

Putting Conservation and Consumers First

A Review of *Conservation First: A Renewed Vision for Energy Conservation in Ontario*

ONTARIO CLEAN AIR ALLIANCE RESEARCH | www.cleanairalliance.org

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According to the Government of Ontario's white paper, *Conservation First: A Renewed Vision for Energy Conservation in Ontario*, the Province is now committed to meeting Ontario's electricity needs by investing in all cost-effective energy conservation and efficiency resources before investing in new electricity supply.

The Government's *Conservation First* policy is both revolutionary and common sense.

It is revolutionary because the Government of Ontario's preferred option for meeting our electricity needs for more than 100 years has been the construction of large, centralized electricity generation stations. As a consequence, Ontario has failed to pursue all of the cost-effective energy conservation resources that can lower our electricity rates and bills by avoiding the need for higher cost new supply.

It is common sense because the pursuit of all cost-effective energy conservation will lead to lower electricity rates and bills; increase the productivity and competitiveness of our manufacturing and other industries; create good jobs in Ontario; and protect the environment.

Currently, the Government's *Conservation First* policy only applies to electricity despite the fact that the province's natural gas consumption is almost double its electricity consumption;¹ and natural gas is responsible for approximately 35% of Ontario's energy-related greenhouse gas emissions. This doesn't make sense since the benefits of electricity conservation are equally applicable to natural gas conservation.

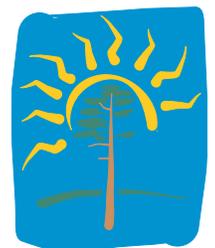
Moreover, it will be impossible for Ontario to meet its greenhouse gas emission reduction targets without implementing a *Conservation First* policy for natural gas. And gas conservation programs will create more good jobs in our province by reducing the outflow of Ontario dollars to western Canada and the U.S. to purchase natural gas.

Promotion of Conservation First by Ontario's Electric and Gas Utilities

There are three major barriers that are preventing Ontario consumers from pursuing all of their cost-effective energy conservation and efficiency options.

1. *Missing information:* Most energy consumers have limited information about the full range of cost-effective energy efficiency options and trustworthy and qualified energy efficiency providers.

Ontario Clean Air Alliance's Environmental Registry Submission re: The Government of Ontario's Conservation First White Paper



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2. *Limited access to capital:* Most consumers lack access to sufficient capital to invest in all of their financially beneficial energy options. As a result, residential, commercial and industrial customers typically demand very short (1-5 year) payback periods for energy efficiency improvements despite the fact that these investments can generate savings for decades. In contrast, on the supply-side, electric power producers and utilities are willing to recover their capital costs over time periods ranging from 15-100 years.²
3. *Electricity and gas rates that encourage wasteful consumption:* The Ontario Energy Board, which regulates our electric and gas utilities, has made the utilities' profits a function of the amount of capital they have invested in electricity and natural gas supply-side infrastructure (e.g., distribution lines and transformer stations, pipes, compressor stations). As a consequence, the utilities have developed rate structures that encourage excessive consumption on peak demand days in order to stimulate the need for increased spending on supply-side infrastructure, which will raise their profits.



Ontario's municipal electric utilities, Hydro One, Enbridge Gas Distribution and Union Gas are the ideal agencies to help remove these market barriers to energy conservation and efficiency because:

- They have existing relationships with every electricity and natural gas consumer in the province;
- They are very knowledgeable and trusted sources of energy information;
- They can establish, in co-operation with third-party financial institutions, low-interest rate on-bill financing programs to help their customers overcome the high up-front capital cost barrier to energy efficiency and renewable energy investments;
- They can provide financial incentives to encourage their customers to pursue all of their cost-effective savings opportunities;
- Their rate structures can be reformed to promote the wise and efficient use of energy; and
- Utility designed and implemented energy conservation and efficiency programs can help facilitate the phase-out of the Ontario Power Authority.

Ontario's gas and electric utilities have been promoting energy conservation and efficiency for a number of years. And Enbridge Gas Distribution and Union Gas have developed some of the most cost-effective energy conservation programs in North America. Specifically, the two gas utilities' energy conservation programs are reducing their customers' bills by \$3.1 billion at a cost of only \$191 million. That is, for every dollar of utility spending, their customers are receiving \$16.2 dollars in bill reductions.³

Unfortunately, the Ontario Energy Board (OEB) and the Ontario Power Authority have implemented red tape and perverse financial incentives to discourage and prevent our electric and gas utilities from pursuing all of the cost-effective opportunities to save electricity and natural gas.⁴ In fact, the OEB has capped utility spending on gas conservation measures dramatically below the maximum

cost-effective level in the misguided belief that this is in consumers' interest.

These regulatory and financial barriers must be removed and the Minister of Energy must take the following actions, pursuant to section 27 of the Ontario Energy Board Act, to ensure that our electric and gas utilities will be motivated and able to implement the Government of Ontario's Conservation First agenda.

- **Inform the OEB that it is the policy of the Government of Ontario that our electric and gas utilities should pursue all of the energy conservation opportunities that are cost-effective and feasible.**
- **Direct the OEB to make the pursuit of all cost-effective energy conservation and efficiency opportunities the most profitable course of action for Ontario's electric and gas utilities.**

This objective can be achieved by linking the utilities' profits to the magnitude of the bills savings that their energy conservation and efficiency programs create for their customers. For example, if a utility's conservation programs create \$100 million of bill savings, it could be awarded a conservation bonus equal to 5% of the savings, namely \$5 million.

This mechanism will motivate utilities to pursue all of their cost-effective conservation opportunities since the greater the bill savings, the greater their profits. In addition, this mechanism will motivate the utilities to achieve these energy savings at as low a cost as possible, since the lower the utilities' costs, the greater the net bill savings and hence the higher their profits.

Direct the OEB to: a) establish aggressive minimum energy conservation and efficiency targets for Ontario's electric and gas utilities for 2015 to 2017 inclusive; and b) encourage the utilities to seek approval for energy conservation programs and budgets that will allow them to exceed their minimum targets.

Direct the OEB to require the electric and gas utilities to establish home energy retrofit programs that will provide: a) a network of utility-qualified contractors and installers; and b) low-interest rate, on bill-financing for energy conservation products (e.g., insulation, energy-efficient windows and doors, high-efficiency air-conditioners) and renewable energy technologies (e.g., heat pumps and solar water heaters).

Pursuant to sections 90, 91 and 92 of the *Ontario Energy Board Act*, Ontario's electric and gas utilities must submit "leave to construct" applications to obtain OEB-approval to build major new distribution facilities. **The Minister of Energy should direct the OEB to make such approvals conditional on the utilities demonstrating that they have pursued all feasible and cost-effective energy conservation and efficiency options to avoid the need for the proposed new supply-side facilities.**

Municipal electric utility (e.g., Toronto Hydro) conservation programs provide benefits to all Ontario electricity consumers by avoiding the need for new, higher-



Business

Toronto Hydro conservation plans unplugged

The Ontario Energy Board has denied Toronto Hydro permission to go ahead with conservation programs costing \$45 million.

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By: John Spears Business Reporter, Published on Wed Jul 13 2011

The Ontario Energy Board has pulled the plug on \$45 million worth of energy conservation programs proposed by Toronto Hydro.

The decision means that Toronto Hydro can't start the programs, nor charge the cost to its customers.

And it means that Toronto Hydro won't be able to hit targets that are a condition of its licence, vice-president Blair Peberdy said in an interview.

"Our reaction is surprised and disappointed," he said.

"Right now I'm not sure what the next steps are."

Programs shredded by the energy board include consumer education campaigns; a proposed incentive to get rid of flat-rate water heaters; and a special program aimed at curbing power use in multi-unit buildings.

The board said that some of the programs duplicate provincewide campaigns already funded through the Ontario Power Authority.

For others programs, it said there wasn't enough evidence that they would be effective.

In its decision, the board noted that the Ontario Power Authority (OPA) is already

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CHP systems can keep the lights on in hospitals, schools and apartment towers during a power outage.

cost transmission and generating facilities. **Therefore municipal electric utility conservation programs should continue to be financed by a surcharge on the electricity consumption of all Ontario consumers (i.e., the global adjustment rate).**

Unbiased, evidence-based estimates of the costs of new electricity distribution, transmission and generation infrastructure are needed to assess the cost-effectiveness of energy conservation programs. **Therefore the Minister of Energy should direct the OEB to produce objective 20 year forecasts of the electricity distribution, transmission and generation costs on a regular basis.**

Virtually every building and factory in Ontario uses natural gas to provide just one service: heat. It is much more efficient to use these same molecules of natural gas to simultaneously produce heat and electricity. This is what combined heat and power (CHP) plants do. As part of an integrated electric and gas *Conservation First* strategy we need to stop wasting gas by replacing the boilers in our apartment buildings, condominiums, shopping centres, hospitals, universities, airports and factories with high-efficiency CHP plants.

To maximize efficiency and lower costs, whenever feasible, a CHP plant should be combined with a district energy system that uses underground pipes to distribute hot and/or chilled water to neighbouring homes, buildings and/or factories. In addition to CHP, the district energy system's thermal energy can be provided from multiple potential sources including solar energy, geothermal energy, biogas and waste heat from factories.

A major barrier to CHP and the creation of new district energy systems are their upfront capital costs. This barrier can be overcome by allowing our electric and gas utilities to include these capital costs in their utility rate base.

The Minister of Energy should direct the OEB to allow our electric and gas utilities to include the capital costs of small-scale CHP plants (up to 20 MW) and district energy systems in their utility rate base.

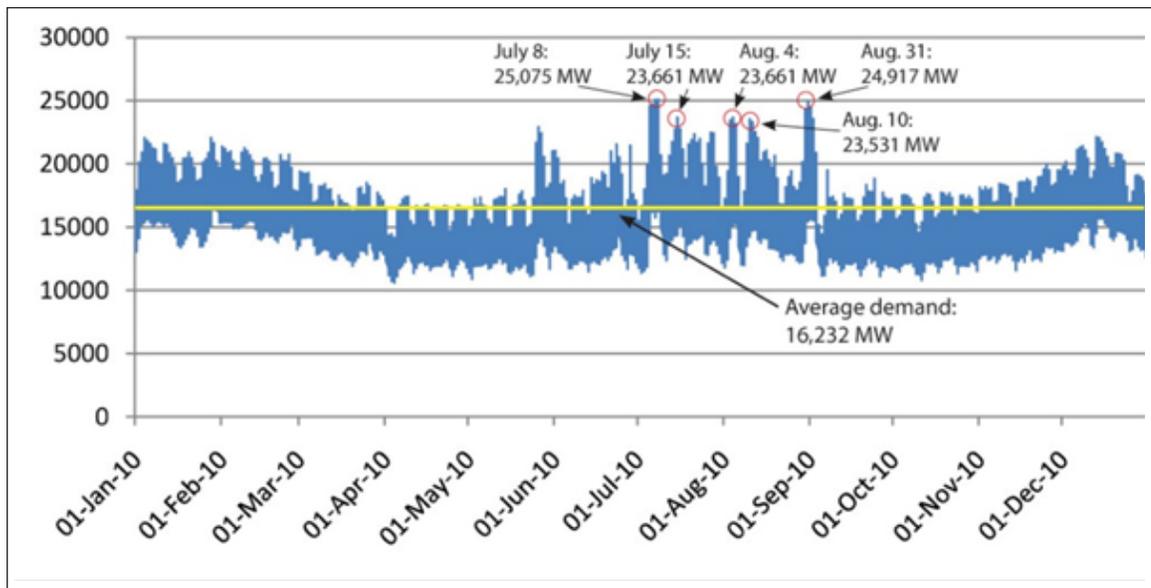
Every year approximately 7.5% of the electricity that we produce is lost by our electricity transmission and distribution systems before it reaches the consumers. Furthermore, the losses are even greater during peak demand hours. In 2012 these losses cost Ontario's consumers approximately \$777 million.⁵

While our electric utilities can reduce transmission and distribution losses by making operational improvements to their systems and by helping their customers' reduce their peak demands, they have little direct incentive to do so since the OEB allows them to recover all of their lost electricity costs from their customers – no matter how excessive they are.

The Minister of Energy should direct the OEB to establish annual electricity loss reduction targets for our electric utilities. The utilities should no longer be allowed to pass on the costs of excessive electricity losses to their customers.

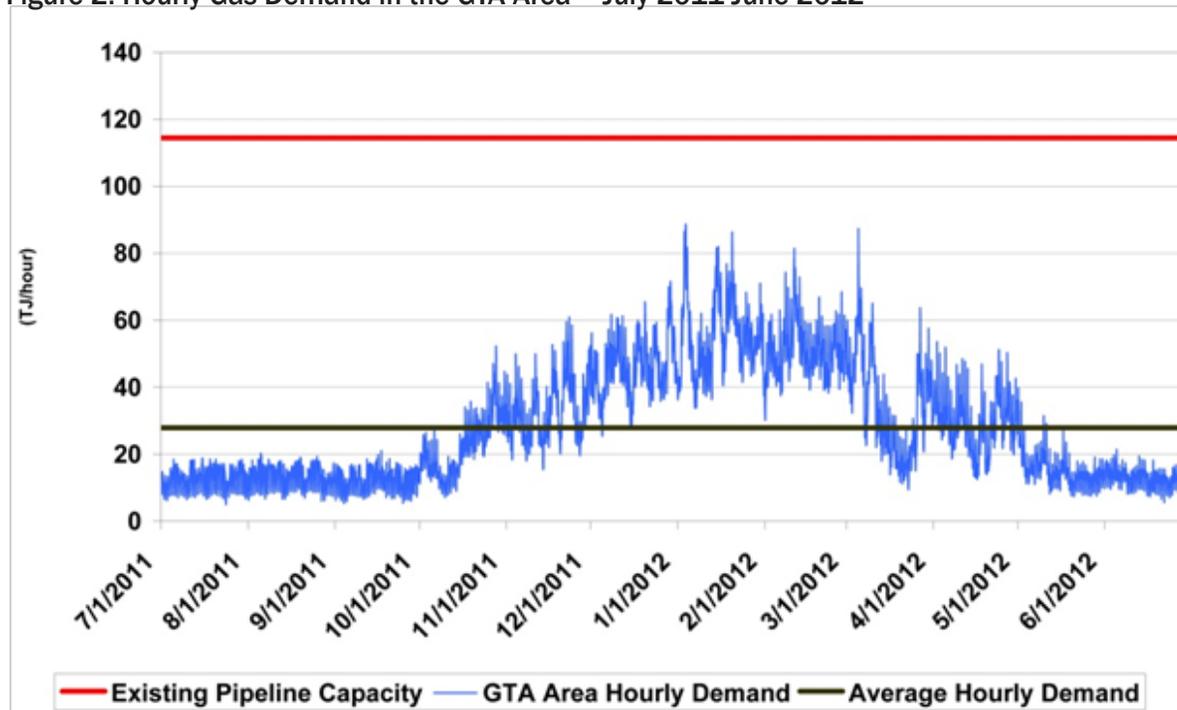
As Figure 1 indicates, the demand for electricity spikes during about a dozen very hot summer afternoons when our air conditioners are running full out. During these summer spikes in demand (needle peaks), the demand for electricity is up to 50% higher than Ontario's average annual hourly demand.

Figure 1: Ontario's Demand for Electricity in 2010



Similarly, as Figure 2 indicates, the demand for natural gas peaks on cold winter days when our furnaces are running full out. The Greater Toronto Area's peak hourly demand for natural gas is 200% greater than is average annual hourly demand.

Figure 2: Hourly Gas Demand in the GTA Area – July 2011-June 2012



The cost of meeting these peaks in demand is very high. Furthermore, the cost of meeting these spikes in demand is dramatically higher than the prices that consumers pay for electricity and natural gas during these peak hours. For example, while it can cost up to \$1.19 to \$1.64 per kWh to provide electricity at the time of system peak,⁶ the residential peak hour price of electricity is only approximately 17 cents per kWh.

Subsidizing peak hour consumption doesn't make sense since it drives up demand and utility costs and hence rates for *all* consumers.

The Minister of Energy should direct the OEB to modify the electric and gas utilities' rates to reward consumers who reduce their peak demands. In particular, the OEB should mandate the utilities to:

Increase the differentials between peak and off-peak rates;

- **Lower the fixed monthly charges and increase the variable distribution charges per kWh or per cubic metre consumed;**
- **Provide more generous rebates to consumers who curtail some of their energy consumption during peak demand periods; and**
- **Establish "double returns" programs that reward residential and small business electricity consumers that reduce their consumption by 20% or more during summer months. Specifically, double the utility bill saving for consumers that reduce their consumption by 20% or more.**



The peaksaver program has attracted just a small percentage of eligible households

The IESO recovers Ontario's wholesale electricity generation costs via two rates, the Hourly Ontario Energy Price (HOEP) and the Global Adjustment (GA). In 2012, two-thirds of our total wholesale generation costs were recovered through the GA.⁷

The GA is billed to large industrial and commercial consumers on the basis of their consumption during the five highest demand hours for Ontario for the year. As a result, these consumers have a very strong financial incentive to reduce their peak hour demands.

On the other hand, the GA is billed to our municipal electric utilities on the basis of the total annual electricity consumption of their customers. As a result, the GA rate does **not** give the municipal utilities a strong financial incentive to take steps to reduce the peak demands of their residential and small volume business customers.⁸ This doesn't make sense since lower peak demands and costs will lead to lower rates and bills for all consumers.

The Minister of Energy should direct the IESO to recover its GA costs from our municipal electric utilities on the basis of their consumption during Ontario's annual five highest demand hours.

The Minister of Energy should establish firm dates for the implementation of the above-noted recommendations.

Transferring responsibility for the design and implementation of energy conservation and demand response programs from the Ontario Power Authority (OPA) to the utilities and the Independent Electricity System Operator will facilitate the elimination of the OPA, which will reduce red tape and bureaucracy in CDM program delivery.

Net Zero Energy Homes and Buildings

A Net Zero Energy home or building is built to super-efficient standards that can meet all of its energy needs on an annual basis from its on-site renewable energy supply (e.g., solar, geothermal). To cope with fluctuations in demand, Net Zero Energy homes and buildings can be connected to the electricity grid.

California has adopted the following Net Zero Energy goals:

- All new residential construction will be Net Zero Energy by 2020; and
- All new commercial construction will be Net Zero Energy by 2030.⁹

Moving towards Net Zero Energy for new homes and buildings will be necessary for Ontario to achieve its 2050 greenhouse gas emission reduction target – an 80% reduction relative to 1990 levels.

The Ministry of Municipal Affairs and Housing should:

- **Establish target dates for when all of Ontario's new homes and buildings will be Net Zero Energy; and**
- **Regularly raise the Ontario Building Code's minimum energy efficiency standards to continuously and cost-effectively move our new homes and buildings towards Net Zero Energy.**
- **The Ministry of Energy should regularly raise its minimum energy performance standards for new appliances and equipment to help move our homes and buildings toward Net Zero Energy and to lower our energy bills.**

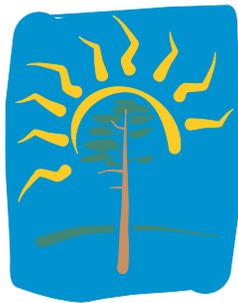
Electricity conservation costs Ontario only three cents per kWh.¹⁰ There is no other option that can meet our energy needs and reduce our greenhouse gas emissions at a lower cost. Given that Ontario has a lower level of energy productivity than many competing jurisdictions that have had long-standing commitments to pursuing energy efficiency (e.g., New York, California, Vermont, Massachusetts), we have a huge unexploited opportunity to increase our energy productivity, create jobs and lower our energy bills and greenhouse gas emissions. It is therefore vital that the Government of Ontario take the steps that are necessary to put its *Conservation First* policy into practice as soon as possible.



**Net zero homes
can actually save
homebuyers
money**

Endnotes

- 1 Environmental Commissioner of Ontario, *Restoring Balance – Results: Annual Energy Conservation Progress Report – 2011 (Volume Two)*, page 58.
- 2 Ontario Clean Air Alliance, *An Energy Efficiency Strategy for Ontario’s Homes, Buildings and Industries*, (2011), page 6.
- 3 *An Energy Efficiency Strategy for Ontario’s Homes, Buildings and Industries*, page 10.
- 4 *An Energy Efficiency Strategy for Ontario’s Homes, Buildings and Industries*, Appendix A.
- 5 In 2012 Ontario’s total electricity consumption was 141.3 TWh. Assuming a 7.5% loss rate, our total losses in 2012 were 10.6 TWh. In 2012 the average wholesale cost of electricity generation was \$73.30 per MWh. See *Ontario Energy Board 2003-04 Annual Report*, page 19; IESO, *News Release*, “Ontario’s Independent Electricity System Operator Releases 2012 Electricity Production, Consumption and Price Data”, (January 11, 2013); and IESO, *Monthly Market Report: December 2012*, page 21.
- 6 Environmental Commissioner of Ontario, *Re-thinking Energy Conservation in Ontario – Results: Annual Energy Conservation Progress Report – 2009 (Volume Two)*, November, 2010, page 35.
- 7 IESO, *Monthly Market Report: December 2012*, page 21.
- 8 Navigant Consulting Ltd., *Global Adjustment Review: Part 1: Options Identification*, Prepared for IESO, (March 28, 2013), pages 11 to 16.
- 9 State of California, *Energy Efficiency Strategic Plan: January 2011 Update*, page 6.
- 10 Colin Andersen, CEO, Ontario Power Authority, “Powering Toronto’s Electricity Future”, Remarks to the Toronto Board of Trade, (October 25, 2012), page 10; accessed at <http://www.powerauthority.on.ca/sites/default/files/news/Andersen-Board-of-Trade-Oct-25-2012.pdf>



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