a broader provincial basis, TRCA recommends that future DSM/CDM programming in Ontario should include the following elements:

- Multi-year term recognizing recruitment and engagement goals in the beginning while providing energy reporting, target-setting and conservation planning
- Incentives based on documented energy savings
- Coordination between natural gas and electric utilities
- Provision of reliable and accessible monthly billing data
- Conservation potential estimation based on benchmarked performance data for each sector
- Advanced metering for mid-sized buildings, including schools
- Research into best practices identified through continuous savings reporting
- Related education for building owners and managers, and for the buildings industry
- Sponsorship for established and proposed programs which provide these elements to the market in Ontario
- Measure Life input assumptions raised over time as permanence of savings is demonstrated