

Draft LTEP Discussion Guide

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1. Minister's Message

[Placeholder]

2. LTEP 2017

The LTEP Process

The Long-Term Energy Plan (LTEP) is a road map that will set out the direction for Ontario's energy future for the next 20 years. It is based on principles that residents and businesses have said are important to them, and legislated in the *Electricity Act, 1998*: Cost-effectiveness,

reliability, clean energy, community and indigenous engagement, and putting conservation and energy efficiency first before building new energy infrastructure.

The next LTEP will follow the process outlined in recent changes to the Electricity Act that identify the steps for developing a long-term energy plan. The legislated process includes stakeholder consultation and a technical report that the government must consider when developing its plan.

The LTEP is also flexible, and can be changed in line to respond to future technology, policy and program needs. There is no one path to ensuring a secure, reliable and clean supply of energy for our residents and businesses. The Ministry of Energy is working with other ministries and consulting with Ontarians and energy stakeholders to get their views on the choices that need to be made. The Ministry wants to have a robust engagement with local and Indigenous communities that takes into account current energy needs, programs and policies and responds to changing energy needs and new technologies that are on the horizon. A companion LTEP Indigenous Discussion Guide is available at [link](#) to help the Ministry seek Indigenous energy perspectives.

To help residents and stakeholders participate in this consultation, the Minister of Energy asked the Independent Electricity System Operator (IESO) to prepare a technical report that looks at the adequacy and reliability of electricity resources over the next 20 years. The *Ontario Planning Outlook* (OPO), available at [link](#) examines a number of possible futures for Ontario's energy demand, and what sort of supply could meet them. It takes into account government commitments included in the *Climate Change Action Plan*, *The Climate Change Mitigation and Low-Carbon Economy Act, 2016*, and the Vancouver Declaration¹. The information in the OPO is a 'starting point' for preparation of the next LTEP and will help inform the consultation process.

The Ministry has also released a companion technical report on the future demand for hydro-carbon fuels, such as oil, gasoline and natural gas, The Fuels Technical Report is available at [link](#) and, like the OPO, is intended to help inform the consultations.

The Ministry will publish the next LTEP in 2017. After the plan is made public, there will be an implementation process led by the Ministry and its agencies.

Linkages Between the CCAP and LTEP

In order to combat climate change, Ontario released a 5-year *Climate Change Action Plan* (CCAP) in June 2016. The CCAP outlines what approaches the government will take to reduce carbon emissions in the province. This plan could have a significant effect on how energy is used in our province by reducing the use of fossil fuels such as oil, gasoline and natural gas

¹ The Vancouver declaration committed the federal and provincial governments to meet or exceed Canada's international targets for reducing GHG emissions.

through conservation, energy efficiency and fuel switching while increasing the use of clean electricity and clean fuels.

The fight against climate change will play a key role in the development of the new LTEP. The *Climate Change Action Plan* and the Long-Term Energy Plan are inextricably linked. For instance, between 2017-2020, the proceeds from the cap and trade auctions will be used to fund actions, such as low-carbon technology programs that help reduce energy use and greenhouse (GHG) emissions. The commitments set out in the *Climate Change Action Plan* were incorporated into the Ontario Planning Outlook. Future LTEPs will elaborate on the objectives identified in the next CCAP.

Ontario has already set high standards for building and sustaining a clean, affordable and modern electricity system. In 2014, we completed the single-largest climate change initiative in North America by completely eliminating coal-fired electricity generation. GHG emissions from Ontario's electricity sector have fallen by 80 per cent since 2005².

Towards a Broader Energy Focus

Oil and natural gas supply three-quarters of the province's primary energy requirements and need to be included in any long-term energy plan. However, when we compare these fossil fuels to electricity, there is a significant difference. Ontario produces very little of the oil and natural gas it consumes. Almost all of it comes from outside the province and is delivered by interprovincial pipelines, which are under federal jurisdiction and regulated by the National Energy Board. This means provincial governments have not focussed on oil and natural gas the way they have on the electricity the province itself produces.

That began to change in 2013. That was when Ontario, through the LTEP, established a set of principles the government would use to evaluate oil and natural gas pipeline projects. The principles in LTEP were used as the basis for the set of principles that Quebec and Ontario have agreed to use when examining pipeline proposals.

This increased scrutiny received new impetus with the government's *Climate Change Action Plan* (CCAP) and its enabling legislation, the *Climate Change Mitigation and Low-Carbon Economy 2016 Act*. The new LTEP will take a broader view of the province's energy needs and consider the effect the province's emission reduction goals will have on both the electricity and fuels sectors. For example, a number of the areas identified for action in the CCAP involve switching from fossil-fuels to electricity for certain applications in buildings and transportation; others are focused on cleaner and more efficient use of our existing fossil-fuel infrastructure. This interaction requires the Ministry of Energy to take an integrated approach and plan for any potential changes the transformation in the fuels sector will have on energy demand.

3. Ontario's Energy Mix at the end of 2015

² Draft OPO technical report 08-12-2016 page 9

Electricity Supply

Ontario met the needs of the province's residents and businesses by producing 160 TWh of electricity in 2015. This was a slight increase over the amount produced in 2013. That electricity did not come from any one source. The province relies on a diverse number of sources to give it the secure and reliable supply of electricity it currently enjoys, including nuclear, natural gas, and renewable generation such as hydroelectric, wind, solar and bioenergy.

This supply mix also has to be flexible, to meet the changing priorities of Ontarians. The big change over the past decade has been the elimination of coal-fired generation. In order to reduce the carbon emissions that cause climate change and improve Ontario's air quality, Ontario closed five coal-powered generating stations, and invested in new and refurbished generating facilities to replace the closed facilities.

In 2015, nuclear generation provided the biggest share of Ontario's electricity supply, producing 92.3 TWh of electricity. That was followed by hydroelectric generation which provided 37.3 TWh, natural gas which supplied 15.9 TWh, and non-hydro renewables such as wind, solar and bioenergy that provided 14.2 TWh.

While Ontario generated 160 TWh of electricity in 2015, it also had the ability to generate more. The installed capacity of its generating fleet totalled 39,393 MW.

Since the 2013 LTEP, the share of wind, solar and bioenergy in our supply mix has grown from 9% to over 18%. As of March 31, 2016, wind represents the largest source of our non-hydro renewables generation with an installed capacity of approximately 4,400 MW.

Commented [SK(1): Comparing generation in a given year to what might be possible based on installed capacity maybe confusing to many readers without further explanation.

Fuel Consumption

[Placeholder for Fuel Sector Technical Report Information]

Emissions

Ontario is a North American leader in the reduction of GHG emissions. The closure of the province's five coal plants was the single largest reduction effort, and reduced emissions from the electricity sector by 80%. The success in fighting climate change continues. Since release of the 2013 LTEP, emissions from electricity production have declined by another 7.1 Mt, a reduction of 35%.

Ontario has ambitious targets for further reductions in the province's GHG emissions. The *Climate Change Mitigation and Low-Carbon Economy Act, 2016* has committed the government to reducing emissions:

- 15% below 1990 levels by 2020

- 37% below 1990 levels by 2030
- 80% below 1990 levels by 2050

In order to achieve these reductions, the government is taking action on a number of fronts. It has brought in its first five-year *Climate Change Action Plan*, which commits the government to developing a number of policies to fight climate change.

Ontario has also established a cap and trade program that sets caps for the emission of GHGs, and allows businesses to buy or sell allowances (credits) if they are over or under those limits.

The cap and trade program covers:

- Facilities that emit more than 25,000 tonnes of CO₂ a year
- Distributors and importers of liquid petroleum fuels
- Distributors of natural gas

Ontario expects to generate between \$1.8 and \$1.9 billion in revenues as a result of the sale of allowances during the first compliance period of the cap and trade program. In the future, Ontario plans to link up with the cap and trade program run jointly by Quebec and California, as part of the Western Climate Initiative.

4. Demand Forecasts

Electricity Demand Cases

Investments over the past decade have established a firm foundation for Ontario's energy future. We are in a strong position to meet a range of electricity demands that could occur. And we have to be prepared to meet that range of demands, because how we will use electricity 10 or 20 years from now will depend on a number of things, some of which cannot be precisely predicted:

- How will our population grow?
- Where will the new residents live?
- How much conservation and distributed generation will occur?
- Will the current transformation of the provincial economy continue?
- What will be the pace of our efforts to mitigate Climate Change?
- Will Ontarians travel differently to work and around the province?

In the *OPO*, the IESO examined four possible futures, or outlooks:

- Outlook A examines a future of low demand, with the province using less electricity than it does now. In Outlook A, Ontario would use 133 TWh of electricity annually by 2035.
- Outlook B is a continuation of the current pattern of flat growth in energy demand and would see annual electricity use of 148 TWh over the same period. This is close to the

current level of 143 TWh used in 2015. With currently planned and existing resources, including conservation efforts, Ontario will have enough capacity to meet the needs of a flat demand future.

- Outlooks C and D examine a future with a significantly higher use of electricity due to the increased electrification of transportation and changes in the heating of homes and businesses. In these outlooks, the annual consumption of electricity could reach between 177 and 197 TWh by 2035. Ontario would require more electricity resources than it has today to serve these higher levels of growth in electricity demand. The needs are not expected to occur until the mid 2020's, with significant increases in resources required after 2030³.

Fuels Demand Cases

[Placeholder for Fuels Sector Technical Report]

5. Future Pathways and Considerations

Distribution & Grid Modernization

The traditional centralized electricity network is undergoing a transformation, not just in Ontario but around the world. Innovation and changes in customer behaviour are driving the spread of new energy technologies. Electricity storage, microgrids, distributed energy resources, electric vehicles, and the increasing electrification of transit/transportation will change the way utilities interact with their customers and stakeholders.

For most electricity customers, local distribution companies (LDCs) are the face of Ontario's electricity system, the enterprises that bring power to their door. But many of the distributors' assets are reaching the end of their useful life, and LDCs will have to make significant investments to maintain reliable service to Ontarians. LDCs must balance the need to provide customers with the appropriate level of service they expect with the ever increasing need to limit cost increases. They will need to embrace innovative approaches to managing their businesses which take into account their customers' needs, the management and renewal of aging infrastructure, the opportunity presented by new technologies, and potentially new business paradigms in electricity distribution.

LDCs are using new smart grid technologies to bring old and new assets together to construct a modern, intelligent distribution grid for Ontario. Grid modernization gives distributors the opportunity to meet changing needs and demands, giving energy consumers access to new

³ All figures from the Aug. 12 draft of the OPO

technologies that allow them to not only better understand and take control of their energy consumption but even generate their own electricity. Widespread adoption of electric vehicles and technologies such as storage will also have a significant impact on how Ontarians use electricity. A modern grid platform will be required to let these and other technologies empower customers by providing them with more choice and control over their energy use.

Ontario has used the Smart Grid Fund, as well as the IESO's Conservation Fund and LDC Innovation Fund, to help LDCs explore the potential new technologies have to contribute to a modern grid. The pace and nature of the anticipated changes represent a challenge for many LDCs. The Smart Grid Assessment and Roadmap report (add link) identified a number of barriers that prevent LDCs from achieving a fully modernized grid.

Moving forward, Ontario needs to create conditions that are conducive to grid modernization while at the same time delivering efficiencies and productivity gains in the distribution sector. This includes considering how Ontario's policy and regulatory frameworks can promote cost-effective improvements in the quality and reliability of distribution service, including opportunities for electricity and peak demand savings in front of the meter. As well, Ontario must ensure that its regulatory processes are adaptable enough to encourage improvements to the LDC business model that allow for a more effective response to emerging technologies and opportunities for increased efficiencies.

For Consideration

- **What impediments do you see or anticipate that will inhibit grid modernization?**
- **What are some of the most significant challenges facing LDCs and what can government do to facilitate solutions to those challenges?**

Microgrids

There is an interesting convergence between innovation, renewable generation, remote communities, and new economic opportunities. Ontario is a big place with many rural and remote communities. Traditionally these are powered by single lines, sometimes over long distances, which can affect reliability. Other communities aren't connected at all and rely on diesel generation. In these circumstances, an advanced microgrid may be the solution. Ontario is establishing itself as a top innovator with this technology.

A microgrid is, as the name suggests, a mini analogue of the main grid, or a network that integrates distributed electricity resources such as solar panels, energy storage, or a combined heat and power plant and distributes it to loads such as a house, an electric vehicle, or a school. In doing so, it uses intelligent controls, which help to optimize power flow, and enable features like demand response and smart EV charging. It can be thought of as an 'island' within the larger grid, but an "island" that interacts with the larger system. In the event of a widespread outage, that means the microgrid has the potential to isolate itself and continue to have power, critical for users such as a hospital campus, to whom resiliency and reliability are vital.

The cost of microgrids is expected to continue to decline, both in Ontario and around the world, due to innovation and the technical expertise gained from commercial scale demonstrations. The Ministry of Energy's Smart Grid Fund has supported several of these successful pilot projects, and we expect to learn a great deal from them. There are niches where microgrids can already make sense today, namely remote communities that currently rely on expensive and dirty diesel fuel for their power needs. In these communities, microgrids could use renewable energy to offset diesel consumption, as well as improve the reliability of supply in these isolated areas. While the priority is to connect many of these communities to the transmission system, there may be opportunities to consider a complementary role for microgrids.

For Consideration

- **What role do you see microgrids playing in Ontario's changing electricity system in the near future, and are there any barriers to realizing this scenario?**

Transmission

Ontario's transmission system is a network of high voltage electricity wires that forms the backbone of Ontario's electricity grid. Most of it is owned and operated by Hydro One. Since 2003, approximately \$15 billion has been invested to enhance and renew Hydro One's systems, including upgrades to over 15,000 kilometres of power lines, (including both transmission and lower-voltage distribution lines) to connect homes and businesses to the grid. This has ensured that Ontarians have reliable access to clean electricity at all times.

The 2010 and 2013 Long Term Energy Plans identified a number of priority projects for transmission improvements in Northwestern Ontario:

- The Northwest Bulk Transmission Line to increase supply and reliability to the area west of Thunder Bay
- The East-West Tie line, reinforcing the network between Wawa and Thunder Bay.
- The connection of remote northwestern First Nation communities to the electricity grid.

Proponents are moving ahead on planning and implementing these projects, including seeking the necessary regulatory approvals.

The existing transmission system, including the projects already underway, is expected to be sufficient to meet the current levels of electricity demand. Even so, transmitters will need to replace aging transmission equipment. This presents them with an opportunity to maintain the efficiency of the system on a continual basis.

However, in high demand outlooks (Outlooks C&D in the IESO's OPO), Ontario's electricity requirements grow significantly due to electrification, and to satisfy them, new sources of generation could be needed. This may require additional investments to connect generation to users. For instance, the development of large scale hydroelectric projects in northern Ontario would require major transmission expansions and upgrades such as new lines to the south.

Any transmission system upgrades required to meet specific customer needs, such as a new industrial plant, must be paid for by the customer. Ontario currently applies a 'user pays' principle, to ensure the direct beneficiary is responsible for the costs, rather than having them paid for by all ratepayers. By the same principle, transmitters do not expand the transmission system to attract new customers.

For Consideration

- **How should Ontario evaluate options to expand the transmission system if additional supply would be needed in the longer term, to access clean resources in areas of the province, which are constrained? Which non-economic benefits should be considered, and how should they be valued?**
- **Do you feel that the current user pays model is an effective way to meet Ontario needs, even if it means some trade-offs in economic development?**

Innovation and Economic Growth

Ontario has made innovation in energy technology a priority. By encouraging innovation in our energy sector, Ontario has created opportunities for jobs and growth and kept pace with a changing energy environment. We have done this by supporting organizations such as the Advanced Energy Centre, whose mission is to encourage the adoption of innovative energy technologies in Ontario and Canada, and export these skills and successes internationally.

Ontario's resolve to pursue energy innovation has led to the development and implementation of new technologies throughout the province. The Smart Grid Fund invested nearly \$50 million in 26 new projects, creating nearly 900 jobs and helping innovative Ontario companies to grow. This has encouraged a culture of innovation within the distribution sector, and advanced the adoption of many new technologies such as electric vehicles and energy storage.

The most recent Speech from the Throne committed Ontario to cultivating a dynamic and innovative business climate. Accordingly, Ontario is actively exploring opportunities to push beyond our borders to share Ontario's energy expertise abroad. Growing energy efficiency, renewable and energy innovation sectors are expected to be important export industries for Ontario. The Ministry is working with sector partners to develop and support trade initiatives that will strengthen international relationships and produce new business opportunities. This way, our energy sector can leverage its growing energy innovation expertise for the benefit of Ontarians.

- **For Consideration How should responsibility for supporting innovation, and removing any perceived barriers, in the energy sector be divided between the public and the private sector?**
- **Which innovations do you believe could offer the greatest benefit to your community and the energy system as a whole?**

- **What additional steps can Ontario take to encourage innovation among all stakeholders in the energy sector?**

Conservation and Energy Efficiency

In the 2013 LTEP, the government adopted a policy of putting conservation first before building new energy infrastructure, where cost effective. It began to implement this policy by introducing new and updated codes and standards, implementing the conservation frameworks for electricity and natural gas and consulting on additional government-led initiatives. The results of the province's conservation and energy efficiency efforts are one of the reason the province is in a strong supply situation today.

Conservation and energy efficiency require a sustained commitment to achieve persistent savings over the long-term. Ontario has been setting energy efficiency standards for products and appliances for over 25 years and was the first jurisdiction in Canada to do so. Ontario regulates over 80 products and continues to regularly update its energy efficiency regulation. Since 2012, Ontario has brought in new or improved efficiency standards for over 60 products and appliances. New and updated efficiency standards help reduce consumers' energy bills, increase choices of energy efficient products in the market place, and play a significant role in reducing energy consumption and GHG emissions.

In late 2014 and early 2015, respectively, Ontario launched the Demand Side Management Framework for natural gas and Conservation First Framework for electricity. The new frameworks provide the rules, guidelines and funding that govern the delivery of electricity and natural gas conservation in the province. The guiding principles of both frameworks include flexibility so that distributors can meet local needs, rigorous requirements for cost-effectiveness to ensure the programs benefit ratepayers and collaboration between natural gas and electricity distributors to provide convenient, integrated programs for customers.

Electricity distributors are pursuing innovative approaches to conservation and energy efficiency and have proposed about 40 unique programs and pilots.

- Toronto Hydro and Enbridge Gas offer a \$100 rebate to customers who install a smart thermostat.
- Through a pilot program, Hydro One is helping customers with electric space or water heating to take advantage of air source heat pumps that can help reduce heating costs up to 50%.
- Toronto Hydro is giving pay-for-performance incentives to owners and managers of large commercial buildings who make operational improvements or invest in redesign or retrofits.

In June, 2016, the Minister of Energy directed the IESO to develop two province-wide programs, in consultation with local distributors to support administrative and delivery efficiencies and meet customer needs. One will be a pay-for-performance conservation and energy efficiency program

for businesses who have facilities served by a number of different distributors. The other will be a pilot for a Whole Home conservation and energy efficiency program for residential customers.

Also in June, the IESO completed an achievable potential study (add link) that assesses the amount of electricity conservation that is possible in Ontario. It concluded that, with current budgets, about 7.4 TWh of savings can be achieved in 2020, and 19 TWh can be achieved in 2035. In July 2016, the OEB released an achievable potential study for natural gas conservation potential (add link). The study found that there is significant potential for incremental cost-effective natural gas conservation and energy efficiency beyond current activity levels.⁴ Both these studies will be used as part of the mid-term reviews of both the electricity and natural gas frameworks.

Demand response (DR) can reduce the need to build costly peaking generation by reducing electricity usage during the hours of highest demand on a hot summer day – a period when electricity generation has higher GHG emissions. The IESO has developed a new market-based approach to DR, and successfully procured about 00 MW for 2016-2017 in its first DR auction. The next auction will take place in December 2016.

While acknowledging that the province's energy efficiency and demand management programs have benefitted many consumers, Ontario's *Climate Change Action Plan* states that the ongoing trend of emissions growth calls for bolder action. That's because while electricity is relatively carbon-free, approximately 80 percent of Ontario's energy still comes from fossil fuels, including natural gas and transportation fuels. To begin addressing this point, as part of the *Climate Change Strategy*, the province is investing \$100 million to enhance the existing home energy audits and retrofit programs delivered by Enbridge Gas Distribution and Union Gas Limited. Homeowners across Ontario who use natural gas, oil, propane or wood to heat their homes are able to apply for rebates towards home energy audits and home energy efficiency retrofits. This investment is expected to enable audits and retrofits of approximately 37,000 homes across the province and save approximately 1.6 megatonnes of greenhouse gas (GHG) emissions.

Empowering Energy Consumers

A goal of the 2013 LTEP was to find new ways to get consumers the information they need to make more informed decisions about their energy consumption.

Ontario is a leader in the implementation of the Green Button Initiative in North America and was the first jurisdiction in Canada to announce its adoption in November 2012. Green Button can empower customers to access (i.e., Download My Data) and share (i.e., Connect My Data) their electricity, natural gas and water utility data (including consumption, billing and generation) in an electronic, standardized and secure way. When customers share their data with developers they can use innovative software applications that allow them to view and manage their usage, bills and greenhouse gas emissions. Adoption of Green Button is currently

⁴ Page 12, Updated FTR deck, August 2017

voluntary for Ontario's utilities. In Spring Summer 2016, the Ministry consulted on requiring Green Button for the province's electricity, natural gas and water utilities and conducted a cost-benefit analysis to support decision making. CCAP committed to expanding the Green Button program province-wide to help conserve energy and water use.

Social benchmarking allows households and businesses to compare their consumption with other similar customers, giving them the information they need to make informed decisions about their usage. Social benchmarking programs are data-driven conservation programs that can be enabled by the Green Button Initiative. A number of local distribution companies have indicated intent to offer electricity social benchmarking programs in their service territories under the new Conservation First Framework.

Ontario's government-owned facilities and broader public sector organizations are already showing leadership by annually reporting their energy consumption and GHG emissions. Organizations in the broader public sector are also required to publish conservation and demand management plans every five years.

The Ministry is proposing to bring in energy and water reporting and benchmarking for large commercial, multi-unit residential and some industrial buildings that are 50,000 square feet or larger to help building owners identify opportunities to better manage energy and water use, costs and greenhouse gas emissions. To improve building performance for these as well as small business consumers, Ontario has in place a five-point plan which promotes the use of energy managers and continues to enhance conservation programs to help businesses become more energy efficient, manage costs and save money.

For Consideration

- **What parameters should be considered for Ontario's electricity and natural gas conservation and energy efficiency frameworks and initiatives to 2020, and beyond, to meet climate change objectives?**
- **What are the opportunities and challenges for expanding Ontario's conservation and energy efficiency mandate to integrate all fuel sources consumed in the province?**
- **How can we continue to empower and engage energy consumers?**

Renewables

Ontario is well on its way to meeting the goal in the 2013 Long-Term Energy Plan of bringing 10,700 MW of wind, solar and bioenergy and 9,300 MW of hydroelectricity online by 2025. This is helping offset our reliance on fossil fuels and reducing Ontario's greenhouse gas emissions.

The success of the standard offer Feed-In Tariff (FIT) and microFIT programs, and the competitive Large Renewable Procurement (LRP) process have made the province one of the leaders in North America in the development, use, and manufacturing of clean renewable

energy. The 30 solar and wind manufacturers operating in the province have made Ontario home to the fastest growing clean tech sector in Canada.

Ontario firms are now poised to export their products and expertise as other jurisdictions accelerate their efforts to procure clean energy technologies following the 2015 United Nations Climate Change Conference in Paris (COP21).

Anticipating a more distributed energy future, Ontario is winding down the microFIT and FIT programs and implementing an updated and streamlined net metering program. Net metering is a billing arrangement that allows customers to generate on-site renewable energy for their own use, and to receive credits on their bill for any surplus electricity sent to the grid.

In August 2016, the Ministry of Energy posted proposed updates to the Net Metering Regulation and posted them on the Environmental and Regulatory Registries for public comment. The intent of the changes is to enable a long-term framework that would support customers' ability to generate clean, renewable energy, align with value to the electricity system, and enable innovative technologies and customer-utility relationships. As the transition of the electricity system continues to accommodate more distributed energy resources, these changes will help enable renewable energy projects to find new opportunities to contribute to changing electricity system needs and provide value to Ontarians. The updated program is also expected to support the creation of near-net zero and net-zero buildings, a key element of Ontario's 2016 to 2020 *Climate Change Action Plan*.

For Consideration

- **What role should distributed renewable energy generation play in the ongoing modernization and transformation of Ontario's electricity system?**
- **What types of innovations in renewable energy technologies are customers most interested in?**

Nuclear

Ontario's three nuclear stations, Darlington, Pickering and Bruce, currently provide about 60% of Ontario's electricity. Nuclear generation is reliable, cost-effective and importantly GHG-free. Nuclear power plants are able to operate reliably and continuously, making them ideally suited to meet around-the-clock "baseload" energy needs (i.e., the basic demand that is always present in the system). Ontario has been operating nuclear power plants safely for over 40 years. There are currently 18 units operating at the three sites in Ontario, with a combined capacity of about 13,000 MW. Two units at Pickering have been shut down and being decommissioned.

The government supports nuclear power and is committed to its continued operation in Ontario. As laid out in 2013 LTEP, Ontario is moving forward with plans to refurbish four units at

Darlington and six units at Bruce between 2016 and 2033. Together with the two units at Bruce that have already been refurbished, these investments will ensure Ontario has over 9,800 MW of affordable, reliable and GHG-free baseload generation capacity, and will support the GHG-reduction targets set by Ontario's Climate Change Action Plan.

OPG will begin refurbishing the first of the units at Darlington in October 2016. The first Bruce unit will start being refurbished in 2020. Ontario is proceeding cautiously and has built in flexibility with respect to both these projects. Both Ontario Power Generation (OPG) and Bruce Power will be subject to strict oversight and the government has off-ramps to ensure the work is only carried out if it continues to provide value to ratepayers. Ontario also has the option of stopping the work if it expects that structural or disruptive technological change will cause low demand for electricity for a sustained period of time.

Ontario Power Generation is also seeking regulatory approvals allowing it to operate the Pickering station until 2024. After that, it will be shut down and decommissioned. Keeping Pickering running to 2024 would ensure the province has a reliable source of GHG-free baseload electricity to carry it through the Darlington and initial Bruce refurbishments.

The nuclear industry is an important driver of Ontario's economy, supporting tens of thousands of jobs and billions of dollars in economic activity every year. Ontario's nuclear supply chain consists of over 180 companies across the province and employs about 60,000 people. The supply chain includes nuclear manufacturing, engineering, construction and consulting, fuel fabrication, research and development and medical isotopes (e.g., medical equipment sterilization and cancer treatment). Nuclear companies and research laboratories, located in communities across Ontario, have expertise in the design and construction of sophisticated systems and components for current and future reactor technologies. In addition to being used in all Ontario nuclear plants, the CANDU nuclear technology developed in Ontario has also been exported to Argentina, Romania, South Korea, China, Pakistan and India. The Darlington and Bruce refurbishments will support Ontario's globally-recognized nuclear supply chain for decades to come, creating tens of thousands of jobs and billions of dollars in economic activity along the way.

For Consideration

- **Nuclear refurbishments will secure 9,800MW of GHG-free electricity over the long-term. What are your views on nuclear power's role in meeting Ontario's climate change targets?**
- **What policies or innovative strategies should Ontario pursue in order to best harness the nuclear sector's potential in meeting Ontario's future energy needs?**

Fuels (Future Role/Pipelines)

[Placeholder for fuels generally]

The 2013 Long-Term Energy Plan (2013 LTEP) set out six principles for how Ontario will evaluate oil and natural gas energy pipeline projects such as TransCanada's proposed Energy East pipeline: They stipulate that:

- Pipelines must meet the highest available technical standards for public safety and environmental protection;
- Pipelines must have world-leading contingency planning and emergency response programs;
- Proponents and governments must fulfill their duty to consult obligations with Indigenous communities;
- Local municipalities must be consulted;
- Projects should provide demonstrable economic benefits and opportunities to the people of Ontario, over both the short and long term; and
- Economic and environmental risks and responsibilities, including remediation, should be borne exclusively by the pipeline companies, who must also provide financial assurance demonstrating their capability to respond to leaks and spills.

In November 2014, Ontario and Quebec jointly adopted these six principles and added the need to take into account greenhouse gas emissions and the interests of natural gas consumers.

In August 2015, the Ontario Energy Board (OEB) undertook province-wide public consultations on how to ensure an appropriate balance between the benefits and risks for Ontarians of Energy East. Its report, *Giving a Voice to Ontarians On Energy East*, will help shape Ontario's participation in hearings before the National Energy Board (NEB) on whether to approve the project.

Ontario is committed to ensuring that Energy East is in the best interest of Ontarians. This which includes ensuring the safety of the people of Ontario, protecting the environment, maintaining the reliability of Ontario's natural gas supply and guaranteeing future economic benefits for the province.

For Consideration

- **Are Ontario's pipeline principles adequate to protect the best interests of Ontarians and allow for informed participation in the NEB hearings process on the Energy East project? If not, what new considerations should be taken into account?**

Regional Planning

Ontario is a big province that is not the same everywhere you go. That is especially true with the use of electricity. Some regions may be experiencing heavy growth in demand, while others may see a flat or declining demand. Urban centres can have needs and priorities that are different from rural regions, and areas with heavy industry can have different energy priorities than residential communities.

The regional planning process addresses these issues. It links provincial planning with local needs and provides a platform that integrates bulk and distribution system planning with municipal or Indigenous community energy plans. The purpose is to ensure the electricity needs of all 21 Ontario electricity regions (*link to regions*) are reliably met in ways that consider local preferences and priorities

Ontario's 2013 LTEP committed to promoting the policy of conservation first in regional electricity planning and incorporating the policy of conservation first into distributor planning processes for both electricity and natural gas distributors. The Ministry is continuing to monitor the IESO's and OEB's activities concerning the integration of conservation in the regional planning process.

Regional planning is a collaborative process that is led by the IESO. It collaborates with the transmitter and the local distribution companies to evaluate the electrical needs of a region over the near (1-5 years), medium (5-10 years), and long term (10-20+ years).

Regional plans come in two varieties: a *Regional Infrastructure Plan* (RIP) that is a 'wires only' (transmission and distribution) solution to the electricity needs of a region. This type of plan is led by the transmitter. The other type of plan, called an *Integrated Regional Resource Plan* (IRRP) is facilitated by the IESO, and it considers the broadest spectrum of options, including conservation, generation or other innovative solutions – possibly in combination with, or instead of wires where practicable.

IRRPs are developed by a working group that consists of LDCs in the region, the local transmitter and the IESO. Community engagement is an important part of regional planning and for this reason a Local Advisory Committee (LAC) is developed to provide advice and recommendations on the development of regional plans and to provide input on broader community engagement. General LACs are comprised of municipal, Indigenous, environmental, business, sustainability and community representatives.

All 21 regions have begun or completed the first cycle of the regional planning process. Twelve sub-regions have released Integrated Regional Resource Plans that consider regional reliability and supply needs and offer recommendations for meeting those needs.

With the release of the *Climate Change Action Plan*, there is a need to consider how the regional planning process supports and takes account of the possible growth in the use of electricity.

For Consideration

- **As some of the planning regions have now completed their first plans, and other regions have begun the process, do you feel that the process has worked as intended?**

- **What could be done to strengthen the link between regional electricity planning and other planning processes, including planning to secure land use and corridor allocation, in order to ensure that planned transmission routes are available when they are needed?**
- **Should LDC's be planning more proactively for a potential future scenario of high penetration of distributed energy resources, in order to mitigate system capacity limits and integration costs?**

Indigenous Energy Policy

As the Ontario government strengthens our electricity system and diversifies our supply mix, Indigenous communities have emerged as critical partners in the process. Over 150 First Nation and Métis communities across Ontario have established Aboriginal and treaty rights or have credibly asserted them. These rights, as well as the social and economic well-being of the communities, can be affected by energy developments. Indigenous communities can bring unique perspectives, knowledge and leadership to energy projects and planning activities, because of the unique relationship with the land and their long history in this province.

Indigenous communities across Ontario face unique challenges when it comes to energy. These often have complex historical, jurisdictional, geographic and regulatory causes. Ontario recognizes that participation in the energy sector can be a key to the economic development of Indigenous communities. We are encouraging First Nations and Métis communities to play an active role in the energy sector, including participation in generation, conservation and major transmission line projects. To do this, we need the input and guidance of First Nation and Métis communities and leadership, and have established forums to ensure this important dialogue happens regularly.

Consistent with the spirit of reconciliation, the government has brought in a range of policies and programs to increase Indigenous participation in the energy sector and enhance its relationship with Indigenous peoples across the province:

- First Nation and Métis communities and groups are now participating in more than 500 different wind, solar and hydroelectric projects across the province. The projects have a capacity of over 1,800 MW of clean energy.
- Over 80% of the contracts executed under the province's Large Renewable Procurement include participation from Indigenous communities
- First Nation and Métis communities are leading or partnering in approximately 800 MW worth of projects with Feed-in Tariff contracts.
- The Aboriginal Renewable Energy Fund committed over \$8.5 million to help 45 different communities and groups assess and develop renewable energy projects. It has been replaced by the new Energy Partnerships Program that will continue to support First Nation and Métis communities with renewable generation and transmission projects.

- 89 First Nation communities have used provincial funding to develop community energy plans.
- The Aboriginal Loan Guarantee Program has delivered more than \$200 million in guarantees for indigenous partnerships in renewable energy and transmission projects.
- The Aboriginal Conservation Program provided in-home energy assessments and energy-saving upgrades for homes in 46 indigenous communities.
- \$8 million was earmarked to develop microgrid solutions in First Nations communities. These projects will support economic growth by reducing reliance on diesel fuel and enabling stable, predictable sources of power.
- The Education and Capability Building Program is enhancing the education, capacity, and skills of indigenous communities, to improve their understanding and participation in the electricity sector.

Many of these initiatives have resulted in rewarding and innovative partnerships between First Nation and Métis communities and energy developers. Others are empowering Indigenous communities to take control of their own energy needs and interests.

In August 2015, The Chiefs of Ontario signed an historic Political Accord with the Government of Ontario to guide the relationship between First Nations and the province. The government has committed to working with First Nations on a range of issues, including jurisdictional matters and the sharing of resource benefits. These goals are in line with the spirit and intent of the Truth and Reconciliation Commission's Calls to Action and the United Nations' Declaration on the Rights of Indigenous Peoples.

In line with the principles of the Political Accord, the Province and First Nations in Ontario announced an agreement-in-principle in July of 2016 that would see the province sell shares of Hydro One Limited to First Nations for their collective benefit. This would be a 25-year deal to advance the economic development of First Nations, reduce the barriers to accessing capital, and provide meaningful opportunities for collective wealth creation.

The government also took steps recently to push the expansion of the transmission system to remote First Nation communities in northwestern Ontario that currently rely on diesel generation. Wataynikaneyap Power, a First Nation led-company with 22 community partners, is developing a project that will connect 16 remote communities.

Ontario is committed to engaging Indigenous partners in energy planning decisions in a way that supports reconciliation and community economic development. As we update the Long-Term Energy Plan, it is important that our policies and programming continue to support the participation of indigenous communities in the energy sector. The policies will also need to evolve to reflect technological innovation, an ever-changing electricity system and the broader policy implications of climate change. We look to First Nation and Métis communities and organizations, developers and other key partners to provide the ideas and guidance that will strengthen how we implement this policy priority.

For Consideration

- What are the most important tools to support Indigenous community participation and leadership in Ontario's energy sector going forward?
- How should Ontario best work with and engage First Nation and Métis communities, Indigenous political territorial organizations, tribal councils, the federal government and other key partners to support continued Indigenous participation and leadership in our energy sector?

Supply Mix

[Placeholder]

For Consideration

Pricing

[Writer recommends having a section on pricing general]

For Consideration