

What Can Energy Scenarios Tell Us About Global and Domestic Energy Future

Energy Council of Canada – Members' Roundtable

Date: Wednesday, November 1, 2017

Time: 9 AM – 11 AM

Event location: IESO's office, 120 Adelaide Street West, Toronto

Slide 1 – Cover Slide

- Good morning and thank you to the Energy Council of Canada for inviting me to speak today.
- Dr. Frei kicked-off today's session with an overview of the energy sector's future from a global perspective...
- I will now discuss the energy sector's future – but from an Ontario perspective.
- If you've had an opportunity to review the 2017 Long Term Energy Plan, *Delivering Fairness and Choice*, you will see that it builds on the significant investments the province has already made to green the electricity system.
- Ontario is now well positioned to use its clean and reliable electricity system to decarbonize other sectors, such as transportation.
- The way we deliver and use energy is transforming and as a result, innovation and choice are at the core of the 2017 LTEP.
- At the same time, the government recognizes that affordability is a priority for Ontario's energy consumers, and the 2017 LTEP highlights the work the government has already done through Ontario's Fair Hydro Plan.
- The process for developing the LTEP is set out in the Electricity Act, 1998. This process became law in summer 2016, making the 2017 LTEP the first to follow this new legislated process.

- The process began with the publication of two technical reports in the fall of 2016.
- The Ministry then held extensive engagement beginning October 2016 and ending January 2017 to support LTEP development, including 17 stakeholder and public open house sessions, 17 Indigenous engagement sessions, and it received about 1,500 submissions through the Environmental Registry.
- Now, with the government's approval of *Delivering Fairness and Choice*, implementation directives have been issued to the Ontario Energy Board and Independent Electricity System Operator and the agencies will develop plans to implement the LTEP's goals and objectives and submit these plans to the Minister for review.

Slide 2 – Ontario's Supply Mix

- I'll now give you a brief overview of the planning forecasts in the 2017 LTEP.
- In 2016, about 90 per cent of the electricity used in Ontario was free of greenhouse gas (GHG) emissions – generated from non-emitting resources such as water, nuclear, wind, solar and bio-energy, as you can see on slide 2.
 - Our investments in these types of clean generation resources, along with the elimination of coal-fired electricity generation, mean we have taken significant steps to green Ontario's electricity sector.
 - Ontario now has a robust and clean supply mix.
- This is a significant transformation compared to 2003, when one-third of all generation came from emitting resources. Ontario now has an electricity system that is well-positioned for the future.

Slide 3 – Ontario's Clean Generation Mix

- As you can see on slide 3, in comparison to neighbouring states such as Michigan, Minnesota, Ohio, Pennsylvania and Wisconsin, which still rely heavily on coal-fired electricity generation, Ontario has a much cleaner electricity system.
- We have accomplished this without the abundant hydroelectric resources enjoyed by Québec and Manitoba.

Slide 4 – Supply and Demand Outlook

- The 2017 Long-Term Energy Plan (2017 LTEP) forecasts that electricity demand will be relatively steady over the planning period.
 - In the longer term, the Independent Electricity System Operator (IESO) projects an increase in overall demand as electrification of the economy increases.
 - It should be noted that the 2017 LTEP demand outlook assumes the equivalent of approximately 2.4 million electric vehicles by 2035 and includes demand from new electrified transit across the province (i.e., GO system and light rail projects in Hamilton, Mississauga, Kitchener, Toronto and Ottawa).
- As for supply, the 2017 LTEP supply outlook over the planning horizon maintains the flexibility to respond to future variations in the supply and demand forecasts.
 - While there is currently an adequate supply of electricity, a need for capacity is expected beginning **in the early-to-mid 2020s** as the Pickering Nuclear Generating Station reaches its end of life, and nuclear units at Darlington and Bruce are temporarily removed from service for refurbishment.
 - In addition, 18 GW of existing supply resources will reach the end of their contract term by 2035.
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- To ensure that our electricity system is able to respond to increases and decreases in future demand, we are maintaining our 2013 LTEP policy of “planned flexibility”. Any need for additional capacity will be met through IESO’s Market Renewal project.

Slide 5 – Electricity GHG Emissions Profile

- The 2017 LTEP notes that GHG emissions are expected to remain well **below historical levels** and to **be relatively flat** over the planning period (with a range of potential emissions outcomes).
- Ontario will continue to look for ways to keep GHG emissions in the electricity sector low and work with non-emitting generators to meet the Province’s emissions targets.

Slide 6 – Progress on Residential Electricity Prices

- The 2017 LTEP’s outlook for residential prices shows progress compared to earlier LTEP outlooks in the 2010 and 2013. The residential price outlook remains below levels projected in the 2013 LTEP outlook for the full planning horizon due to:
 - Ontario’s Fair Hydro Plan;
 - Removing costs from the electricity system;
 - More efficient consumption of electricity; and
 - Anticipated benefits from implementing initiatives, such as IESO’s Market Renewal project; and
- The 2017 LTEP highlights that Ontario’s Fair Hydro Plan lowers typical residential electricity bills by 25 per cent and will hold any increases to the rate of inflation for four years.

Slide 7 – Industrial Prices in-line with Inflation

- The 2017 LTEP price outlook for large industrial consumers reflects average increases of electricity **in-line with inflation** over the planning period.
 - It should be noted that the actual electricity price paid by a large industrial consumer is dependent on their consumption patterns and can vary among industries and specific consumers.
- Currently, the **electricity price** for industrial consumers in Ontario is lower than the average price as reported by the U.S. Energy Information Administration for the Great Lakes region.

Slide 8 – Fuels Use in Ontario

- The 2017 LTEP recognizes that fuels are an important component of the province's economy and Ontario's commitment to decarbonisation.
- Ontario's fuels use has declined from 2005 to 2015 largely due to the retirement of coal-fired generating stations.
 - Currently, about one-third of Ontario's fuel use is from natural gas and one-third from transportation fuels such as gasoline and diesel.
 - It should be noted that about 10 per cent of Ontario's fuels are used for non-energy uses such as feedstock for manufacturing.
- The future outlook for supply and demand of fuels will depend on policy and program decisions over the next 20 years and technological innovation. The 2017 LTEP highlights some initiatives, such as renewable natural gas.

Slide 9 – Key Initiatives and Themes

- The 2017 LTEP covers a number of themes and initiatives. I'll discuss the following three at a high level today:
 - Responding to the challenge of climate change;
 - Encouraging and enabling conservation; and
 - Conservation and energy efficiency;

Slide 10 – Responding to the Challenge of Climate Change

- In terms of climate change, Ontario is aligning its conservation efforts with the Province's climate change goals, by taking the following actions:
 - Phasing out the eligibility of Combined Heat and Power (CHP) projects which use supplied fossil fuels for incentives under conservation programs, starting July 1, 2018; and
 - Working with our colleagues at the Ministry of the Environment and Climate Change and our respective agencies, to coordinate existing energy conservation programs with new low-carbon technology programs being rolled out by the Green Ontario Fund.
- The 2017 LTEP also supports the transition to a low-emission economy by:
 - Including the of impact of increased electrification of transportation on the grid; and
 - Shifting to renewable natural gas (RNG); and
 - Committing to exploring the energy system benefits of using electricity to create hydrogen.

Slide 11 – Encouraging and Enabling Innovation

- The 2017 LTEP aims to create the right environment for innovation to happen. Ontario has already shown leadership in this space – Green Button, smart meters, and the Smart Grid Fund – but we're now running up against barriers to further innovation.

- The government's Grid Modernization Policy focuses on addressing these barriers so utilities can innovate and make investments that improve efficiency, reduce costs, and provide more choice to customers. We will work with the Ontario Energy Board to address them during LTEP implementation.
- A renewed and enhanced Smart Grid Fund will support these outcomes, helping to stimulate technological innovation while creating jobs and business growth. We are also taking steps to better integrate electric vehicles onto the grid and remove barriers that disadvantage energy storage. This will be done by amending government regulations and working with agencies to address market rules and codes.
- We are continuing to enhance Ontario's net metering framework, giving customers new ways to participate in renewable energy generation while also reducing their electricity bills. The government intends to bring forward proposed legislative and regulatory amendments that, if passed, would enable third party providers to own and operate net-metered systems. Under the current framework, a homeowner or business must own the net metered system which generates electricity for their self-consumption, meaning that the consumer and generator are one and the same. Allowing third-party ownership of net metered systems can support greater customer choice.
- We will also work with the IESO to develop a program that will support a select number of innovative renewable distributed generation projects, including virtual net metering demonstration projects. This program will help inform future grid modernization and net metering policies.

Slide 12 – Conservation and Energy Efficiency

- Ontario's commitment to conservation and energy efficiency will be strengthened through initiatives such as:
 - Encouraging local distribution companies to pursue energy efficiency on their distribution systems, such as by reducing line losses and optimizing voltage levels. This can achieve electricity savings for consumers;

- Enabling demand response resources to compete with other supply-side resources as part of Ontario's transition to a capacity auction. Demand response initiatives can reward electricity customers for reducing their electricity use when system needs arise. These initiatives can enhance reliability of the electricity system, while reducing system costs and greenhouse gas emissions; and
- Green Button is a data standard that can empower households and businesses by giving them access to their utility data and allowing them to authorize the automatic, secure transfer of their own data from their utility to apps of their choice. Expanding the Green Button initiative province-wide to improve customer access to energy usage data and tools can help them identify conservation and energy efficiency opportunities.