Learn how biofuels are a part of the solution to transportation emissions. PG. 2

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How nuclear energy delivers economic and environmental value. PG. 6

REPORT ON ENERGY SUSTAINABILITY

Editor's Note:

The Report on Energy Sustainability brings together some of the best and brightest in Ontario's energy sector to discuss how we plan on creating a more sustainable future for our beautiful province. Amongst other things, we discuss Ontario's low carbon future, new energy storage technologies and take a tour of both a "Smart Home" and a "LEED Gold Home".

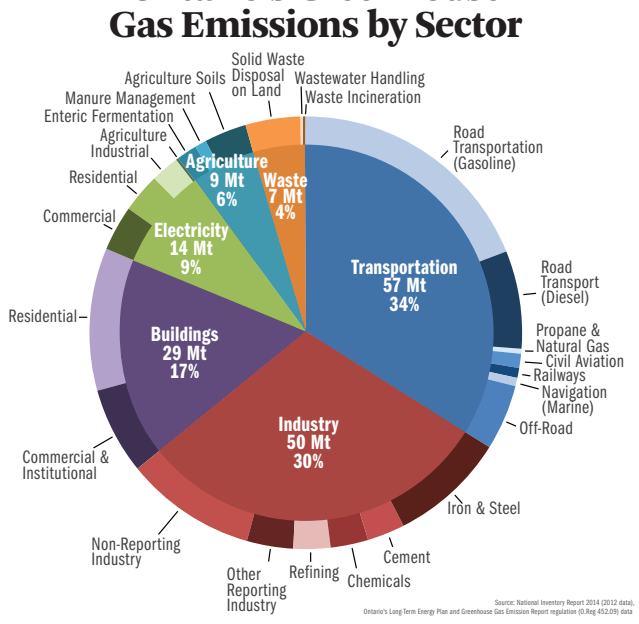
PEPPERMEDIA

Cap-and-trade clarity for Ontario's consumers

For cap-and-trade to benefit Ontarians, government and industry partners must continue to consult, collaborate and define the program details

Ontarians like others across Canada, care deeply about the environment. Responsible environmental stewardship is no longer a soft or abstract political issue – it is now a strategic business imperative. Recent public opinion polling undertaken by Campaign Research for the Ontario Energy Association supports this growing environmental consciousness. The research is clear: while two thirds of Ontarians want the government to act on climate change, that same proportion have clear limits about how much they are willing to pay for a cap-and trade program. While it's clear we need a climate change solution, we need to be realistic about how much consumers can afford to pay.

Ontario's Greenhouse Gas Emissions by Sector



Source: National Inventory Report 2014 (2012 data), Ontario's Long Term Energy Plan and Greenhouse Gas Emission Report regulation (O.Reg 452.09) data

With Premier Kathleen Wynne's recent announcement about implementing a cap-and-trade program, the Ontario government is the latest to signal its intention to join the global movement to tackle climate change. The potential for a successful program is promising, but government needs to continue to consult and collaborate, ensuring that energy consumers are fully considered in all related decisions.

The Ontario cap-and-trade program has ambitious implementation timelines. But we need only look to California or Quebec to see that moving from theory to design to implementation is quite an intricate process. Given the complexity of what is being proposed, it's important to provide ample opportunity for in-depth stakeholder consultation. Comparable programs like the ones in California and Quebec took five to six years to develop and implement, so it's important to manage public expectations with realistic information and commitments.

Many challenges lie ahead, but forethought and clarity at the outset, combined with robust, long-term planning, will ensure Ontario tackles climate change in a responsible manner and, at the same time, protects consumers' already-stretched pocketbooks.

The Ontario Energy Association supports a cap-and-trade program with minimal net impact to the consumer – one that ensures generated funds go directly to support further emission reduction and/or behavioural change, and not general government initiatives. This kind of program will secure the confidence and trust of the public. The commitment to transparency and accountability will serve the government well as they seek to educate the public, collaborate with them and establish a meaningful public discourse on climate change.

Simply put, consumers must know what they are being charged for and what is being done with the revenues collected by any cap-and-trade program. In both the private and public sectors, stakeholders deserve clarity and transparency; collectively, we must respond to this call and work to further consult with industry experts to get the program right, the first time.

Transparency and clarity around the cap-and-trade program should be easy to achieve. For instance, part of the solution should be a separate line item on utility bills that tells consumers the charge they are paying directly. If the government wants to foster behavioural change, consumers must be able to see the charges so they can adjust their behaviour accordingly. Consumers, after all, are the ones who ultimately pay the costs.

Ontario is already a leader in North America in addressing climate change. The move to phase out coal-fired power generation was no small endeavour. The energy sector has led the way among Ontario industries in facilitating greenhouse gas reduction and climate change adaptation. Ontario's energy consumers and the industry continue to invest heavily in clean energy, conservation, and technologies to lower greenhouse gas emissions, often in partnership with government. These important early actions should be recognized when emission caps for the industry are set.

One solution that must not be overlooked in the fight against climate change is the role of fuel switching – using alternative fuels like compressed natural gas, liquefied natural gas, and electricity to power vehicles and fleets. The transportation sector is the single largest source of greenhouse gas emissions in Ontario and reducing transportation emissions will go a long way to reaching the government's greenhouse gas reduction targets.

Of course, there is more to be done. But by establishing a cap-and-trade program, Ontario has a real opportunity to be a leader on the climate change stage.

The government is off to a promising start, and we owe it to consumers to continue to foster an environment of collaboration and consultation on an issue we all care deeply about.

Bob Huggard
President and CEO
Ontario Energy Association

LEVERAGING ENERGY DATA TO CAPTURE SAVINGS

> *Consumers can download their energy consumption data from their local distribution company's online customer portal to get powerful information and take greater control over their energy use.*

It pays to pay attention. That's why a growing number of Ontarians are turning to energy data to improve the efficiency, performance and sustainability of their buildings, including homes, businesses, farms, institutions, cultural centres, sports facilities and other types of property.

With the proliferation of real-time (or near-real-time) data related to other aspects of day-to-day living, it's no wonder electricity consumption is coming under increased scrutiny, not just in Ontario but in many other jurisdictions. Whether you're measuring progress towards health goals with a Fitbit, avoiding traffic with a GPS device, monitoring your home security with a wireless alarm system, tracking a package you've ordered online, timing the arrival of the next streetcar, building playlists on your smartphone or viewing yesterday's electricity usage at your home, the common thread is data – and the visibility it provides.

On a societal level, our access to data is unprecedented. It offers the promise of intelligence. Engaged electricity consumers can monitor a broad array of variables, not just about their own consumption but about conditions on the power system as a whole. This information, in turn, has led to more informed decision making about when and how to use electricity.

Over the past 15 years, Ontario's electricity sector has been transformed, impacting each and every point along the electricity value chain. As part of that transformation, many of the processes related to planning, procuring, delivering, managing, regulating and even consuming electricity in the province have evolved.

This structural evolution is certainly not unique to Ontario, but the scope and magnitude of changes impacting this province are astonishing. On the supply side, these changes include the phase-out of coal-fired generation, the growth in renewable resources like wind and solar and the refurbishment of two units at the Bruce Nuclear Generating Station, among others. On the demand side, in addition to the spike in the use of data analysis, there has been a surge of interest in embedded generation, increasing engagement in regional and local energy planning, as well as broad support for conservation and demand management measures. Transmission and distribution of electricity have also been impacted by the deployment of smart grid technologies, energy storage, electric vehicles and small-scale renewables, especially solar projects.

In Ontario, there has been a coordinated effort between all levels of government, electric and gas utilities, the private sector, trade and business associations, and energy consumers to set sustainability-oriented objectives and actively pursue the economic and environmental benefits of energy conservation and energy efficiency. Since its launch, the saveONenergy suite of programs has grown into one of North America's most successful and comprehensive electricity conservation efforts. The results of the 2011-2014 Conservation Framework show that local distribution companies (LDCs) across Ontario, in partnership with the Independent Electricity System Operator (IESO), achieved more than six terawatt-hours (TWh) of cumulative energy savings.

As impressive as that is, there's more to come. From its vantage point at the centre of Ontario's power system, the IESO will continue to champion a conservation culture, working with LDCs and others to implement a new six-year Conservation First Framework. Through implementation of flexible, scalable programs delivered by LDCs, this new framework is designed to reduce consumption by 7 TWh by 2020. The IESO is also working with the largest electricity users in the province to decrease usage by an additional 1.7 TWh within the same horizon under the auspices of the Industrial Accelerator program.

The business case for conservation, demand response and energy efficiency is well established. In addition to being among the lowest cost resources available (at approximately four cents per kilowatt-hour), conservation plays an essential role in helping the IESO balance supply and demand, with up to 1,200 megawatts of verifiable demand reductions available when supply is tight – sufficient to avoid starting up a higher priced generator.

It's often said you can't manage what you can't measure. Electricity consumers from across the spectrum – residential, industrial, commercial, institutional, agricultural, etc. – are seeking a better, deeper, more holistic understanding of their energy use. Monitoring and tracking consumption can enable consumers to see the impacts of their actions, identify those devices or appliances that are responsible for the greatest consumption and adjust their behaviour accordingly. For example, in an industrial setting, energy managers may use data analysis to identify equipment malfunctions and/or system and process inefficiencies, which in turn enables them to prioritize repairs and upgrades.

That said, consumers are not the only ones paying close attention to their usage data. Discussions are well underway through a number of channels – including the Meter Data Access Project – to identify ways to leverage the data associated with the 4.8 million smart meters installed in Ontario. This would allow for more effective, more targeted energy-efficiency programs and services while ensuring privacy is protected and security is uncompromised.

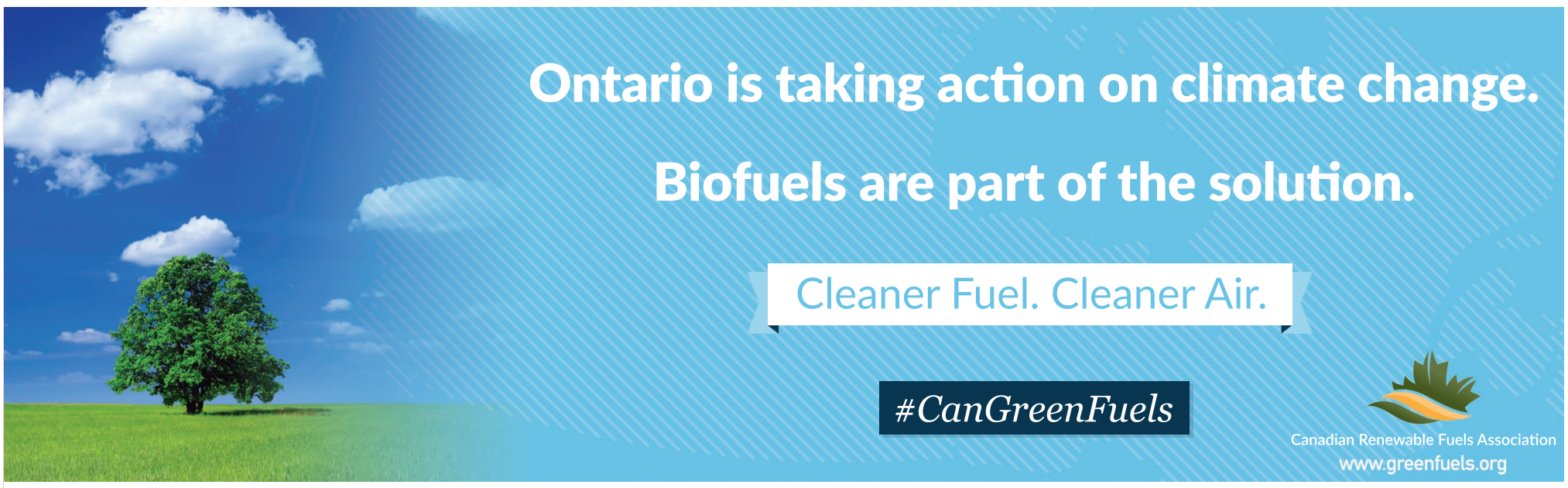
Research, analysis, discussion and debate about different aspects of the innovation life cycle – and the potential it offers to improve the efficiency and sustainability of Ontario's power system – are ongoing among groups that include the Ontario Smart Grid Forum, the MaRS Advanced Energy Centre, the Centre for Urban Energy at Ryerson University and others.

Innovative, data-driven energy solutions are already delivering new insights and new value to Ontarians. Pilot projects involving LDCs, technology development companies, analytics providers, researchers and academics, demand response aggregators and other energy service providers are showing considerable promise. For example, with support from the IESO's Conservation Fund, several LDCs have undertaken social benchmarking projects that allow residential consumers to view personalized energy reports, receive tailored energy-efficiency tips and compare their energy usage to similar properties.

Despite the obvious appeal, the value proposition for energy efficiency isn't limited to saving energy or saving money. A robust, diversified, resilient power system with engaged and knowledgeable consumers can accommodate sudden changes without jeopardizing reliability – and when it comes right down to it, a reliable supply of electricity is something all Ontarians can appreciate.

Sponsored by Independent Electricity System Operator

BIOFUELS : REDUCING ONTARIO'S TRANSPORTATION EMISSIONS



Governments around the world will leave the Paris Climate Change Conference (COP21) with aggressive greenhouse gas emission reduction targets. These governments, including Canada's federal government and provincial governments that have made emission reductions a key part of their mandate, will need to be seen delivering quick results.

It is a highly complex issue with no easy solution, but focusing on the largest greenhouse gas emitting sectors can yield immediate results. The transportation sector accounts for 23% of our nation's greenhouse gas emissions. In Ontario, this sector is the largest emitter – accounting for over one third (34%) of total emissions.

Biofuels are part of the solution. The biofuels currently used in Canada reduce carbon emissions by 4.2 megatonnes every year – the equivalent of removing one million cars from our roads. On a lifecycle basis, ethanol reduces greenhouse gas emissions by approximately 50% compared to gasoline, and its use in Ontario is reducing emissions by 1.2 million tonnes per year.

Ontario's Greener Diesel Mandate, requiring fuel suppliers to include an average adjusted volume of 2% biodiesel in 2015, 3% in 2016 and 4% in 2017, will reduce greenhouse gas emissions by 125,000 tonnes this year, and ultimately 500,000 tonnes in 2017 and onwards. Put in perspective, the 2% biodiesel mandate will be the equivalent of removing 140,000 cars from our roads this year.

Outside of biofuels, there are few short term options. Since the vast majority of today's vehicles are fueled by gasoline and diesel, alternatives such as mass transit and electric or natural gas vehicles are excellent long term solutions for reducing emissions, but their implementation will require major time commitments, behavioural changes and expensive infrastructure development. Biofuels are here now and offer immediate environmental and economic benefits. Expanding their use will provide the emission reductions that leaders will be desperately seeking after COP21.

Even in the longer term there are some transportation applications that will still need the power of combustion engines. Biofuels are the obvious emission friendly alternative to fossil fuels, and expanding their use will also reduce greenhouse gases from otherwise extremely carbon intensive industries like aviation.

More can be done, and the industry is here to work with the provincial government to further reduce emissions from Ontario's roads. The Government of Ontario's decision to develop a cap and trade system under the Western Climate Initiative, which includes Quebec and California, has great potential to help to shape the province's energy future. Cap and trade systems use economic incentives to reduce emissions, and transitioning Ontario to a low carbon economy will require transportation sector greenhouse gas reductions through fuel innovation and diversification. Shifting to clean-burning biofuels not only ensures Ontario's energy needs are met, it also protects the environment and contributes to long-term economic prosperity.

To be successful, Ontario's cap and trade policies need to support the critical role that biofuels play as a low emission fuel option. By its very nature, the biofuels industry is helping to reduce emissions. Increased biofuels usage will yield further benefits.

Ontario's cap and trade system also needs to reward early action by industries like biofuels that have already been actively reducing their emission profile, and should make allowances to promote industry development and use of low carbon products.

Further investment in Ontario's vibrant biofuels industry is also critical. We will rely on internal combustion engines for our transportation needs for years to come. Increasing the amount of biofuels that are being blended into our liquid fuel supply is key to transitioning to a low carbon economy and prolonging the supply of fossil fuels.

Using cleaner fuel results in cleaner air – and biofuels are part of the solution to Ontario's transportation sector emissions no matter what transportation fuels are used in the future.

Jim Grey, Chair
Canadian Renewable Fuels Association

ENERGY STORAGE PACKS A POWERFUL IMPACT

Energy storage is one of the most exciting developments in the advancement of our power systems. Or is it? In reality, energy storage has been around for decades. But what's different today is the broad range of innovation we are seeing in energy storage technologies and applications.

Today, there are more than 125,000 megawatts of energy storage installed worldwide, including more than 2,500 megawatts of what is called advanced energy storage: advanced batteries, thermal energy storage, flywheels and other technologies beyond traditional pumped hydro storage.

Why is this important? Because even though it's a 24/7 essential in all of our lives, electricity is one commodity that cannot be warehoused as inventory.

Energy Storage Ontario is the only industry association in Canada focused on advancing the role of energy storage and driving market development. We focus on demonstrating the tremendous value storage can bring to our electricity systems.

Like many other jurisdictions, Ontario is a market where energy storage can serve many roles and solve many problems. Our aging transmission infrastructure is being updated with a smarter and more efficient grid, one where energy storage will be a key part in the ongoing changes. Ontario has phased out all coal-fired electrical generation and has been bringing online more variable generators powered by renewable fuel sources. More uniquely to Ontario, these generator shifts have occurred while maintaining a fuel mix where more than half of all energy injected to the grid is nuclear power. With the growing fraction of variable generation and nuclear baseload, the flexibility offered by energy storage technology is a perfect fit.

We know that the need for storage is expected to grow rapidly in coming years due to the confluence of many factors, including the deployment of large amounts of renewable energy sources, like solar and wind, the decreasing load factors of power system assets, and the increasing cost and complexity of siting and building power plants and transmission lines.

Energy storage can add value at all points in the energy system. By doing so, it can increase the value of the energy produced by other sources and adds capacity value to the system. It can act as a load and as a generator and provide a range of balancing services both short-term and long-term such as capacity and congestion management and ancillary services. It also allows for the deferral of transmission and distribution infrastructure investments. And it can even help everyone manage energy in their own homes.

With energy storage, we can move energy long distances at night even when there's no demand on the other end because we can charge up batteries or pump air into a cavern for a compressed air energy storage system. We can make that energy local, so it can be consumed during the day when it's needed. It means we don't have to burden the transmission system when we do have high demand.

Fortunately, energy storage is a proven class of technologies that has been in existence for decades. And because of exciting technological progress in recent years there are now a wide range of affordable and reliable storage options available for utilities. In Ontario, there are companies that are now delivering grid-connected storage to the marketplace and showcasing innovation in our economy and our energy systems. If you want to know more about energy storage visit energystorageontario.com

Types of Energy Storage Technologies

The interior of NRStor's 2 megawatt energy storage facility in Minto, Ontario, which uses Temporal Power's innovative flywheel technology for energy storage. Flywheels use steel rotating machinery as energy storage

Flywheels

A flywheel is a mechanical battery that stores kinetic energy in a rotating mass. When electricity demand is low, the flywheel uses power from the electrical grid to drive a motor that spins the flywheel at high speeds, allowing the flywheel to store excess energy from the grid. When demand is high, the flywheel's momentum causes the motor to act as a generator, which then slows down the flywheel, putting power back onto the grid.

Solid State Batteries

A solid state battery has both solid electrodes and solid electrolytes. They are able to convert stored chemical energy into electrical energy. The electrolytes allow ions to move between the electrodes and terminals, allowing currents to flow from the battery to provide energy. Types of Solid State Batteries include:

- Electrochemical Capacitors
- Lithium Ion Batteries (LI-ION)
- Nickel Cadmium Batteries (NI-CD)
- Sodium Sulfur Batteries (NAS)

Pumped Hydro

Pumped Hydro is a type of energy storage used by power systems for load balancing. Pumped hydro storage facilities work by storing energy as water, pumped from lower reservoirs to higher reservoirs. When electricity demand is high, power is generated by releasing the stored water through turbines, similar to conventional hydropower stations. When electricity demand is low, the excess generation capacity is used to pump water into the upper reservoir. Pumped Hydro works both as a turbine and a generator. Differing from conventional hydroelectric stations, pumped hydro storage stations are a net consumer of electricity as a result of the hydraulic and electrical losses incurred in the cycle of pumping from the lower to upper reservoirs.

Compressed Air

Compressed Air Energy Storage takes air, compresses it and stores it under pressure in underground caverns. When electricity demand is high, the pressurized air is heated and expanded in an expansion turbine which drives a generator for power production. There are various ways of storing the energy underground, one of which is via underwater accumulators.

Thermal Energy

Not all stored energy necessarily comes directly back to the power grid as electricity. Off-peak energy can be stored as thermal energy, which can then be used to supply heating and/or hot water needs, reducing electricity consumption during on-peak periods. Increasingly, solar thermal systems are being used around the world to supplement or replace the electrical energy drawn from the grid for such uses. Ice storage systems do just the opposite where off-peak energy is used to make large blocks of ice to help cool buildings during peak hours. Other more sophisticated, high-temperature thermal storage systems can also be used to generate steam for electricity production to supply back to the grid.

Power-to-Gas

An electrolyzer can dynamically respond to fluctuating renewable generation while producing hydrogen by splitting water. The hydrogen energy can be stored and used as renewable fuel or renewable natural gas in several applications as follows: hydrogen fuel for Fuel Cell Electric Vehicles, direct injection of hydrogen into the natural gas grid, or production of liquid fuels as hydrogen feedstock to refineries or combined with CO2 in a biological or catalytic process.

Canadian company Hydrogenics' power-to-gas energy storage system at E.ON's site in Hamburg, Germany. The company's 1.5 megawatt PEM electrolyzer energy storage system, with its complete system residing in a single 40-foot ISO container, stores up to 36MWh per day of renewable energy.

Toronto-based company HydroStor has developed the world's first underwater compressed air energy storage system. Located three kilometres off Toronto Island and in 55 metres of water, Hydrostor's system is connected to Toronto Hydro's electricity grid where it will remain until a two-year pilot study is complete.

TOURING A "SMART HOME" AND A "LEED™ GOLD HOME"

Solar panels and Sedum plants on the green roof

Exterior skeleton of the smart home

Green Energy Doors Open is an event organized by the Ontario Sustainable Energy Association. It took place on October 3rd, 2015 and showcased renewable energy projects run by individual homeowners, communities and local organizations throughout Ontario. Its goal is to demonstrate the progress that the province is making in achieving a 100% sustainable energy system. Last Saturday, I took the opportunity to visit two open house events in Toronto — a "Smart Home Tour" at 2575 St. Clair Ave., and a "LEED Gold Home Tour" at 20 Senlac Rd.

The house at 2575 St Clair Ave is a solar PV-powered home. It is still under construction at the moment, but according to the owner, Jerry, it should be complete in 6 months. What piqued my interest about this house was that it modelled a passive house.

Passive house is a rigorous, voluntary building standard that aims to achieve up to 75% reduction in demand for heating, cooling, and primary energy usage.

That's a lot of energy saved.

Another unique aspect of this home was the fact that it would be using a net metering system, where the solar energy generated would be utilized domestically for all its energy needs, instead of supplying it to the grid through Ontario's MicroFIT (Feed-In-Tariff) program. As Jerry and I discussed the various features of the building, he told me that the house will be heated and cooled using a technology called a "air-to-water heat pump", instead of the more common and popular "groundsource heat pump".

Essentially, air-to-water heat pumps use heat energy from the outside air to heat and cool a home. This type of system is less efficient in cold climate regions such as Canada, where there is insufficient outdoor heat. In that case, back up systems that help to provide additional heating are required. However with the advancement in research and technology, more modern heat pumps with improved performance are also starting to become available. Water heating in the home will be done using a solar thermal system, which collects energy from the sun to heat water for domestic use.

Jerry also told me that when the house is done it will have the ability to power electric vehicles, as he plans to purchase one in the near future. Being an electric vehicle enthusiast myself, this really impressed me. Overall, I would give this solar home an A+ for effort and for being highly energy efficient.

The second house that I visited is a solar PV home as well as a LEED Gold certified home. Similar to the previous solar home, this house was equipped with solar panels to generate energy. However, instead of keeping the power for domestic use, this house supplies the energy generated back to the grid through the MicroFIT program.

The homeowner, James, was incredibly knowledgeable when it comes to energy efficiency, renewable energy technologies, and LEED. I later learned that he is an agricultural engineer who is also LEED certified. In the short one hour that I spent with James, I learned more about LEED than I did in a weeklong "Introduction to LEED" workshop I took in university.

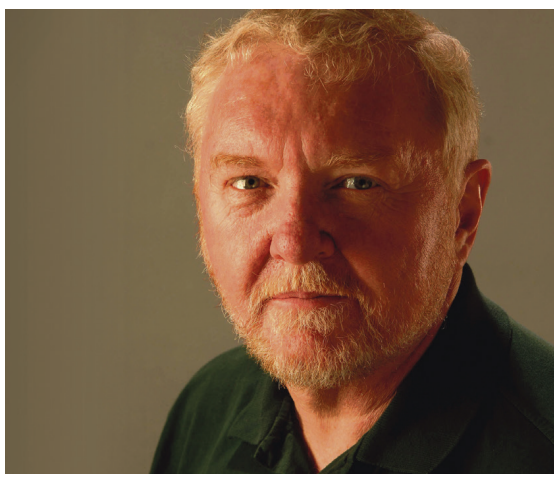
This impressive LEED Gold home has features like 21 built-in solar panels, a green roof (with a cool drought-resistant plant called "Sedum"), a geothermal system for space heating and cooling, LED lighting, "Energy Star" certified appliances, and low flow water fixtures.

As if these features weren't enough, James even went the extra mile to subscribe to Bullfrog Power for his home, which primarily sources solar power with a small portion of wind power. Bullfrog costs 14% more than conventional power sources, but is a lot healthier for the environment. James proudly told me that his house is the only modular home in Canada, meaning that it was constructed following the highest building standards and quality control, has very low wastage, and built to be as sustainable as possible. Fun fact: the entire house was assembled in only 2 days.

After visiting these two eco-friendly homes, I can say that I am sufficiently inspired and impressed by the commitment of these two homeowners to building a living environment that is as "earth-friendly" as possible. James and Jerry both agreed that although the initial investment is high, the return on future investment would definitely be worth it, as both cost and energy expenditures will be reduced. Now that I am a burgeoning energy expert thanks to James and Jerry, I have big dreams of owning a similarly sustainable, green energy-powered home in the future.

Yvonne Ho
Communications Co-ordinator
TREC Renewable Energy Co-operative

The Pickering Nuclear Generating Station Can Continue To Deliver Economic and Environmental Value



By Don MacKinnon
President
Power Workers' Union

Greenhouse gas emissions (GHG) from Ontario's electricity sector are expected to more than double from 2014 levels, and could negate the reductions already achieved by closing the province's coal stations. Ontario's growing dependence upon carbon emitting natural gas-fired generation in the next decade is particularly concerning as more and more of this fuel comes from environmentally-questionable shale gas. Carbon pricing, likely in the form of a Cap and Trade program with Quebec and California, will bring new cost pressures for residential, commercial and industrial electricity consumers if Ontario's carbon emissions rise.

In the coming months, as the province's 2013 Long-Term Energy Plan is being updated, Ontario's decision-makers will need to address these and some other critical challenges. Besides meeting the province's GHG targets and ensuring system reliability, Ontarians will expect to see rising electricity prices kept in check and a healthy and expanding economy that sustains existing jobs and creates new ones.

Ontario's Independent Electricity System Operator (IESO) has identified a 2,000 to 3,000 megawatt shortfall in reliability reserve capacity resulting from the scheduled closure of the 3,100 megawatt Pickering Nuclear Generating Station in 2020 that will persist beyond 2032. As part of an interconnected power system, Ontario must fill this shortfall to comply with the reliability requirements of the North American Electricity Reliability Corporation and the Northeast Power Coordinating Council Inc.

A recent analysis by Strategic Policy Economics (Strapolec) demonstrates that extending the operation of the Pickering Nuclear Station for four years is a near-term, low-cost option that can help address all of these challenges. Moreover, this option keeps more dollars in Ontario while significantly improving the province's energy security.

The Strapolec analysis demonstrates that continuing operations at the Pickering Nuclear Station will displace natural gas generation helping to avoid over 18 million tonnes of GHG emissions over a four-year period. That's the equivalent of taking about 3 million vehicles off the road. Without the continued operation of Pickering, Strapolec predicts Ontario's increased reliance on natural gas-fired generation will increase the overall consumption of natural gas in Ontario by 25 percent.

In addition to producing electricity, Ontario uses natural gas for heating and industrial applications. Over 99 percent of this natural gas is imported, which exposes Ontarians to significant natural gas price volatility. President Obama's Clean Energy Plan, which is causing a major shift in U.S. dependency on coal generation to natural gas, can be expected to exacerbate this volatility.

Since operating the Pickering facility is 25 percent less expensive than natural gas generation, Ontario's electricity system costs will be reduced by over $600 million over four years. The analysis also estimates an additional $950 million in avoided natural gas generation risks.

Overall, Strapolec modeling shows $7 billion in net new economic benefit to Ontario and 40,000 additional person years of employment. By continuing the operation of the Pickering Nuclear Station, Ontario saves $4 billion from avoided energy imports. Durham Region, where Ontario Power Generation (OPG) is the largest employer, retains $1.2 billion of economic activity. The Government of Ontario could realize over $1.1 billion in additional revenues from an increase in GDP and cost savings at OPG.

Strapolec suggests that Ontario's industrial and residential ratepayers should also see a benefit with comparative rates lower by four percent and one percent respectively.

Continuing to operate reactors at the Pickering generating plant for a four-year period can deliver substantial environmental and economic benefits. Achieving these outcomes requires the Government of Ontario to direct the Minister of Energy, the IESO and OPG to consult with the Canadian Nuclear Safety Commission for the purpose of securing approval for the longest possible period of continued safe operation of the Pickering Nuclear Generating Station beyond 2020.