

Commercial Building Retrofit Initiative: *Background*

The Challenge

Improving the energy efficiency of our building stock presents a vast untapped potential to increase our bottom lines, better our workplaces and protect our environment. Commercial buildings account for one third of the greenhouse gas (GHG) emissions in the GTA, and consume 37% of the electricity and 17% of the natural gas. Available energy efficiency technologies with significant economic and environmental benefits are not penetrating the sector. And while simple behavioral changes in the use and management of our commercial space could have a major impact on energy efficiency with little cost, widespread adoption of these changes is lacking. All stakeholders in the commercial building sector need a coordinated and timely action plan to increase the resource efficiency of our existing building stock in order to ensure reliable and affordable energy for the region with minimal environmental impact, uphold the desirability of the region's collective building stock on the global stage, attract and retain talent, and meet critical carbon emission reduction targets.

- ✓ **How can tenants of large GTA buildings and building owners work together to create a culture of energy awareness and accelerate broader resource efficiency and retrofits in the GTA?**

The Current Situation

Office buildings are by far the largest consumers of energy in Ontario's commercial and industrial sector. Since the GTA is home to over 80% of the provincial office floor area, most of the energy consumption and carbon emissions in this sector are locally based.¹ Retail trade is second in energy use, although less than half of the consumption of office buildings. Between 1990 and 2005, large proportional increases were noted in energy requirements from auxiliary equipment, resulting from increasing computerization of work spaces with computers, printers and personal electronic devices; and space cooling resulting from the higher cooling rate of commercial/industrial buildings. Space heating, however, continues to be the largest use of energy throughout the period, accounting for over 50% of the total energy consumed.

Evidence indicates that further improvements in the Ontario's building efficiencies are not only possible, but cost effective. The Canada Green Building Council conducted a national pilot project for commercial office buildings in 2008 to support the introduction of *LEED Canada for Existing Building* and testing of a new Green Building Performance System. Fourteen commercial landlords participated, with 64 buildings totaling more than 32 million ft². This benchmarking pilot project demonstrated that the range of energy use intensity across the commercial building sector is more than 2.5:1, thus illustrating the

¹ Trend data for energy consumption and emissions from the GTA commercial building stock is elusive, although the Toronto Environment Office is formulating a plan with Toronto Hydro and Enbridge to compile consumption data based on postal codes. The Toronto Atmospheric Fund has calculated energy consumption and emissions in the GTA based on utility customer classes and sectors; however, these classes do not clearly delineate office buildings and retail space.

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potential for significant improvement in energy use through the broader commercial office sector.² This pilot project is the basis for the adoption of the 20 kWh/ft²/year by 2015 office building energy consumption target, or **20 by '15**, announced jointly by the Canada Green Building Council (CAGBC), the Building Owner and Manager Association (BOMA Canada) and Realpac. REALpac estimates that by achieving this target, average energy use in commercial office buildings would decline by 48%, with operational cost savings of \$1.6 billion and greenhouse gas reductions of 6.8 MT.

A recent report by McKinsey supports the energy efficiency potential of the existing building stock. McKinsey estimates the commercial sector constitutes 25% of potential end-use energy savings in the US by 2020, with a full 35% of that potential in the existing private building stock.³ McKinsey also estimates that deploying all NPV-positive efficiency improvements in existing US privately owned commercial buildings would provide present-value savings of \$104 billion, with a required initial investment of approximately \$73 billion. By deploying even 35% of this investment, 60% of the energy efficiency potential could be captured.

Recent Developments – The Perfect Storm

Market forces, public awareness about climate change and public policy initiatives are converging to set the stage for a transformation of energy efficiency uptake in the commercial sector.

Sphere of Impact	Building Owners	Tenants
Market Data	✓	✓
Shareholder CSR		✓
Supply & Demand	✓	✓
Public Policy		
Incentives	✓	✓
Building Mandates	✓	
Labeling/Benchmarking	✓	
Carbon Pricing	✓	

Market Data: Market data is now emerging regarding LEED New Buildings and Energy Star, which suggests that energy-efficient buildings fare better when it comes to occupancy rates, rent premiums and sale prices. Data relevant to tenants is also emerging. Although health and productivity are difficult to quantify, a 2008 study by Deloitte, *Dollars and Sense*⁴, show that retrofitted buildings do in fact experience many such benefits. Deloitte surveyed 16 retrofit projects and found that “people benefits” were among the main reasons to retrofit:

² Canada Green Building Council. “Canada’s Building Performance Program for Commercial Office Buildings”. April 2009.

³ McKinsey & Co. “Unlocking Energy Efficiency in the US Economy.” July 2009.

⁴http://www.deloitte.com/assets/DcomUnitedStates/Local%20Assets/Documents/us_re_Dollars_Sense_Retrofits_190608_.pdf

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- 93% reported a greater ability to attract talent
- 81% saw better employee retention
- 87% experienced improved workforce productivity
- 75% reported improved employee health
- 100% experienced an increase in goodwill and brand equity

Shareholder Corporate Social Responsibility (CSR) - A report from the Economist Intelligence Unit shows that CSRs are becoming much more important in investment decisions. In a 2005 study, **81% of investors considered CSR an important factor in their investment decisions.**⁵ The disclosure of socially responsible endeavors for tenants and building owners has become a powerful marketing and branding opportunity. Energy efficiency of their office and retail spaces aligns with this interest.

Supply and Demand: The real estate sector in the GTA is feeling the impact of the weak global economy, as Toronto's office vacancy rate rose to 9.1 per cent during the third quarter of 2009, from 6.6 per cent for the same period last year, according to CBRE⁶. In the next few months, the City will see 3.9 million square feet of new office space hit the market as five office towers are completed - the RBC Centre, the Telus Tower, the Bay-Adelaide Centre and Maple Leaf Square - as well as 18 York St., to be completed by 2012. The pressure to attract and retain tenants is high, and market forces are working in favour of the tenant. Building owners understand that energy efficiency can act as a competitive advantage. This market situation is occurring at a time when most of the downtown core office space is approaching the natural life cycle of major systems, as 53% of the GTA building stock is 26 years or older. With the right tools, the combination of vacant space and replacement of systems can provide a unique opportunity to improve our overall energy efficiency.

Public Policy: All three levels of government have created incentive programs that help building owners and, in some instances, tenants finance energy efficiency improvements, with the public policy objective of meeting stated emissions reductions goals in the building sector. Other public policy options include efficiency mandates, in which new buildings or significant renovations must meet certain energy use requirements.

Labeling/ Benchmarking: Natural Resources Canada is currently adapting the US Energy Star benchmarking tool to help building owners measure the energy performance of their commercial and institutional buildings compared to other similar facilities in their region or across Canada. Other benchmarking tools are also on the horizon. Currently mandated in the EU, building labeling is an evolution of benchmarking and provides transparency of energy consumption information to the broader market.

Carbon Pricing: In 2007, Sustainable Development Technology Canada concluded that a market-wide carbon price signal is the single most important factor in driving a shift toward sustained efficiencies. Various price signals are now being considered at all levels of government. While the debate over price

⁵ http://graphics.eiu.com/files/ad_pdfs/eiuOracle_CorporateResponsibility_WP.pdf

⁶ <http://www.theglobeandmail.com/report-on-business/vacant-space-continues-to-grow/article1295709/>

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mechanisms and timeframe continues, entitlements for energy efficient buildings may be on the horizon.

In addition to the positive real value of energy improvements, other well documented reasons to support energy efficiency in the building stock are as follows:

- **Mitigate climate change impact.** As noted by the Intergovernmental Panel on Climate Change (IPCC), energy efficiency in the building stock “*encompasses the most diverse, largest and most cost-effective mitigation opportunities.*”⁷
- **Improve air quality.** The Ontario Medical Association estimates that in 2005, the illness cost of air pollution in Toronto was \$118.16 million for health care and \$80.9 million for lost productivity.⁸
- **Optimize our limited energy resources.** The Ontario Power Authority estimates that as early as 2014 demand will outstrip supply and that by 2025, the demand gap could be 10,000 MW. The Minister of Energy has directed the OPA to reduce demand by 6300 MWs by 2025 through conservation efforts. This can only be achieved with the full participation of both the public and private sector.
- **Retain energy dollars in the City.** The City of Toronto is a net importer of energy. Savings from reduced consumption could boost the local economy.
- **Create jobs in the emerging green economy.**

The IPCC estimates that the economic value of these additional benefits likely far exceeds the energy savings from the energy efficiencies themselves.

Chief Barriers to Progress

There is a well documented “efficiency gap” between the levels of investment in energy efficiency that appear to be cost effective based on engineering /economic analysis and the low levels of investment that are actually occurring.⁹ This gap is compounded by recent developments that would suggest a shift toward energy efficiency. All levels of government have sought to identify the barriers to broader

⁷ IPCC, Working Group III, Fourth Assessment “Residential and commercial buildings. In Climate Change 2007: Mitigation.

⁸ <http://www.oma.org/phealth/ICAP2005regional.pdf>

⁹ PriceWaterhouse Coopers. “Background Report on the Energy Plan for Toronto”.

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implementation of energy efficiency measures, with a significant overlap in findings. These barriers include:

1. **Agency issues.** When tenants are responsible for utility bills, there is little economic incentive for a landlord to replace inefficient equipment or provide the most energy efficiency equipment when replacements are needed, which may come at a greater cost than standard equipment.
2. **Capital constraints.** Organizational hurdle rates may not accommodate energy efficiency investments with longer term payback periods. Furthermore, some organizations may not be able to finance the initial capital outlay for efficiency improvements.
3. **Lack of awareness or information.** Understanding the alternatives for improving energy efficiency from a technical and cost/benefit perspective requires reliable access to information and an investment of time. These resources may not be available, internally or externally, to an organization. Furthermore, incentive programs that support energy efficiency may not be well understood.
4. **Custom and habit.** Established budgeting and operating practices may not readily accommodate investments or processes to improve energy efficiency.
5. **Energy price distortions.** The true cost of energy, including the cost of greenhouse gases, is not included in the price of energy in Ontario. If all costs were included in the price of energy, more investments in energy efficiency would be justified.

Opportunities for Action

- Develop criteria for energy efficiency performance measuring across building sectors.
- Mentor low efficiency targets for improvements, leveraging existing incentive programs and local expertise.
- Develop financing mechanisms to drive retrofit uptake.
- Address the issue of split incentives for building owners and tenants and drive uptake of “green leases.”
- Work with stakeholders to promote Ontario based companies in the building efficiency arena.
- Promote energy consumption and behavioural “Best Practices” for office and retail tenants
- Develop a toolkit for commercial sector business case and resources.
- Work with public policy stakeholders to develop clear pricing signals for carbon emissions.