

Where the Green Jobs Are:

Harnessing the Energy Conservation Potential in Buildings

By Ian A. Jarvis – President, Enerlife Consulting

Ontario's homeowners, businesses and public agencies can save between \$5 – 10 billion annually by eliminating energy use inefficiencies in buildings and homes. Harnessing this potential will put money in the pockets of homeowners and add to businesses' bottom lines, while creating tens of thousands of new "green" jobs across the economy. Progressive legislation, combined with leadership from a growing number of organizations, has positioned Ontario to realize this potential at home, while capturing a large share of the emerging global market. More needs to be done to focus the efforts and incorporate best practice standards into government regulations.

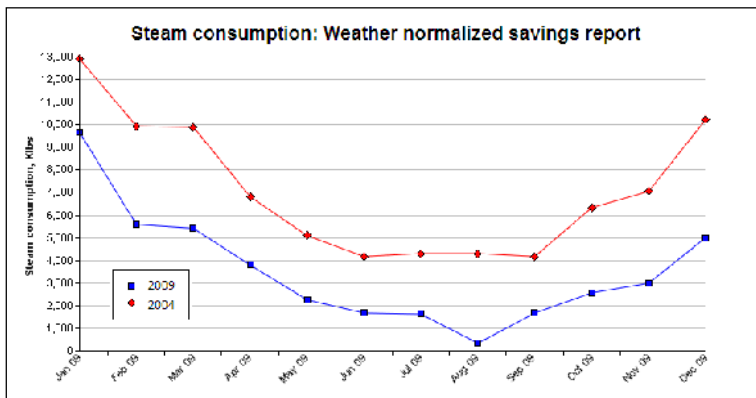


The Hospital for Sick Children – Atrium Wing
Toronto, Ontario, Canada

John Natalie has a green job. As Program Manager for Environmental Sustainability at the Hospital for Sick Children (SickKids) in Toronto, John was hired in 2010 with specific responsibility for implementing hospital initiatives to support their corporate strategy of creating a sustainable infrastructure and promoting a socially responsible work environment. Notably, his salary is paid for entirely out of the energy savings and utility company incentives that SickKids earns each year through its ongoing, remarkably successful energy and environmental program.

Since 2004, despite the addition of medical equipment and intensification of services, the hospital has lowered total energy use by 19.3% across its three Toronto sites, recording \$1,980,000 in utility cost savings in 2009 alone. Add in \$135,775 in incentive payments from Enbridge Gas since 2007, and energy conservation has been an important contributor to SickKids' operating budget.

SickKids Atrium Facility Steam Consumption



Ian Jarvis is President of Enerlife Consulting. He served from 2003-2007 as founding chair of the Canada Green Building Council and is a member of the National Advisory Council on Energy Efficiency.

“Over the past seven years we have undertaken a succession of initiatives to lower our energy and operating costs,” says Ron Lowe, the hospital’s Director of Facilities Operations. “We manage these efforts ourselves. Our people are skilled at spotting and fixing energy inefficiencies.”

Those initiatives range from a sophisticated control system for operating theatre ventilation, which assures proper pressure differentials as well as saving energy, to tracking down and repairing steam leaks. SickKids has conducted lighting retrofits, modified its heat recovery systems, upgraded and reprogrammed building automation systems and even installed a rooftop solar thermal system to preheat hot water. The total cost to date has been paid for with less than one year of savings.

SickKids is now among the most energy efficient hospital corporations in the province. “But we feel we have only just begun,” says Lowe. “Working with a large number of other Ontario hospitals through the Greening Health Care program (see boxed profile), we have targeted doubling our savings over the next few years.”

Greening Health Care is a collaborative program among more than forty Ontario hospitals working together to lower energy use and greenhouse gas emissions. Members benchmark their performance, set targets and monitor savings, while sharing experience and best practices in quarterly workshops. Greening Health Care is delivered across Ontario by

Toronto & Region Conservation.



According to Lowe, “Energy conservation is about good management, not big capital expenditures. There is always an economical way of correcting inefficiencies – the trick is in finding the opportunities, thinking them through, and then making sure that improvements are maintained over time.” And the experience is being leveraged with their major new Research and Learning Tower which is now under construction. “We are incorporating all we have learned into our new facility” says Lowe.

SickKids is among a growing number of public- and private-sector organizations getting serious about tackling energy efficiency in their buildings. Their common message is that the potential for savings is far greater than they had believed, and the big savings are found where people least expect.

Brad Parkes is Assistant Manager of Design & Construction Services at the Simcoe County District School Board in Barrie, Ontario. According to Parkes, “It’s all about attention to detail.” Over the past two years the board has been benchmarking all of its schools, analyzing the high energy users, and auditing their systems to find out what is causing high consumption. “We continue to be amazed by what we are finding,” says Parkes. “We had already retrofitted all of our T12 lighting to T8 technology, but are now redesigning that lighting to gain additional savings of up to half.” Upgrading the Board’s building automation systems is also yielding large savings, while their IT department is contributing with a sophisticated network control system that substantially lowers the energy use of their 12,000 computers. Systematic testing of their heating, ventilation and air conditioning systems is uncovering a range of problems, some dating back to original design and construction, with others resulting from

operational inefficiencies or deterioration over time. “We are now busy identifying and fixing these problems” says Parkes, and the results speak for themselves.



*“Trillium Woods Elementary School in Barrie is one of our most efficient schools, having been designed in 2002 under the Government of Canada’s Commercial Building Incentive Program. Benchmarking and system testing is identifying further significant savings.” - **Brad Parkes***

The results are remarkable. The Simcoe County District School Board recorded a little over \$300,000 in savings in 2009 as their program got underway. In addition, since 2007 they have earned over \$63,000 in incentives from Enbridge Gas based on actual, recorded gas savings. When their current multi-year program is completed they are targeting Board-wide savings of 26% worth more than \$2,000,000/year. “We are improving indoor environments in the schools and lowering maintenance costs, as well as saving energy and reducing our carbon footprint” says Parkes. “Millions of dollars in savings are just the beginning.”

What do these examples tell us about the potential for energy cost savings, emissions reductions and green jobs as part of a vibrant green economy in Ontario?

For Building Owners

Every portfolio of buildings contains rich veins of conservation gold which can be converted into capital, operating cost savings and a smaller carbon footprint. Benchmarking and target-setting readily quantify potential and point to where savings are to be found. Low and no cost re-commissioning and operational improvements are generally making up the larger part of the savings. *Management excellence achieves more than capital expenditures.*

For the Government of Ontario

In round numbers, Ontarians spend \$20 billion each year on utilities for buildings and homes. Up to half of this amount is being shown to be wasted. Unlocking up to \$10 billion in annual savings can create more than 50,000 direct, high quality jobs while adding more to the Ontario economy than all federal and provincial stimulus spending over the past 3 years.

The Green Energy Act has set the stage for rapid growth in energy conservation across the province. Realizing this potential requires strong regulation centred on the real performance of buildings, and incorporating current standards and best practices into the design, retrofit and operations of public sector facilities. *Government can lead by example, adopting the key principles of benchmarking, target-setting and accountability for results, while supporting the capacity of businesses across the province to meet the growing market.* The Building Code can follow, incorporating higher design and performance standards to consolidate performance improvements.

SickKids, Simcoe County Board of Education, and a growing number of other organizations across Ontario are demonstrating how this can be done.

For Public Services in Ontario

As we enter an extended period of fiscal austerity, reducing utility costs provides the best option for saving money in order to maintain services. As Ron Lowe expresses the priority for SickKids, “Most of our savings have gone into preserving front-line service jobs.” *Every public agency should know its potential for utility cost savings, and make it a priority to achieve and sustain a high level of efficiency.*

For Utility Companies

Ontario is entering a new era of performance-based conservation. Whereas utility programs in the past have relied on engineering calculations of savings, today we have real performance data to drive and inform conservation action. Performance-based programs such as Greening Health Care are helping organizations quantify their potential, determine where savings are to be found, share best practices and verify that savings are actually achieved and sustained over time.

The next generation of conservation programming can build on the performance-based conservation process and the new standards by:

- Supporting the establishment and growth of collaborative, data-driven, multi-year programs such as Greening Health Care for all building types and homeowners;

- Raising the expectations for engaging building owners in comprehensive conservation action;

- Establishing building specific benchmarking standards and conservation targets so that all potential savings are identified and harvested; and

- Supporting continuous energy use monitoring and reporting, with incentives linked to actual savings, to reward comprehensive initiatives and drive continuous improvement.

For the Energy Services Industry

The market for energy conservation services and performance-based solutions is set to take off in Ontario (see boxed story on page 5). This market will reward new methods and knowledge, and inform new approaches to business. *Those companies that adapt and consistently deliver high standards of building performance will prosper in the emerging green economy.*

This new green economy is global in scale. It is transforming traditional ways of doing things, and nowhere more so than in the buildings sector. Market transformation presents risks and opportunities from which arise new market leaders. Through the Green Energy Act, and the initiatives of SickKids, Simcoe County Board, Toronto & Region Conservation and a growing number of other organizations, Ontario businesses are particularly well positioned to seize the moment. Harnessing the energy conservation potential in buildings can be an important economic and environmental driver for decades to come.

Growing the Energy Services Industry

"We could grow a whole lot faster if there were more qualified people available." So says Chris Aaltonen, General Manager of CFMS Consulting. Founded in 1992 and with its head office in Richmond Hill, CFMS already employs 20 people in Ontario as well as 5 more across Canada and 2 in its newly opened office in Dubai. That number has grown by 20% over the past two years. CFMS provides commissioning services to building owners – in essence they are in the business of ensuring that buildings work properly.

Similar sentiments are expressed by Jim Bowie, a partner with Setpoint Building Automation located in Concord. With 17 employees in Ontario, Setpoint has grown by 25% since 2008. As the largest Ontario dealer/contractor of Reliable Controls' products (manufactured in British Columbia), Setpoint installs and programs building automation systems in office buildings, schools and other building types. "While our products come from outside the province," says Bowie, "three-quarters of our revenues are the labour we put into our projects."

Rick Williams, president of Carma Industries, would also welcome better access to qualified people. "The economic downturn has actually helped a bit" says Williams. "As some industries have closed down, a number of experienced people have become available, but they need training to transition to the Green Industry." Carma develops, manufactures and services utility metering systems for buildings. With 40 employees in Ontario and 7 more in Vancouver, Calgary and Ottawa, the company has grown by 70% since 2008, and has recently built its new headquarters in Lindsay to accommodate continuing growth.

The three companies know there are capable people out there looking for work, whether they are displaced workers, new immigrants or graduates from post-secondary education. "We would applaud more training, apprenticeship and transitional employment programs targeted at the specific skills needed for energy conservation," says Williams.

CFMS, Setpoint and Carma are representative of the hundreds of small and mid-sized companies which are part of Ontario's dynamic energy conservation industry. "The green building movement is an important driver of growth," according to Williams. "There is considerable demand for submetering of commercial office buildings to support tenant engagement and energy conservation." Aaltonen agrees that green buildings are good for business. "Interest in LEED certification has brought greater attention to commissioning new buildings and re-commissioning existing ones." Bowie also sees the relentless rise in energy prices as an important factor in the growth of their business. "Building owners know that their utility costs are only going one way," says Bowie. "As we are increasingly able to show the savings due to our building automation systems, the business case for taking action becomes more compelling."

All three firms are well positioned for continued growth. So far they have not felt the effects of Ontario's Green Energy Act whose regulations, when they are enacted, can be expected to further accelerate demand for energy conservation products and services. Asked what more the government could do to support market growth, leading by example topped the list. "There are government buildings, schools and hospitals all over the province," says Aaltonen. The province could really help with a dependable, multi-year program to achieve high energy performance in public buildings. "Create a market for qualified companies able to demonstrate consistently great results, and you will see the emergence of Ontario firms capable of competing across North America and around the world." Carma and Setpoint, along with the rest of Ontario's energy conservation industry, would wholeheartedly agree.



Enerlife Consulting is a management consulting firm based in Toronto, Ontario, enabling building owners and managers to achieve and sustain high standards of energy and environmental performance across building portfolios. The company's online Green Building Performance System is used by owners and managers from all building sectors.

For more information, please visit www.enerlife.com