March 29, 2011

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge Street
Suite 2700
Toronto, Ontario, M4P 1E4

To: Board Secretary, Kirstin Walli

Re: EB-2008-0346 – Demand Side Management ("DSM") Guidelines for Natural Gas Utilities – Stakeholder Comment

Energy@Work Inc. is committed to promoting and facilitating energy efficiency in the commercial and industrial sectors. We assist property management firms which collectively have a portfolio of over 25 million square feet of commercial office space. We also work with many of the major retail properties and industrial customers in the GTA.

We work with our clients to identify, assess, and—if all goes well—implement and verify energy efficiency projects. This is often as much an exercise in politics as it is an exercise in engineering or cost-benefit assessment. This is particularly true in the retail and commercial sectors, since the stakeholder who pays the bill (the tenant) is not typically the stakeholder who manages the property's energy-using systems (the property owner / manager).[1]

We are also active advocates in the public discussion on EE in Ontario, publishing case studies and research papers on EE which we make freely available on our website (www.energy-efficiency.com).[2] We participate in many of the major Ontario EE events.

Outside of Ontario, we've volunteered our time and presented at conferences all over the world (most recently South Africa, Singapore, and Australia as part of IEEE Distinguished Lecture program). We interact regularly with top energy management professionals in Ontario and elsewhere to stay current on best practices.

Preliminary Discussion

In our experience, DSM can be the difference between a viable natural gas-efficiency project being green, yellow or even red-lighted. In most cases, energy management is not commercial or industrial property managers' core business. This means that it often takes more than a good business case to interest an asset manager in undertaking a project. They're very risk averse. This is shifting slowly, but the norm against active energy management on the part of property owners and managers, not to

[1] Ref: This is discussed in the "Partners in Green" paper, included in Appendix A.

[2] Examples of Energy@Work's advocacy, educational initiatives, and community engagement:

- Several submissions to the OEB on behalf of a 'customer perspective, e.g.,http://www.rds.oeb.gov.on.ca/webdrawer/webdrawer.dll/webdrawer/rec/102902/view/EnergyEfficiency_comments_20090205.PDF
- The IEEE's Symposium on Future Friendly Technologies, April 30, 2011 - http://www.ieee.ca/wie/wienc11/
- Toronto Zoo: www.ECOexecutives.org

Contact: Scott Rouse, 416-402-0525, scott.rouse@energy-efficiency.com

mention their tenants, is entrenched. Energy management, in a significant proportion of cases, is left to operators who often have limited resources. This is an important reason why DSM programs are so critical to Ontario's competitive future.

In most cases, DSM's impact is to move an EE project up the priority list, meaning that it gets done, and sometimes sooner. Because the environmental benefits of consumption reduction are cumulative, this means that for every year that a project reduces waste, the greater the green benefit to the province. Additional, the benefits are direct and verifiable, since both Enbridge and Union maintain very high standards for project measurement and verification (M&V). Rigorous M&V ensures that claimed reductions are both real and sustainable.

Finally, contrary to any suggestions to the contrary, the natural gas DSM field is far from "crowded with organizations … spending ratepayer funds in the pursuit of cost-effective conservation" (February 14th School Energy Coalition submission, page 4). The only example given was the CDM programs recently launched by the OPA, but these programs are devoted to electricity demand reduction.[3] Natural gas efficiency projects are ineligible. It was further stated in the School Energy Coalition submission that "gas utilities are no longer a lone voice [in DSM]. In fact, there are now many voices…" – we would be very curious to know who else exactly is hearing these voices, and what we and our clients need to do to hear them too.

Perspective

The Board Secretary's request for comment begins by stating the Board's determination that ratepayer-funded natural gas DSM activities should not be expanded (page 6).

Before moving to the specific issues raised in the letter, we would like to emphasize our support for DSM expansion. We respectfully request that, as the DSM discussion proceeds, there be greater engagement facilitated with stakeholders more directly involved with customers and knowledgeable about their concerns. Energy@Work would happily volunteer to share customer case studies, comments and challenges.

The case study provided in Appendix B describes the identification, implementation, and results of a 2010 existing-building commissioning (EB Cx) project on a large commercial property's natural gas-based heating system. The project wouldn't have gotten off the ground, let alone succeeded without the excellent support we got from Enbridge's DSM staff. Early indications suggest that the project has resulted in a sustainable 30% savings in natural gas with less than a 3 year payback.[4]

EB Cx is only starting to earn enough confidence from property owners and managers for projects to be green-lighted, but that's changing, in large part thanks to support from the natural gas utilities. The experience at the property described in the case study has done a lot to convince the property management company's portfolio managers that it's a worthwhile enterprise to at least investigate EB Cx projects at other properties in the portfolio. But even as green leaders in the sector, they're still very cautious, and caution means delays, and delays mean a lost opportunity for the Ontario's competitiveness and emission reduction strategy.

[3] As is described in the Green Paper (appendix A), electricity CDM is an entirely different animal than natural gas. For one, it is an exceptionally cost-effective alternative to rate-payer funded construction of new generation. And since either (or, more likely, both) CDM and new-generation investments are necessary for the grid to continue to function for Ontario electricity consumers, the money is not being drawn from the same pot as that going to support natural gas DSM.

[4] "In existing buildings, commissioning was found to produce a median savings of 15%." (http://www.bcxa.org/downloads/bca-white-paper-cx.pdf)

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EB Cx is only one example of energy efficiency that is beginning to be accepted in the commercial sector. The suggestion that the low-hanging fruit has mostly been picked (page 4 of the March 28th letter) is just incorrect. Across their portfolios, our clients have no shortage of "low-hanging fruit" projects pending budget approval by asset-managers. But it's difficult to make the business case to asset managers, even for low-hanging fruit, since utility savings are primarily passed on to tenants, while the up-front investment falls directly on the property management.

This is why DSM is so essential even in these cases. Given the opportunity, Enbridge and Union could play a far more active role in alleviating customer concerns, and resolving confusing market signals. The partnership between property owners, asset managers, tenants and utilities is the most promising way to move EE projects forward and help meet the spirit of Ontario's Green commitment.

***

Turning to the issues identified in the Board's letter, we will comment substantially on #2 below, but we will say generally that, as much as possible, the Board should avoid taking a prescriptive approach to DSM oversight. Every project and every property is different. Enbridge and Union are uniquely positioned to customize and optimize their support to the given situation since they work directly with and know their clients.

Issue 2:

Do industrial and commercial DSM programs with significant incentives create competitive advantages for the participants of the programs relative to their competitors?

DSM incentives (although not particularly financially significant) are available to any member of the C&I sectors in Ontario that can identify, implement, and properly "measure and verify" (M&V) energy savings achieved. Enbridge and Union have done an admirable job of creating a level playing field, making DSM available to all sector members. It is up to customers to make their own strategic decisions about whether or not the benefits of capitalizing on DSM programs is worth the effort involved.

If there is any systemic competitive advantage that should be relevant, it's the advantage greater efficiency, and less reliance on natural-gas imports gives Ontario firms in relation to their extra-provincial and international competition.

What programs, if any, are appropriate for these sectors?

A good DSM program is one that is easy to use, flexible, and rigorous at ensuring that the savings achieved through it are real and sustainable.

Enbridge and Union's programs to date have had these characteristics. We've been especially impressed with their collaborative approach working *with* customers. We are confident that Enbridge and Union can leverage the experience they've gained in developing these programs to ensure that future programs maintain this high standard.

Should there be a focus on monitoring consumption, data analysis or benchmarking energy use in buildings and industrial processes?

The case study discussed (and attached in Appendix B) demonstrates clearly the interconnectedness between monitoring consumption, data analysis, AND benchmarking. It doesn't make sense to prioritize one over the other, though, obviously getting the data to the consumers is the necessary first step (enabling data analysis, which enables benchmarking).

Should DSM programs in these sectors focus more on energy audits and efficiency training or case studies to highlight best practices and new technologies, rather than financing equipment and installation costs for specific DSM projects?

As we said above, we urge the Board to avoid taking a prescriptive approach in its oversight of DSM. Flexibility is necessary if DSM money is to be optimally spent. In some cases energy audits represent the best investment; in others, it's efficiency training. It depends on circumstances like customer awareness, project timing, etc.

Conclusion

We take a great deal of pride in sharing Ontario's commitment to a competitive and green energy market. The past decade has been a challenge, with the cancellation of Ontario Hydro's electricity CDM plus the complex de- and re-regulation of electricity distribution. Natural Gas DSM has been one of the few steady beacons to help customers navigate in our confusing energy market.

Supporting Enbridge and Union's DSM should be a provincial priority. We are pleased to see the Board requesting comments and providing a practical mechanism for customer and stakeholders to register their concerns, and to be listened to.

Sincerely,

Scott Rouse, P. Eng., MBA, CEM
Managing Partner
Energy@Work Inc.

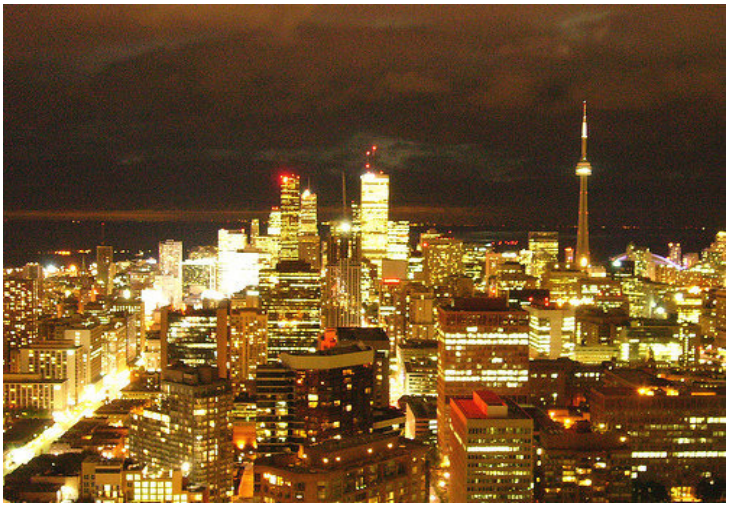
Appendix A – Partners in Green

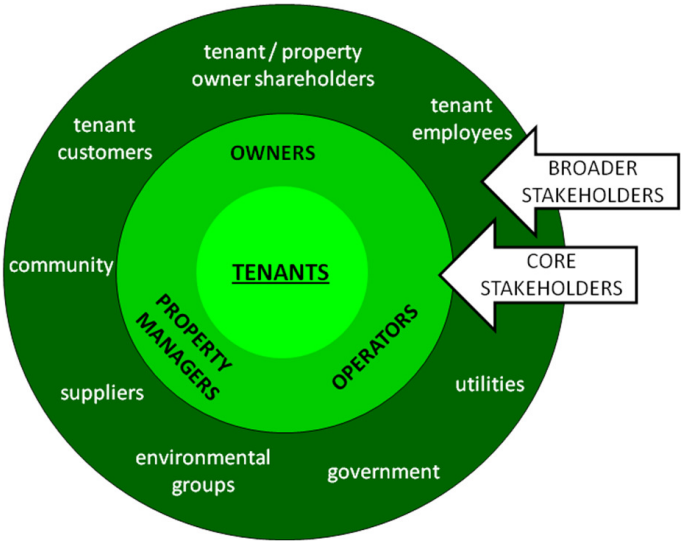
2010

Promoting Green Partnerships

Commercial Property Stakeholders

*** Owners**
*** Property Managers**
*** Operations**
&Tenants





Prepared for the third year in a row by:

Energy@Work Inc.

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Forward

Green **continues to be internationally recognized and respected as the thing to be.**

For 5th anniversary of Earth Hour, March 28th, participants in 92 countries shut off their lights; proof that on every continent, in every industry, at every level, there is a growing respect for, and urgency toward achieving green results.

In recognition of the efforts of these green leaders and of the people that support them, this paper has been re-published for a third year.

Although we are facing a new economic reality, green solutions have, if anything, only gained in priority. This is because green solutions cut waste, and mitigate the impact of an unpredictable energy market. These priorities are even more important to tenants and owners now than they were in better economic times.

What defines green energy management solutions?

- **Green solutions are smart solutions,** founded by a serious understanding, they are part of a coherent, realistic, and forward-looking energy master plan.
- **Green solutions are real**. Green leaders recognize that Greenwash is short-sighted and incredibly risky (environmental hypocrisy is media gold).
- **Green solutions are transparent**. Transparency attracts meaningful buy-in from all of the stake-holders, and through that, enables green solutions to be understood and sustained.

The focus of this paper continues to be the promotion of partnerships across stakeholders. Case after case has shown that such partnerships are a key asset to the successful implementation of an energy master plan.

The commercial sector continues to rise to the challenge to be green. In September of 2009, an ambitious "20 by '15" performance target was proposed by a coalition including BOMA Canada, the Canada Green Building Council, and REALpac. The commercial sector performance target is to achieve 20 equivalent kilowatt-hours per square foot per year by 2015 (20 ekWh/sqft.y by 2015).

Energy@Work believes that this is a realistic target, given a proactive plan, solid definitions and access to the right tools. However, by the end of March 2010, the 20 by '15 definitions are still not available. This delay illustrates the challenge in achieving green: the devil is in the details.

Champions get "green". But there is still undeniable pushback and inertia from sceptics, cynics, and people too busy watching the puck to see the defence. Those who do not get it will continue to dig themselves into a hole that will be increasingly difficult to escape from, especially as the real numbers are compared against real standards.

We welcome your comments to share what is working well and what needs to be worked on.
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Executive Summary

Measuring by the triple bottom line benefits (below), green continues to be the new gold:

- **Economic Prosperity:** There is a major short-term, medium-term, and long-term 'economic' potential to reduce utility use and costs within the commercial sector.
- **Environmental Performance:** The reduction of energy consumption is an unqualified and significant environmental good.
- **Social Responsibility:** When stakeholders are confident that you are doing good, they will help you to do better. Equally, sceptics like nothing better than to catch companies doing wrong.

This paper outlines the value of creating stronger partnerships between commercial property stakeholders (owners, property managers, operations, and tenants) to achieve ***Green.*** The paper emphasizes the importance of developing a sustainable Energy Master Plan (EMP) in the pursuit of this goal. The following core questions will be discussed:

(1) What does it mean to be carbon neutral and how can carbon neutrality be achieved?
(2) What is the value of focusing first on eliminating waste through energy efficiency?
(3) What are the risks associated with Greenwash (real or perceived)?

Green solutions require vision, investment, and hard work. Vision comes from leaders with a strong commitment and a willingness to look forward, especially at the property manager level. Investment and hard work are motivated by the belief that they will achieve results, and be recognized for achieving results. Stakeholders are empowered to pursue results by a clear Energy Master Plan that they believe in.

There are four strategies to achieve carbon reductions:
i) Renewable energy,
ii) Green energy purchases,
iii) Greenhouse gas offsets, and
iv) Energy efficiency.

The consensus is that energy efficiency is the natural first step in a larger green strategy. This is the case because energy efficiency's impact is direct and demonstrable, and, considering all the low lying fruit, it is often extremely cost effective. Achieving energy efficiency provides a firm foundation from which to build a sustainable, long-term energy master plan.

Leaders are defined by results, and *Green* gets results.

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Acknowledgements

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- Tom Baumann and Tom Johnson of ClimateCHECK (www.climate-check.com);
- Tom Heintzman of Bullfrog Power (www.bullfrogpower.com).

We are also grateful to those who made private contributions.

Over the past year, a proactive effort has been made to monitor and collect information on the "Green" issues, offering continuous support, relevance and suggestions that improve the quality of the 2010 paper. Many of the most interesting items have been highlighted in our monthly newsletter, which is available at www.energy-efficiency.com. References that were particularly helpful in our research for this paper included:

- BOMA Canada, "BOMA BESt Energy and Environmental Report 2009," (2009).
- REALpac and Jantzi Sustainalytics, "Canadian Commercial Real Estate Sustainability Performance Report," (2010)
- McKinsey & Company, "Reducing US Greenhouse Gas Emissions: How Much at What Cost?" (December 2007).
- Terrachoice, "The Seven Sins of Greenwashing" (2009).

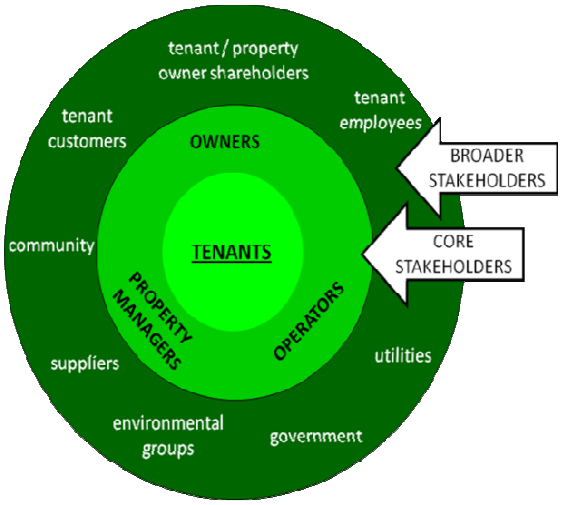
Energy@Work funded the Green Paper and takes full responsibility for views and opinions expressed.

Questions, concerns, comments or suggestions are always appreciated and can be directed to:

Scott.Rouse@Energy-Efficiency.com

1.0 Introduction: How Green provides Triple Bottom Line benefits

1.1 Green is the new "Gold"



For commercial properties, it is imperative that the solutions that are adopted in response to problems of rising costs be **Green**.

Everyone wants green solutions that produce green results. This follows from what is now a well established consensus on green across the 'broader' commercial sector stakeholders putting pressure on the 'core' stakeholders (i.e.: owners, property managers, operations, and tenants) to achieve results.

While barriers exist,[1] most are excuses that can be overcome through:

(1) Leadership,
(2) Proactive partnerships between core stakeholders, preferably involving tenants (who pay the bill);
(3) A forward-looking Energy Master Plan that assesses true, "Triple Bottom Line" costs and benefits.

The Triple Bottom Line

Economic Prosperity:	Measuring true costs by pushing past simple payback, looking at life cycle factors (like the costs of maintenance and disposal, etc.), and recognizing the hidden penalty of maintaining the status quo.
Environmental Performance:	Going beyond compliance, and demonstrating a genuine interest in improving our environmental legacy.
Social Responsibility:	Demonstrating good faith and results through a transparent reporting process.

The flip side of green is the risk attached to either creating or being accused of "Greenwash" (talking the Green talk, but not walking the Green walk). Environmental claims are to a greater and greater extent monitored and checked: honest brands (buildings, property management firms, etc.) are rewarded, and dishonest brands (whether guilty merely of misleading, or outright fibbing) are being punished.

Sincerity, transparency and integrity are the best means of ensuring you land on the right side of the green ledger. Investing the money and time necessary to properly understand these issues enables owners, property managers, operators, and tenants to push further than "one offs" or "flavour of the day" programs (which are seen as hollow by employees, consumers, and the public at large).

Energy efficiency is a proven Green solution that capitalizes on all of the triple bottom line benefits, producing win-win-win results. Tenants win, so owners, property managers and operators win, so society wins. Just as the benefits are collaborative, the efforts to achieve them must be collaborative as well. Partnership allows barriers to be overcome and benefits to be maximized.

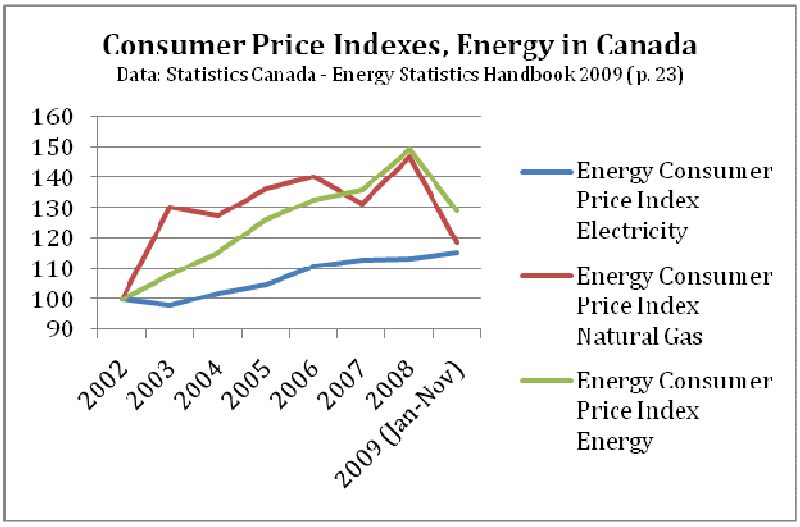
[1] Energy @ Work: "Energy Efficiency Barriers in Ontario: Listening to the 'Interval Meter Customer' View". Published by OPA (Fall 2007).

1.2 The Triple Bottom Line

1.2.1 Economic

Energy prices, over the past few years, have been all over the map, rising rapidly between 2002 and 2008 (+50% on the Energy Consumer Price Index), falling sharply through late 2008 and early 2009 (bottoming at +23.8% in January of 2009), and now beginning to inch back up.

While no one has a crystal ball, it's a rare economist who predicts the relatively low prices are going to stay so "low" for long ("low" is in scare quotes because prices are still over 30% higher now than they were in 2002). This is especially true in Ontario, where many argue that prices have been kept artificially low through the reliance on unsustainable means of energy production. The Green Energy Act, introduced in 2009, looks to shift the Ontario electricity market towards forms of energy (nuclear, wind and solar) that require significant up-front investment, and an evaluation of cost that is closer to the true cost.



As a consequence of these erratic energy trends, retailers, tenants, owners, property managers and operators are facing forecasting problems that make smart decision-making difficult. However, proactive managers are seeing that energy is a 'controllable' cost, meaning that by proactively cutting waste and changing operations practices, rises in cost can be mitigated and operations cost can be controlled with a focus on reducing the utility bill.

Serious public discussion of why we evaluate supply investment on a different standard than conservation demand management (CDM) investment is needed. This is needed because it is unclear what the difference is between a kW created, and a kW reduced, beyond that the cost of a kW reduced generates value across the triple bottom line (see Appendix C), and won't need to be replaced at the end of a generator's lifecycle.

There is a wide consensus (supported by NRCan, the US-EPA, among others) that the first step in bringing energy costs under control is developing an energy management plan that:

(1) Enables energy use to be properly monitored and optimized, and
(2) Facilitates the implementation of energy efficiency measures (EEMs).

Energy Star compared EEMs with other investments, finding that EEMs held a lower associated risk than long-term US government bonds, PLUS promised an internal rate of return (IRR) higher than the high-risk Latin American stock composite (22% versus 17%).[2]

[2] Energy Star, "Building Upgrade Manual", (Dec 2004): http://www.energystar.gov/ia/business/BUM.pdf

1.2.2 Environmental

Everyone wants to be seen as **Green**.

Commercial towers are a visible reminder of how far we have to go; a reminder that is particularly stark when office lights dominate the urban landscape in the evening (image 1), or when they disappear in thick smog (image 2). This visibility puts pressure on owners, property managers and tenants to take action. The public's demand for **Green** was eloquently expressed in the enthusiastic response to Earth Hour's 5th anniversary on March 2009 which called for 'lights out'.

What is alarming is that GHG emissions, direct and indirect for commercial facilities have yet to show evidence of turning a corner. Intensity has increased consistently over the past decade, i.e. a factor of natural gas, steam, and electricity consumption[10].

Context:
Energy@Work is assisting 18 million square feet of commercial properties across the greater Toronto area.

Drawing from a selection of these buildings with utility profiles typical for the Southern Ontario region (using natural gas for heating, and grid supplied electricity for other loads), we identified an average in CO_2 emissions of approximately 1,500 tonnes of CO_2 per year for a 250,000 ft^2 property (though there was significant variance). This is approximately equivalent to:

- The amount of CO_2 sequestered by 600,000 trees per year[3];
- The amount of CO_2 produced by about 360 cars in a year.[4]

The environmental 'concern' list doesn't stop at GHGs. 'Smog days' are increasingly common due to the production of nitrogen oxide (NOx), sulphur dioxides (SOx) and other pollutants. The public understanding of environmental issues and concerns are becoming more sophisticated. Although, there is still considerable pushback from those that protect the status quo, the public is making their voice heard. People want to be informed with better, more transparent reporting; reporting that would have as a corollary greater accountability. This kind of transparency is what' being pursued by national target initiatives such as the "20 by '15" energy intensity target proposed by BOMA Canada, the Canadian Green Building Canada and REALpac in September (discussed in section 4.0 of this paper).

Helping our environment is not only the right thing to do, environmental performances distinguishes great performers. Energy efficiency delivers significant emissions reductions by ensuring that we use only what we need and that we do so wisely.

[3] http://www.treecanada.ca/programs/climatechange/index.htm
[4] Natural Resources Canada - Office of Energy Efficiency - Personal Vehicles Initiative: http://oee.nrcan.gc.ca/transportation/personal-vehicles-initiative.cfm

1.2.3 Social Responsibility

Of the three triple-bottom-line criteria, social responsibility benefits are the most difficult to tangibly define. However, the public is intuitively alert to good and bad performance.

There isn't yet a standard metric with which to assess a particular business' commitment to Corporate Social Responsibility (CSR), though many organizations and magazines have ventured to rank corporations on certain weighted CSR-related criteria.

According to "Beyond Good Intentions: Strategies for Managing your CSR Performance," an article published in the Ivey Business Journal,[5] CSR pertains "to the firm's moral actions – the kind that either do great good or great harm to people." At the core of CSR is the idea of sustainability, broadly defined: Are a corporation's actions and policies, on aggregate, constructive to the larger community, or is their impact ultimately destructive?

Maclean's produces an annual Corporate Social Responsibility Report, in partnership with Jantzi Sustainalytics.[6] In this report, major publically traded companies operating in Canada are graded using an alphabetic score that ranges from A to F based on Jantzi criteria. Jantzi criteria look at areas of strength and concern in terms of seven categories (at right).

Jantzi CSR Criteria:

1. Community and society;
2. Corporate governance;
3. Customers;
4. Employees;
5. Environment;
6. Human Rights; and
7. Controversial business activities.

"Jantzi Research assigned a weight of 87% to social and governance issues and only 13% to environmental issues for retailers in 2007." [7] The Ivey article goes on to make the following two major points:

- It is centrally important to know the assessment criteria being applied to determine CSR ratings; and
- It is equally important to know "to whom you are being compared."

CSR is emerging as a recognized metric to assist in 'ethical investing' with investors wanting to 'know what they're buying', and have the confidence that the information being provided is reliably reported.

A 2010 study released jointly by Jantzi Sustainalytics and REALpac on CSR and sustainability (CSR&S) recommended that companies take an active approach by:

1. Gathering sustainability intelligence;
2. Integrating CSR&S into their corporate strategy;
3. Gathering, managing and reporting portfolio-wide data, thinking holistically about operations, and research, innovating and experimenting with green certifications and technologies; and
4. Communicating to create internal buy-in and external awareness.[8]

[5] http://www.iveybusinessjournal.com/article.asp?intArticle_ID=739 (January/February 2008); Globe and Mail distillation: http://www.theglobeandmail.com/servlet/story/RTGAM.20080310.WBwschachter20080310103619/WBStory/WBwschachter

[6] Maclean's Corporate Social Responsibility Report, 2007: http://www.macleans.ca/article.jsp?content=20071130_114344_4508

[7] http://www.iveybusinessjournal.com/article.asp?intArticle_ID=739

1.2.4 + Security

"Plus Security" is following a similar course to the acceptance of social responsibility, and may ultimately become a fourth criteria. Security encompasses several objectives, including security of utility supply. Utilities were traditionally taken for granted since supply was considered guaranteed.

The massive power failure on August 13, 2003 was a wakeup call to our vulnerability and over confidence in a complex and massive electrical infrastructure, resulting in an estimated $6 Billion in business losses.[9]

Commercial facilities must be in a state of readiness. For example, emergency services are protected with standby generation that is routinely tested. In several cases, tenants are becoming even more proactive. They are investing in further measures, such as additional 'uninterruptible power supply' (UPS) and identifying 'critical power'. As an example, a major bank in Toronto has installed 125% back-up power capability in case of a system outage.

Another dimension of security is internal to a facility. A solid energy management plan is highly effective in identifying risks. For example, reinvesting in building infrastructure and upgrading or replacing old and inefficient systems will reduce the risk of system failure. Reducing consumption reduces the cost of providing alternate solutions.

Secure utility supply was taken for granted, but now "do-nothing" plans are no longer acceptable. Companies are now planning actively by obtaining UPS, critical power and devising more robust standby-power solutions.

The above is an image of Toronto's skyline as a result of the massive power failure on August 13th 2003.

[8] "Canadian Commercial Real Estate Sustainability Performance Report." 2010. Jantzi Sustainalytics and REALpac.
[9] Wikipedia on the blackout: http://en.wikipedia.org/wiki/2003_North_America_blackout

1.3 Applying the Triple Bottom Line + Security

1.3.1 Property manager / tenant impasse

The Canadian lease structure typically uses a "net" lease. A net lease specifies that the property manager manages utilities on behalf of tenants, but that tenants ultimately pay the utility bills. Built into this structure is a basic, though serious, impasse: it is unclear...

1. Who is motivated to / responsible for identifying sources of waste;
2. Who is motivated to / responsible for creating a sustainable plan to eliminate the waste; and,
3. Who is motivated to / responsible for seeing that the solutions are implemented.

Commercial utility use is divided into common (base-building), and tenant consumption. Tenants ultimately pay the bill for both. Common consumption includes elevators, stairwell lighting, Heating Ventilation and Air Conditioning (HVAC), etc. Tenant consumption typically includes plug load and sometimes lighting.

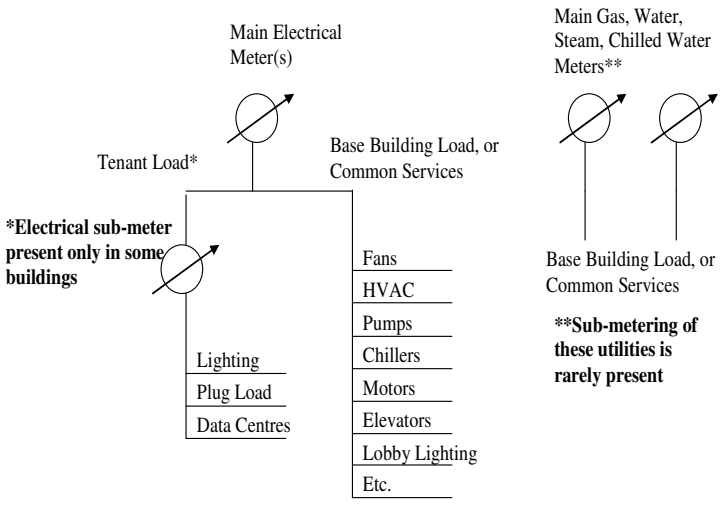
Property managers have the responsibility of managing payment to the utility companies, on the tenant's behalf. They must therefore be cautious that each energy efficiency investment results in a utility reduction, or run the risk of not recovering their up-front investment. The tenant will typically request an annual audit of all expenses. An investment required to reduce utility use can become a line item that may be challenged. Property managers are therefore limited in investing without first obtaining tenant approval, and with multiple tenants / lease agreements, overcoming the barrier of coordinating tenant approval is challenging.

This is the classic commercial office energy efficiency impasse. Property managers must make upfront investments to achieve energy efficiency. However, tenants are pushing to see expenses drop and often do not respect the work required to understand and deliver energy efficiency. Since only the tenant ultimately benefits from energy efficiency, upfront investments are difficult to justify, especially in the face of competing priorities.

Making matters worse, obtaining utility data is difficult. Often access to the main utility meter data is blocked so that only billing data is available, not necessarily on a monthly basis. Billing data provides the building's overall use only. In the absence of sub-metering, property staff are left to guess what portion of the building's use is from specific loads. Not understanding how loads break down results in:

1. Tenants not knowing their use. The cost and work involved in sub-metering is a barrier. Tenants may feel that if they invest in energy efficient, they will only enjoy diluted benefits, since savings will be shared with others who are doing nothing.

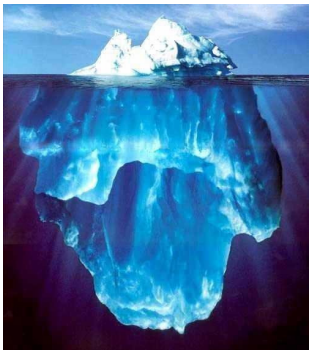
2. Sources of waste (a.k.a. energy efficiency opportunities) are hidden, and in order to identify them, technical staff must have Sherlock Holmes' powers of deduction without Sherlock Holmes-calibre tools of investigation.



1.3.2 The Challenge of Evaluating Costs and Benefits

Another major challenge to energy efficiency is the method of economic evaluation. The commercial sector adopted a practice of making energy efficiency decisions mostly on the basis of 'simple payback' assessments (first cost divided by utility savings per year). A focus solely on expected utility savings and upfront costs fails to provide for full cost accounting. Simple payback does not reflect the costs and benefits associated with maintenance, operations, tax rebates, the cost of money, end-of-life disposal, etc. The impact of using simple payback is an erosion of competitiveness across the triple bottom line. This is particularly valid when projects that are above a 3 year payback are rejected as 'not being economic'.

The alternative favoured by green leaders is lifecycle costing. Lifecycle costing provides a robust evaluation method that delivers triple bottom line benefits.



Case Study: Lighting "Retrofit" vs. "Re-design" (See Appendix B)

First cost (the tip of the iceberg): 8%, (Lamp, fixture and ballast)

Lifecycle costs: 92%, (energy, maintenance, lamp replacement, GHG impact, tax deductions, etc.)

Decision: "Simple payback" ignores life cycle costs. The result is installing the cheaper 'first cost' fixture which consumes 1 W/ft². Accounting for lifecycle costs results in investing in a proper lighting redesign that delivers better light quality while reducing electricity consumption to 0.5 W/ft². Associated energy costs are halved, less maintenance is required, emissions are reduced, etc.

Unfortunately, examples of 'waste' are still too numerous:

- Conference rooms equipped with incandescent lighting (95% efficient at producing heat) while running air conditioning to wastefully counterbalance this excess heat. In many cases, even free cooling cannot be used because ventilation systems are not designed to take advantage of outside air.
- Computers running 24/7 at 70% consumption because hibernate settings are disconnected for software upgrades or security checks and not reinitiated.
- Atriums or open walkways that have ample natural light, but lighting systems are hard wired to other areas that will not permit light fixtures to be turned off through photo sensors or other devices.
- Utilities that will not allow easy access to the utility meter for real time monitoring. Monitoring utility use in real time allow operations to see and respond to demand (kW) or consumption (kWh) increases that are outside of the norm, several case studies are shown in the appendix.

The good news:
Energy efficiency measures (EEMs) are available, have low risk and when properly engineered, evaluated and commissioned, deliver the same or often better performance!

Conservation and Demand Management (CDM) incentives further improve the economics. Additionally, the monetization of greenhouse gas (GHG) emissions, through credits or offsets (when in place), will increases the benefits to make 'Green' an economic imperative.

2.0 Being *Green*: A Reality Check

Carbon Neutrality

Interest in tracking carbon is changing how companies view energy use. A growing number of companies are reporting on Greenhouse Gas (GHG) emissions (for example, the Carbon Disclosure Project, which is supported by all of Canada's major banks). Proactive companies are voluntarily committed to track energy use in order to know and report their carbon footprint. Some organizations are costing the impact of their emissions in order to move towards becoming "carbon neutral."

Calculating a facility's carbon footprint requires a thorough understanding of its operation and how these operations translate to carbon emissions, but even given such knowledge, calculating a building's total carbon footprint is not an exact science. Depending on the 'level of assurance' or precision required and the "boundary conditions" (i.e., what is included?), the process can be very resource intensive. The level of detail used to describe a property's carbon footprint is contingent on the purpose for assessing their carbon footprint: I.e., if the purpose is to pursue emissions offset credits from energy savings, there are very specific requirements for each factor that must be counted or discounted. Additionally, to qualify for these credits, emissions data must meet specific standards. Thus, in the case of emission credits, the appropriate level of investment will be much higher than if, for example, emission tracking was purely for internal monitoring.

Reducing a building's carbon footprint requires a strategy incorporating at least one of the four tactics below:

1. **The purchase of Green power;**
2. **The installation of renewable power sources;**
3. **The purchase of carbon offsets; and**
4. **Investing in energy efficiency.**

Caution: *Green* enthusiasm can also produce unintended consequences

"In this world, you get what you pay for." — Kurt Vonnegut (Cat's Cradle)

Green solutions within the sophisticated commercial sector require professional expertise, experience and investment. Too often solutions fail or results do not materialise because of "best intentions." Underfunded or poorly informed utility, government or non-profit group programs, however enthusiastic, lack the motivation, time or investment required to do the job properly. The result is market interference by so-called 'free' services that trivialize the level of effort required and undercut the value of going green.

2.1 The Purchase of Green Power

Green power is generated from verifiable renewable energy resources and technologies.[10]

The Case for Green Power:

Green power purchases from locally produced, high-quality generation sources allow organizations to reduce their carbon footprint, support the development of renewable power, and enhance their reputation for environmental stewardship. Organizations purchasing green electricity for their power requirements have a zero-emissions footprint associated with that electricity use. Purchasers should consult with leading environmental groups to ensure the green power they are buying is high-quality and genuinely contributing to the support of new renewable development.

Best practices in Canadian green power procurement are generally agreed upon:

1. EcoLogo-certified – Purchase a product that is EcoLogo-certified, Environment Canada's certification for environmentally friendly products.
2. Green Power Mix – Insist on the product with the greatest percentage of new renewable power (Type III) in its mix, and no old power (Type I). Demand for new power stimulates the development of more renewable generation facilities.
3. Locally sourced – Ensure your environmental claims are defensible by purchasing locally generated power, provincially where available, and regionally as an alternative. The development of renewable power in the region in which you operate directly reduces your environmental impact, and benefits the local environment and economy.
4. Bringing new power online – Ensure your purchase makes a tangible difference by insisting on a supplier that can demonstrate a proven track record of using customer demand to bring new renewable generation projects online in Canada.
5. Endorsed by environmental groups – Protect your organization's brand and reputation by choosing a supplier that has earned the support of the environmental community.
6. Audited – Protect the integrity of your commitment by insisting on a supplier that can demonstrate a proven track record of providing independent audits validating that all environmental credits associated with the green power purchases are retired on behalf of customers.
7. Communications – Evaluate the supplier's communications credentials to assess their ability to help you communicate your green power purchase to key stakeholders

> [M]ost major environmental groups recommend addressing electricity-related emissions with local green power purchases rather than carbon offsets. Offsets should be reserved for those emissions for which an environmental alternative does not exist.

Cost: According to The Ontario Clean Air Alliance, green power carries a premium of approximately $0.03 per kWh in Ontario[11] (the effective rate charged per kWh has been $0.08-$0.12 per kWh for the past three years). The costs are nicely contextualized by Bullfrog, in this video.[12]

[10] United States Environmental Protection Agency (US-EPA), "Green Energy Defined": http://www.epa.gov/grnpower/gpmarket/index.htm
[11] Electricity Choices "Green Power Suppliers"(Nov 2007): http://www.electricitychoices.org/greenpower.html
[12] http://www.youtube.com/watch?v=rNRq3J-GrCc&feature=player_embedded

2.2 The Installation of Renewable Power Sources

The payoff of installing renewable power sources depends a great deal on circumstances, for example:

- Location – For example, Deep Lake Water Cooling (DLWC) has very limited availability and requires a specific source and load density to be cost effective.
- Physical conditions – For example, the availability of wind and/or sun are obviously variable.
- Operating conditions – For example, the payoff of ground source heating is dependent on both physical conditions as well as the facility's specific operating requirements.
- The economic lifecycle of a building's existing systems – For example, replacing a new system with a renewable alternative is difficult to justify. However, a system that is reaching the end of its 'economic' life could be very economically replaced with a renewable alternative. This is particularly valid if the 'incremental' cost is compared with the replacement cost, i.e. an investment must be made.

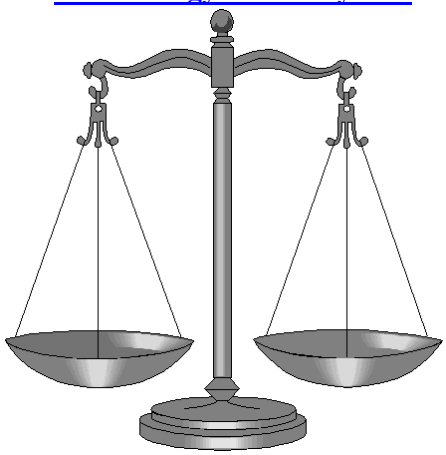
Renewable Power Sources:

- Ground source heating/cooling;
- Deep Lake Water Cooling (DLWC);
- Passive and active solar energy;
- Wind turbines;
- Green walls; etc.

Renewable alternatives have clear benefits and can produce significant savings. However, the challenges related to getting companies to invest in these alternatives prompted the federal and provincial governments to develop incentives to support the adoption of these technologies in the marketplace. For example, the Ontario government has moved strongly towards the promotion of renewable through the recently passed Green Energy Act (http://www.greenenergyact.ca/).

Before accepting government help, however, it's important to recognize that by taking a government grant, you may be relinquishing your claim to the carbon savings created by the project. To give another Ontario example, onsite renewable energy installations can only reduce a facility's carbon footprint if it is *not* participating in a feed-in-tariff (FIT) program such as Ontario's new Green Energy Act FIT program. In the FIT program, the organization cannot obtain the benefit from renewable energy and also claim the associated emission reductions.

2.3 Purchase of Carbon Offsets



The potential to create carbon offsets will enable companies to trade emissions to meet targets (whether an internal target of achieving carbon neutrality or a government target. A price for carbon is on the horizon and a system will be implemented, it's only a matter of when.)

The purchase of carbon offsets can reduce a property's carbon footprint providing the carbon offsets meet strict principles and standards (for example, the GHG Protocol for Projects and ISO 14064-2 use the principles of relevance; completeness; accuracy; consistency; transparency; and, conservativeness). For carbon offsets to be real (not Greenwash) they MUST be real, unique, permanent, verifiable and prove additionality. To participate in the carbon marketplace (either buying or selling) requires significant commitment, investment, and expertise.

Benefit: Carbon offsets can be a cost-effective solution to reducing a building's carbon footprint. The premium to offsetting a building's emissions using offsets will vary based on a number of factors.

Offset prices range under $1 per ton to over $20 per ton, depending on the program and standard as the basis to certify the tons and type of transaction, such as exchange or bespoke.

Cost: There isn't the same degree of public certainty that a carbon offset (which can be an emission reduction, avoidance, or a removal/sequestration of CO2) actually offsets the carbon it claims to. Commercial property stakeholders will need to be prepared to know and to show the pedigree of the carbon offsets in order to be universally accepted. The carbon offset process is a monetization and transaction of environmental attributes that involves a 'public good', therefore transparency is an important aspect of the credibility of using carbon offsets.

The price of CO_2 has yet to be defined in Canada, but eventually, it will be. To best place themselves for future prosperity, companies should be actively monitoring the emissions market and legislation in their jurisdiction as they mature and grow.

For more information about carbon offsets, we recommend that you look into the following:

1. The recent release by the David Suzuki Foundation[13];
2. The Carbon Offset Research and Education (CORE) website (www.co2offsetresearch.org); and
3. The Greenhouse Gas Management Institute (www.ghginstitute.org).

[13] www.davidsuzuki.org/files/reports/climate_offset_guide_web.pdf, 2009

2.4 Energy Efficiency Opportunities for Commercial Properties

Energy efficiency is the "thin edge of the wedge" that can crack open green. Energy efficiency openly engages stakeholders with the reality of becoming 'green'. Energy efficiency is also the first step in delivering early and economically sound results from (in order of priority):

1. Low and no cost opportunities (Turning off systems not required);
2. Demand reductions (retrofitting systems that consume half the energy required); and
3. Secure system optimization (tweaking systems to provide for occupancy requirements)

The advantage of energy efficiency is that, in accordance with the Pareto principle,[14] it prioritizes the easy to achieve 80% over the more difficult 20%. The priorities are not rigid. **Energy@Work** has found that by targeting energy inefficiency in the above order, the result encourages the evolution of a sustainable Energy Master Plan. Success encourages organizations to adopt green as an accepted practice.

Examples of green projects with 'triple bottom line' + Security benefits:

- **Real Time Monitoring:**

Economic:	8-15% reduction in consumption since we 'manage what we measure'.
Environmental:	Less energy use equals less emissions – simple and verifiable!
Social Responsibility:	Permits monitoring and verification to prove energy reduction and share 'green' success to illuminate Greenwash.
Security:	Knowing when, where and how energy is used becomes proactive.

- **Motion Sensors:**

Economic:	Using lights only as required – avoiding lighting unoccupied areas.
Environmental:	Environmental emissions eliminated when systems are off.
Social Responsibility:	Increased lamp life means less waste and seen as more responsible.
Security:	Sensors detect when someone is in, or is entering an area.

- **LED Exit Signs:**

Economic:	LED uses 1.1 watts compared to 40 watts: i.e., 40:1 reduction
Environmental:	Less pollution from electricity use & less waste from longer bulb life
Social Responsibility:	Better quality of light and balance across the face of the fixture.
Security:	LED longer life provides greater confidence that systems will be on.

- **Deep lake water cooling:**[15]

Economic:	Capturing "coldness" from domestic cold water supply for air conditioning
Environmental:	Renewable resource - only the "coldness" from the water is used.
Social Responsibility:	A visible 'green' initiative to reduce peak summer loads.
Security:	An alternative to an electric 'grid' solution.

[14] The 80-20 Rule: http://www.aafp.org/fpm/20000900/76the8.html
[15] Enwave deep lake water cooling: http://www.enwave.com/dlwc.php

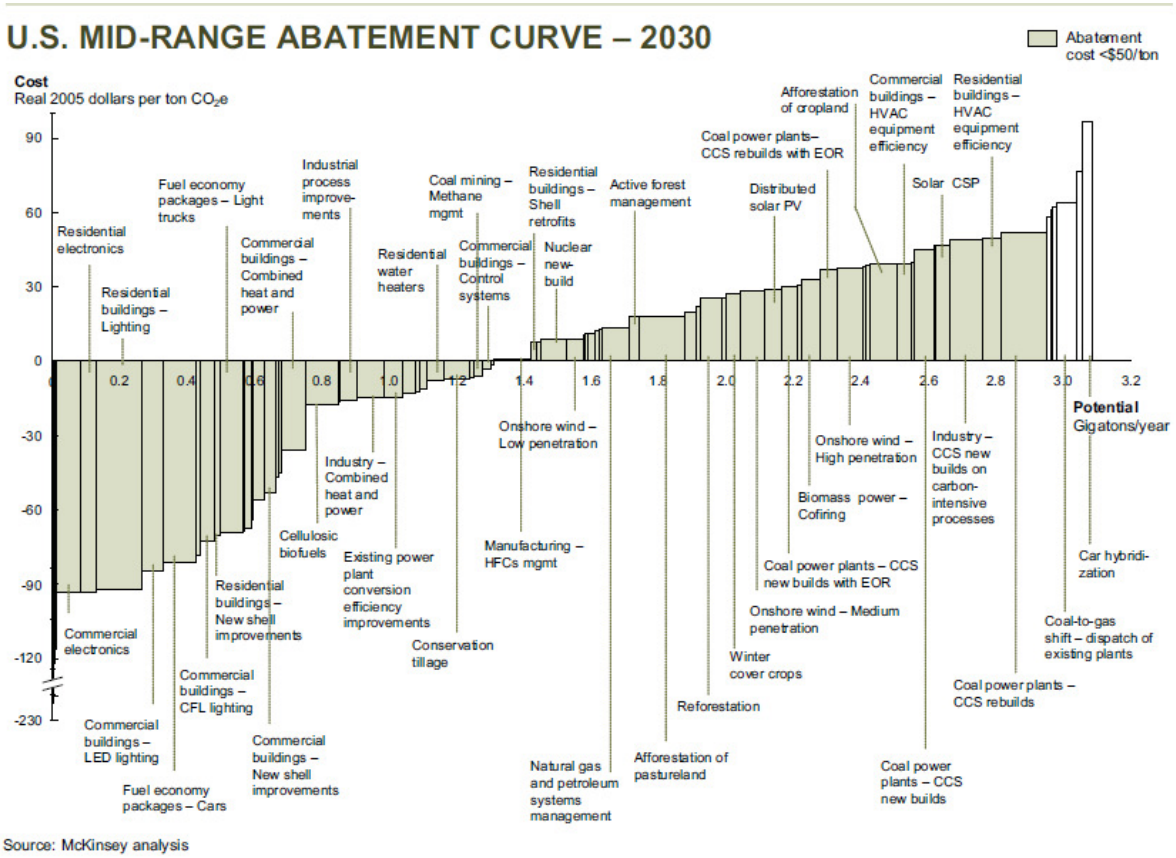
2.4.1 Carbon Footprint Reduction Strategy: Preference for Energy Efficiency

In the commercial sector, reducing carbon emissions is no longer just good corporate citizenship; it's becoming imperative, and many leases now contain 'green' clauses. Properly understanding the issues surrounding an organization's "carbon footprint" becomes a strategic advantage by creating a sustainable 'green' strategy (economically, environmentally, social responsibility and security).

Standards for emission credits are in early development – especially outside of BC [16] – but emissions regulation is coming and the sooner an organization gets on board with a strategy, the better prepared it will be.

Carbon will have a cost – invest now or pay more later.

The key is to recognize that by making strategic upfront investments, the reduction of carbon emissions can actually be achieved at a 'negative' cost, i.e. reducing carbon can make money with the proper investments. McKinsey and the Economist among others have found that almost 40% abatement can be achieved at a negative marginal cost, especially through energy efficiency measures such as redesigned lighting systems, insulations improvements, water heating improvements, etc.[17]:

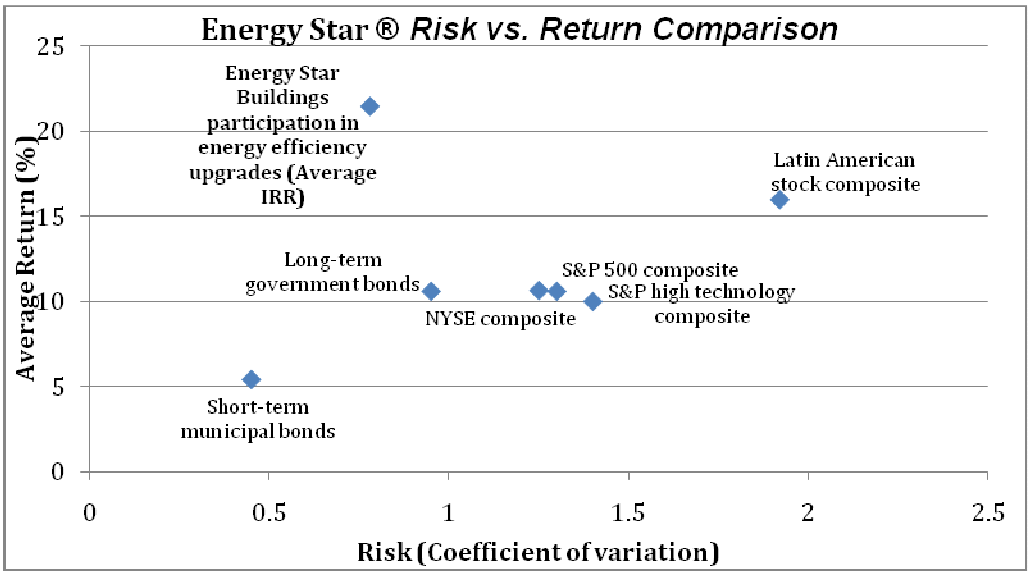


[16] BC Government Ministry of Small Business and Revenue report "British Columbia Carbon Tax".
[17] The Economist, "Irrational Incandescence", 31 May 2007:
http://economist.co.uk/surveys/displaystory.cfm?story_id=9217972&CFID=8584114&CFTOKEN=21690652http://economist.co.uk/displaystory.cfm?story_id=9249262

2.4.2 Consensus on Energy Efficiency's Economic Potential

Energy efficiency has an economic potential of between 25% and 50% in the short and medium terms for commercial properties. This statement is consistent with general research by others on the economic potential of commercial properties:

- Dr. Dan Turner, Director, Energy Systems Laboratory, Texas A&M University, experience of over 300 audits of commercial facilities the economic energy efficiency opportunity can exceed 25%.
- The Building Owners and Managers Association International (BOMA), which runs the best CDM program for electricity demand reduction currently available in Ontario, is encouraging its members to consider a 30% reduction target by 2012.[18]
- Sustainable Development Technology Canada (SDTC) has set a goal of a 50% reduction in end-use commercial energy demand across Canada by 2030.[19]
- The Canadian Green Building Council (CaGBC) is just as ambitious, aiming to reduce energy intensity by 50% in 100,000 buildings across Canada by 2015 (against a 2005 baseline).[20]
- On a global scale, McKinsey & Company predict in their report on "Curbing Global Energy Demand Growth," estimates a global potential in the commercial sector of a 20% reduction by 2020.[21]
- Energy Star demonstrated how energy efficiency compares with traditional investments from the classic 'risk versus reward':



While substantial reductions are achievable, an Energy Master Plan is required to incorporate the vision, the investment and the people needed to drive the effort to achieve sustainable results.

[18] Building Owners and Managers Association Website: www.boma.org.
[19] SDTC, "Commercial Buildings — Eco-Efficiency: SD Business Case," (2007), pp. 36.
[20] CaGBC LEED Canada Initiative Overview:
http://www.cagbc.org/database/rte/080204%20CaGBC%20LEED%20Canada%20Initiative_overview.pdf
[21] McKinsey and Company, (May 2007), pp. 106.
http://www.mckinsey.com/mgi/publications/Curbing_Global_Energy/index.asp

2.4.3 Challenges to Energy Efficiency

So, why has this 25+% economic opportunity not been tapped?

Achieving energy efficiency in the commercial sector is not a simple matter of remembering to "turn off the lights." It requires the core stakeholders to recognize the shared benefit of sustainability. Partnerships can then mature and strengthen enabling stakeholders to overcome the "classic impasse to energy efficiency" (introduced in Section 1.3.1).

McKinsey & Company, in their report *"Reducing US Greenhouse Gas Emissions: How Much at What Cost?"* provided the following perspective:

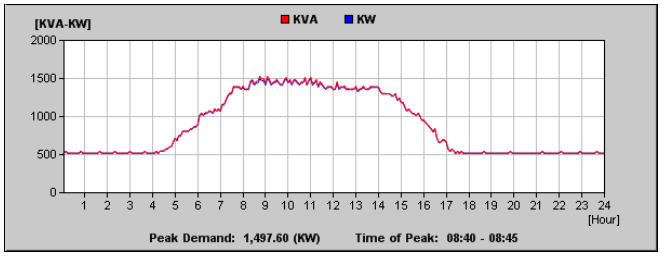
> ***"Unlocking the negative cost options would require overcoming persistent barriers to market efficiency, such as mismatches between who pays the cost of an option and who gains the benefit (e.g., the homebuilder versus homeowner), lack of information about the impact of individual decisions, and consumer desire for rapid payback (typically 2 to 3 years) when incremental up-front investment is required."***[22]

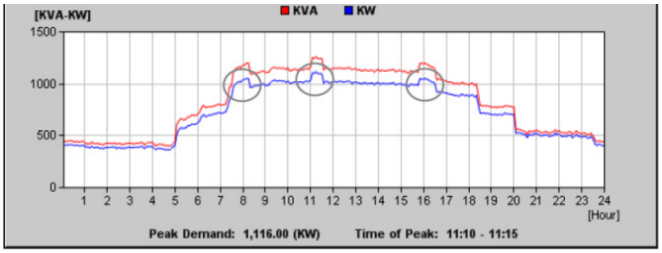
Perhaps the most significant challenge in overcoming these barriers is the unavailability of useful information necessary to make informed energy management decisions. We can only manage what we measure. Operators need to see their consumption in "real-time", not day delayed or worse, when the bill arrives 45 days later. Despite large commercial facilities having interval meters that can provide real time data, very few facilities actually obtain it. Equally, few utilities promote this capability. The utility controls the locked meter cabinet and gaining access is strictly controlled.[23] The Ontario Energy Board acknowledges that obtaining data is a persistent problem.

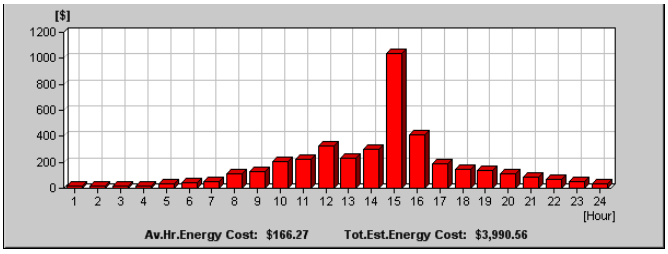
For electricity use in particular, having access to the real time data directly from the utility meter (i.e. the same pulse outputs used by the utility for billing) is essential. Operators will manage electricity proactively if they have confidence that information is available. Benefits increase when the analysis is used in conjunction with the real time price information ($ / kWh).

[22] McKinsey & Company, "Reducing US Greenhouse Gas Emissions: How Much at What Cost?", December 2007, pp. xii.: http://www.mckinsey.com/clientservice/ccsi/pdf/US_ghg_final_report.pdf
[23] Information on this topic is available online. The article at the following link is of particular note: http://www.energypulse.net/centers/article/article_display.cfm?a_id=430

2.4.4 Real Time Monitoring







The usefulness of real time monitoring (RTM) cannot be overstated:

- RTM profiling enables operators to identify waste and improve scheduling:
- RTM serves as a diagnostic tool to identify system problems:
- RTM allows operations the choice to adjust consumption and soften the impact of hourly price spikes as a result of the Hourly Ontario Energy Price (HOEP).
  In this example, the HOEP resulted in the hourly cost to jump from $300 to over $1,000.
- RTM enables the monitoring and verification of EEMs.

Data made available by electricity utilities is day delayed (preventing alarming of price and demand spikes), can be difficult to access, and is often impeded by awkward interfaces, slow refresh times and frequent system interruptions. On top of this, additional steps are necessary to convert consumption data into actual cost, which people relate to and prefer. As such, utility provided 'free' monitoring tends not to be used.

Companies often fail to see the benefit of investing in utility management systems, and as a result fail to have a budget to manage utility costs. As one energy manager aptly summarized the situation:

"The typical monthly utility management budget is 52 cents; the cost of a stamp to avoid a late payment charge."

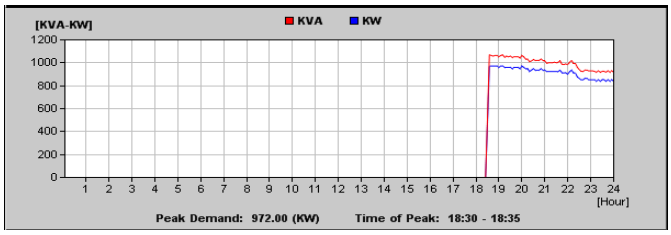
Even the utility bill (which, in the case of electricity, typically arrives 45 days after the billing period) contains impediments to energy management. Key information such as power and load factor, is often difficult to understand or simply not directly available.

Perspective: It is not uncommon for interval meter customers to receive rebates rewarding energy reductions that they didn't even know they had achieved. If a customer doesn't know what they are being incented to do, they are not being incentivized at all.

2.4.4.1 Case Study: The Value of Real Time Monitoring:

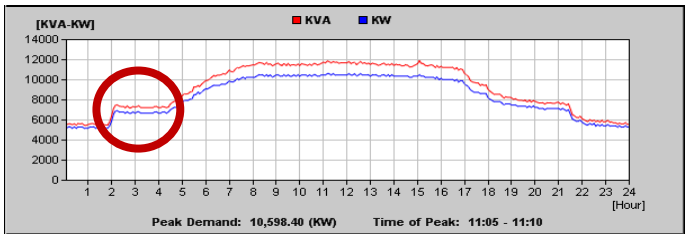
Real Time Monitoring< RTM>was approved by the technical director and installed on March 10, 2008. The following summarizes the 5 steps that achieved a $80,000 annual saving in less than 2 weeks.

STEP 1: On March 10, for the first time, operations could see: **price** ($/kWh),**cost** ($$), **energy use**(kWh), **demand** (kW), **apparent power** (kVA), and **power factor** (pf), all in real time, *plus* have their utility bill verified!



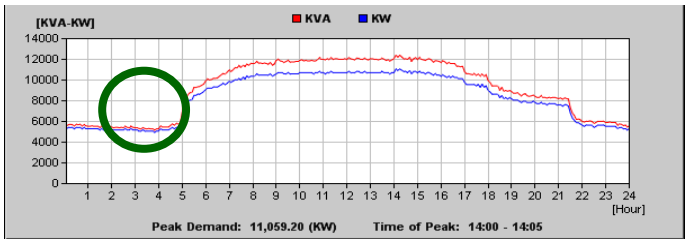
STEP 2: The energy team monitored the electricity consumption profile for the next 12 days to determine the building's weekly load profile. The weekday profile was typical for a commercial office building, but had an interesting early start.

STEP 3: Scott Rouse, managing partner, **Energy@Work,** and a member of the energy team, alerted the technical director on March 23 noting the jump in consumption at hour 2 to hours 4-5.



STEP 4: The technical director reviewed the profile with the Operations Supervisor and devised an alternate operating strategy.

STEP 5: The same day, March 23rd, the operations supervisor met with his operations team to discuss alternatives that would ensure tenant comfort, protect operational concerns, and save energy. Operational adjustments were made resulting in a new consumption profile that was completely flat in the early morning, between hours 2-5!



Results: ***"We manage what we measure!"***

The energy team achieved **a reduction of 3,692 kWh against an average day**. This worked out to an **annual savings of $80,000** (paying for the installation of RTM in less than a month), and **reduced the property's annual carbon emissions by over 160 tons**.

Later in the same week, during Earth Hour, the property achieved a 19.5% energy reduction (almost quadrupling the 5% provincial average)!

2.5 Energy Efficiency as Green Strategy: Key Takeaways

Energy efficiency measures include everything from simple low and no cost opportunities (replacing incandescent with LED in exit signs) to major capital investments (replacing an HVAC or upgrading a building automation system).

- Implementing low and no cost measures, or measures that have paybacks in the range of 3 years or less, is typically considered good maintenance. However, even in these cases there are numerous barriers, such as in the case of exit signs. Exit signs adjacent to an exit are typically 'base building' and the responsibility of the property manager. Exit signs within tenant leased space are typically a tenant responsibility. The simple task of converting to a more efficient technology suddenly becomes a challenge within a multi-tenanted building. Also, the costs and benefits of implementation does not always divide cleanly between the stakeholders as a result of a number of factors, including the unavailability of tenant sub-metering.

- Budgeting for major capital projects requires asset managers to assess relevant variables (the age of the building, length of leases, regulatory requirements, economic life, asset value, breakdown of who is paying the cost / receiving the benefit, etc.) The preparation and evaluation of business cases takes time, investment and must answer all of these questions while operating in an environment of uncertainty (accounting for unknowns such as energy prices, the rapidly changing commercial property marketplace, etc.) On top of this, projects must compete with other priorities (i.e. legislative requirements, security, tenant upgrades, etc.) for very limited resources. As a result, capital projects must be budgeted in the annual 'capital plan.' If a project is not included in the budget, the project must wait for the next year's planning cycle. Therefore, projects can typically take at least 18 months to begin. Similarly, if an 'emergency' project arises or an unusual event occurs, such as the 2008 recession, non-life-threatening or non-compliance projects are 'deferred'. Energy efficiency projects are typically the first to be deferred.

- Commercial property owners and tenants in Canada typically use a 'net,' as opposed to a 'gross,' lease. This means that the tenants' utility costs are a 'pass through cost' from the property manager to the tenant (rather than being simply included as part of the rent.) Common utility costs (for elevators, lobby, etc.) are shared equally among the tenants on a prorated basis. Energy savings therefore benefit the tenants by reducing their utility costs. The owners and property managers do not gain direct financial benefit from implementing energy savings.

Moving forward with a Green strategy, it's important to be realistic about the challenges that need to be overcome. But it's even more important to recognize that these challenges are only challenges, and not acceptable excuses for costly inaction.

3.0 The Danger of Greenwashing

3.1 Terrachoice's "Seven Sins of Greenwashing"

In 2009, TerraChoice updated their 2007 study, *"The Six Sins of Greenwashing.""*[24] The original study provides valuable lessons equally applicable to the commercial sector. In 2009, in addition to updating their study and numbers, they added a seventh sin (included below). The sins they identified are the following (and 98% of all products analyzed in 2009 committed at least one of them):

1. **Sin of Hidden Tradeoffs:** Emphasizing one environmental issue and hiding the trade-off (cost to another environmental issue) – Seen in 998 products and 57% of them had false environmental claims.

2. **Sin of No Proof:** An environmental claim comes with a responsibility to provide evidence to support/verify it – Seen in 454 products and 26% of them had false environmental claims.

3. **Sin of Vagueness:** Vagueness translates to meaninglessness. Often a result of a dependence on jargon and buzz-word, i.e.: "non-toxic", "all-natural", "environmentally-friendly", "carbon neutral", etc. – Seen in 196 products or 11% of false environmental claims.

4. **Sin of Irrelevance:** "If a light bulb claimed water efficiency benefits you should be suspicious" - Seen in 78 products and 4% of false environmental claims.

5. **Sin of Fibbing: "**Though shall not bear false witness"[25] – making environmental claims that are simply false - 10 products or less than 1% of false environmental claims.

6. **Sin of the Lesser of Two Evils:** "...consumers concerned about the human health and environmental risks of excessive use of lawn chemicals might create a bigger environmental benefit by reducing their use than by looking for greener alternatives" – Seen in 17 products or 1% of false environmental claims.

7. **The Sin of Worshiping False Labels** is committed by a product that, through either words or images, gives the impression of third-party endorsement where no such endorsement actually exists; fake labels, in other words (see: http://www.terrachoice.com/Home/News).

[24] Wikipedia entry on "Greenwash": http://en.wikipedia.org/wiki/Greenwash
[25] The 9th Commandment.

3.2 The Consequences

Although 'green' remains undefined, the concept can provide a means to distinguish great performers, but perhaps more importantly, also provides a means to distinguish poor performers. The consequences of failing to meet green standards are significant. Greenwash can...

- **Attract the attention of a scandal-obsessed media:** "The reputation of Japan's top paper companies collapsed faster than the proverbial house of cards in January when bogus labelling of products as recycled was uncovered.... Paper firms accounting for four-fifths of the industry confessed to exaggerating or entirely fabricating the recycled content of greetings cards, copier and printing paper in a bid to lure green-minded customers. It was an industry-wide deception that had gone on for ten years."[26]
- **Reduce companies' attractiveness to skilled workers:** "A surprising percentage of young workers want employment with a green company: 80 percent of those surveyed said they are interested in a job that has a positive impact on the environment and a whopping 92 percent would choose working for an environmentally friendly company."[27]
- **Alienate consumers (tenants):** 53% of global consumers prefer to buy from a company with a green reputation.[28]

Commercial stakeholders expect more. The competitive commercial sector has long recognized the value in differentiating better performance and "green" is becoming a powerful and respected tool.

Steve Bishop wrote in the Harvard Business Review[29]:

> "Marketing needs to define what sustainability means for their company and then decide how to express those values in their offerings. Companies should stop trying to appeal to green consumers by building green myths into the products they have and start creating something real—products that tell their environmental story for them."

Tenants and other stakeholders want to learn more about "green" and know what actions are underway.

Core stakeholders want greater transparency. The best ways to increase transparency are through...

- ***Solid monitoring and verification (as that prescribed by the International Performance Monitoring and Verification Protocol (IPMVP)),***
- ***Industry best-practice certifications (such as BOMA BESt and LEED-EB), and***
- ***Visible "green" initiatives.***

[26] Ethical Corporation, "Japan: Pulp Fiction": http://www.ethicalcorp.com/content.asp?ContentID=5766
[27] Greenbiz.com article on green as an employee priority (published 2008): http://www.greenbiz.com/news/news_third.cfm?NewsID=36111&CFID=13426096&CFTOKEN=94475733
[28] Environmental Leader "53% of Consumers Prefer to Buy From Company With Green Rep" (published Oct 2 2007): http://www.environmentalleader.com/2007/10/02/53-of-consumers-prefer-to-buy-from-companies-with-green-rep/
[29] http://www.hbrgreen.org/2008/01/dont_bother_with_the_green_con.html

4.0 Looking Ahead

Green initiatives that provide real, tangible and verifiable results on the triple bottom line are increasingly in demand. For example, the commercial market's increasing emphasis on carbon neutrality.

Success requires a holistic approach incorporating green power, carbon offsets, renewable energy. The proponents of each support energy-efficiency as the obvious first step. In the pursuit of energy efficiency, effective partnerships between the stakeholders are invaluable.

Energy efficiency is the 'thin edge of the wedge' to achieving green and delivers early results from:

- Low and no cost opportunities;
- Capital investment in demand reduction; and
- System optimization.

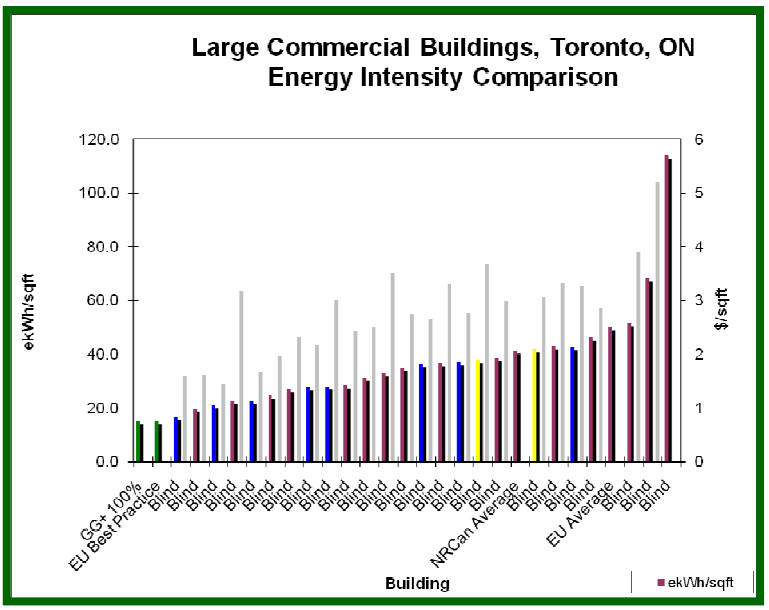
The advantage of a holistic approach is in accordance with the Pareto principle[30]: focusing first on the 80% that is easy to achieve, before tackling the more difficult 20%. Early implementation also eliminates the 'cost of procrastination' – when good energy efficiency measures become locked in an intermediate "study" phase, and are not implemented. Savings from energy efficiency measures, are cumulative, and a year's delay is a year's lost savings.

4.1 The Playing Field

For commercial properties to prevail in achieving "green" involves partnerships between core stakeholders (owners, property managers, operations, and tenants).

Energy@Work reviewed 18,000,000 ft² of commercial office buildings to prepare the figure at right to illustrate the range in energy and economic performance.

The energy intensity, ekWh per ft², is on the left hand side and shown with colour columns. The cost per sq. ft is on the right hand side and shown in grey columns. Three years of utility bills were used for each facility to prepare this comparison. Each facility is within the Greater Toronto Area and has similar occupancy.



Ironically, the best performers on the left hand side are the most committed to further reductions!

[30] The 80-20 Rule: http://www.aafp.org/fpm/20000900/76the8.html

4.2 New Initiatives

There are exciting initiatives that promise to have major repercussion in the commercial sector.

In particular, three initiatives to watch are:

- 20 by '15 energy intensity target,
- The Carbon Disclosure Project, and
- Ontario's Green Energy Act.

4.2.1 20 by '15:

The commercial building marketplace is highly competitive, demanding and makes numerous "green" claims of varying credibility. On September 18th 2009, BOMA Canada, the Canadian Green Building Council, and the Real Property Association of Canada proposed an energy performance target:

- ***Canadian office buildings to achieve an energy intensity of 20 ekWh / ft^2 / year by 2015.***

Tenants can be expected to accelerate this target's adoption, especially if the initiative's designers follow through on their emphasis on transparency, simplicity, credibility, verifiability, inclusivity, and relevance. . Higher standards of transparency will become a competitive must that differentiate the leaders from the laggards.

Note: the definition of "20 by '15" is still under consultation. **Energy@Work** *has provided input.*

4.2.2 The Carbon Disclosure Project:

From the Carbon Disclosure Project Website (https://www.cdproject.net/en-US/Pages/HomePage.aspx):

> *"The Carbon Disclosure Project launched in 2000 to collect and distribute high quality information that motivates investors, corporations and governments to take action to prevent dangerous climate change.*
>
> *We further this mission by harnessing the collective power of corporations, investors and political leaders to accelerate unified action on climate change.*
>
> *2,500 organizations in some 60 countries around the world now measure and disclose their greenhouse gas emissions and climate change strategies through CDP, in order that they can set reduction targets and make performance improvements. This data is made available for use by a wide audience including institutional investors, corporations, policymakers and their advisors, public sector organizations, government bodies, academics and the public.*
>
> *We operate the only global climate change reporting system. Climate change is not a problem that exists within national boundaries. That is why we harmonize climate change data from organizations around the world and develop international carbon reporting standards.*
>
> *We act on behalf of 534 institutional investors, holding $64 trillion in assets under management and some 60 purchasing organizations such as Cadbury, PepsiCo and Walmart. View our programs to find out more."*

4.2.3 Ontario Green Energy Act

The Ontario Green Energy Act[31] is purported to be the most aggressive act in North America. As described by Sven Thorsten Hombach of the International Law office, the Green Energy Act (Bill 150, which received royal assent in 2009) includes several provisions bearing on the commercial real estate industry. Such provisions would include:

- Prohibiting any person from offering for sale or lease an interest in real property, unless the person discloses the energy consumption and efficiency of the residence or other building on the property (as prescribed by regulation);
- Designating (by regulation) energy efficiency and water consumption ratings for appliances;
- Enumerating guiding principles to govern the construction, acquisition, operation and management of facilities by the government of Ontario relating to energy use, greenhouse gas emissions, environmental responsibility and the use of renewable energy sources for the facilities.[32]

It will also have an indirect effect on the sector, by reshaping the Ontario energy industry.

A product of the Act was the recent $7 billion contract awarded to Samsung for new wind and solar power generation as well as the $8 billion for new renewable energy contracts[33]. The shift towards more expensive sources of energy, like green energy and nuclear, has put upward pressure on the electricity price for residential and will also soon reach the meters of commercial properties.

[31] http://www.greenenergyact.ca
[32] "Ontario Embraces Green Energy Economy." Internation Law Office. Accessed from: http://www.internationallawoffice.com/newsletters/detail.aspx?g=1d1183e1-65b9-44cf-b024-4c94e4b5a768&redir=1
[33] http://www.powerauthority.on.ca/Page.asp?PageID=122&ContentID=7221

5.0 Conclusion

What have we learned since the green paper was first launched three years ago?

Achieving Green is even more valuable, although it's not easy to obtain. Green takes hard work. False claims, easy solutions and Greenwash have created a lot of distrust in the marketplace. The lack of transparency makes it especially difficult to determine what is real.

Business is expected to be part of the solution. Commercial buildings in particular, are an obvious target for improvements, i.e., it's noticed when commercial buildings leave an excess of lights on through the night.

Energy efficiency is the natural first step in a larger green strategy. Its impact is direct and demonstrable, and, considering all the low lying fruit, it is often extremely cost effective. Energy efficiency helps to provide a firm foundation from which to build a sustainable, long-term energy master plan.

Barriers (or excuses) may be difficult to distinguish from 'business as usual.' But, once identified and sustainably removed, the economic, environmental and socially responsibility rewards of overcoming these will bring recognition and respect, and demonstrate green leadership.

Our partners have suggested the following to help others move forward towards Green:

Understand Right:

- Know your company's energy use, cost and waste.
- Specify your company's energy needs and goals.
- Identify who you need on your company's energy team.

Use Right:

- Empower the energy team to take action, to…
- Optimize your company's energy use, to…
- Meet your company's needs and goals.

Buy Right:

- Invest in the right tools.
- Invest in the right projects.
- Invest in real expertise.

We continue to believe in building the right partnerships, making the correct investments, and taking action. A solid, sustainable and powerful path to becoming Green is available! This paper was written to support our green leaders, encourage procrastinators to take action and discourage those that spend more on Greenwash than results.

We wish you success!

Check out the appendices, and visit our website (www.energy-efficiency.com) for additional support.

Appendix B - A Tale of Two Buildings

Chapter 1:

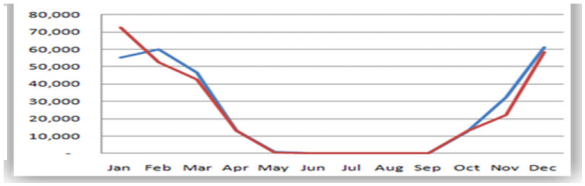
It was the best of times, it was the worst of times, and in the GTA, a leading commercial property management team approved energy audits at two very similar buildings in pursuit of BOMA certification. The buildings' areas, occupancy, and operational needs were comparable, and their weather conditions were identical. The only notable difference was that Building 2 was <u>perceived</u> to be superior from an energy management perspective.

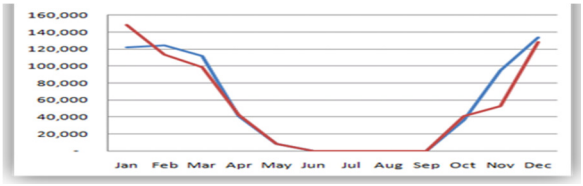
The audits empowered the buildings' energy teams to…

1. Improve their understandings of their buildings;
2. Assess their energy performance; and
3. Identify promising energy efficiency measures.

The profiles below were generated for the purposes of the audit from two years of <u>monthly</u> natural gas billing data (2008-9):

Building 1





Building 2

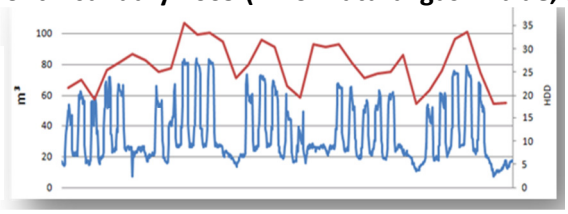
Comparing these initial results, a mystery emerged: While the profile shapes are almost identical, their intensities of consumption were in different orders of magnitude (look at the y-axes at left). *<u>In fact, natural gas consumption intensity in Building 2 (the better perceived building), at 12.21 ekWh/ft^2, was almost double that of Building 1 (6.98 ekWh/ft^2).</u>*

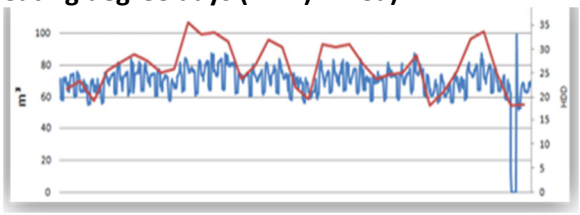
But, why? Tenant and environmental factors were basically the same, and examining the monthly utility-provided data, the buildings' annual profile shapes are nearly identical (aside from their scale, which is almost exactly 1:2).

The power of better data: With Enbridge's help, the energy team accessed interval meter data, tracking the buildings' gas use hour-by-hour. Using this data, Energy@Work generated the following profiles.

Month: January 2009 (m^3 of natural gas in blue, and heating degree days (HDD) in red)

Building 1

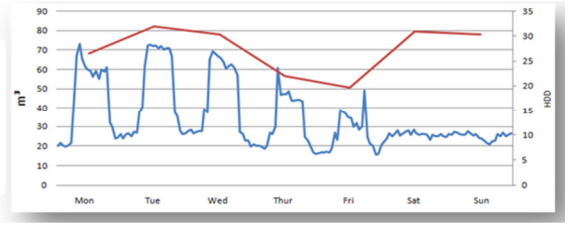




Building 2

Week: January 20th to 26th, 2009 (m^3 of natural gas in blue, and HDD in red)

Building 1



Building 2

Contact: Scott Rouse, 416-402-0525, scott.rouse@energy-efficiency.com

These profiles speak for themselves. In both buildings, the weekday demand peaks are roughly the same (between 70 and 80 m^3 / hour). But there's a major discrepancy in their base loads. On an average night or weekend, Building 2's demand averages about 60 m^3 / hour. By contrast, Building 1's demand for those low-occupancy periods averages only 20 m^3 / hour—one third of Building 2!

Question 1: Why is Building 2 consuming so much more gas at night and during the weekend than Building 1?

Also apparent from the graphs is the contrast between the buildings' responsiveness to varying weather conditions. The HDD, graphed in red, strongly correspond to the daily demand peaks in Building 1 (when the HDD is high, the demand peaks are high, when the HDD is low, the peaks are correspondingly low). By contrast, Building 2 shows no such relationship.

Question 2: Why is Building 2 so comparatively unresponsive to weather conditions?

Chapter 2:

In this chapter, we tell the story of Building 2's response.

The energy team's challenge was this: To respond effectively and solve the problems this discrepancy in a sustainable way, we need to determine the discrpancy's actual root causes.

Within the framework of the building's proactive Energy Master Plan, the team initiated a three part program in response to the issue:

1. Enbridge was contacted for three reasons
    - The support and assistance from Enbridge has been excellent and they continue to support our energy management efforts
    - Incentives of up to $0.10/cubic meter saved might be available
    - An incentive payment also provides valuable third-party verification to validate the savings.
2. Real Time Monitoring (RTM) was installed on the natural gas meters to verify performance:
    - The interval data demonstrated what the gas bill could not: that there was a significant difference in the buildings' daily and weekly natural gas consumption profiles.
3. Initiated an Existing Building Commissioning (EB Cx) project on the underperforming building's heating system.

Conclusion:

Phases 1 and 2 of the EB Cx project were completed during the fall of 2010. Phase 3 was partially implemented in the winter of 2011. Early indications suggest a sustainable savings of approximately 30% has been achieved for January and February. Phase 4 (which focuses on persistence) will ensure that the savings are sustained happily ever after.

The End

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