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ONTARIO ENERGY ASSOCIATION

# LTEP SUBMISSION

**Development of the 2017 Long-Term Energy Plan:  
Planning for a Low Carbon, Resilient, and  
Affordable Future for Ontario**

November 21, 2016

# ABOUT

The Ontario Energy Association (OEA) is the credible and trusted voice of the energy sector. We earn our reputation by being an integral and influential part of energy policy development and decision making in Ontario. We represent Ontario's energy leaders that span the full diversity of the energy industry.

OEA takes a grassroots approach to policy development by combining thorough evidence based research with executive interviews and member polling. This unique approach ensures our policies are not only grounded in rigorous research, but represent the views of the majority of our members. This sound policy foundation allows us to advocate directly with government decision makers to tackle issues of strategic importance to our members.

Together, we are working to build a stronger energy future for Ontario.

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## EXECUTIVE SUMMARY

The Ontario Energy Association (OEA) welcomes this opportunity to provide input to the Ministry of Energy's Long Term Energy Plan (LTEP) Consultation. The LTEP planning process is of critical importance to the OEA membership. The LTEP provides clarification on how energy planning will proceed in the future. Predictability is very important for the energy sector, because energy infrastructure is often capital-intensive and requires long lead times for development. Energy infrastructure is vital to our province's economic prosperity and to our own standard of living, and proper planning is essential.

Ontario's energy industry is evolving, and long term energy planning in Ontario needs to evolve with it. Climate change objectives will have a major impact on the energy sector. The pace of innovation and technological change is accelerating, changing options for the production and consumption of energy. Consumer expectations and preferences are resultantly changing with this innovation. As these changes accelerate, Ontario needs a regulatory system that will adapt and be forward-looking in a way that allows energy companies, consumers and our economy to thrive. These changes bring both challenges and opportunity to Ontario; LTEP 2017 should provide Ontarians with a roadmap to meet these challenges and take advantage of the opportunities provided by an evolving energy market.

The introduction of greenhouse gas (GHG) emissions targets in the *Climate Change Mitigation and Low-carbon Economy Act, 2016* (the "Act"), together with the Climate Change Action Plan (CCAP), means that long-term energy planning necessarily must involve all aspects of energy supply and consumption (e.g., natural gas consumption and distribution, transportation fuels, impacts and uptake of emerging technologies, impacts of electrification, etc.). Therefore, the implementation of CCAP will require a much different LTEP 2017 compared to LTEP 2013.

LTEP 2017 should be founded on core principles that ensure the plan strikes an optimal balance of:

- 1) Security and reliability of supply;
- 2) Attainment of climate change objectives;
- 3) Ontario's economic prosperity;
- 4) Cost effectiveness and affordability of energy products and services for homes and businesses.

What follows are the key priorities identified by the OEA for LTEP 2017.

## 1) LTEP 2017 SHOULD BE A COMPLETE ENERGY PLAN

The OEA strongly believes that this LTEP needs to be different than previous LTEPs, which were primarily electricity plans. With the introduction of the CCAP, the rapid pace of technological change affecting the sector, and increasing discussions of fuel switching and coordination amongst fuel sources, this LTEP needs to be a complete plan for energy in Ontario:

- LTEP 2017 should fully incorporate and integrate CCAP activities and the implementation of the cap-and-trade system
- The LTEP should be an energy plan, not just an electricity plan
  - The LTEP should also include a long-term plan for the efficient and effective use of natural gas vis-à-vis electricity given that the implementation of certain aspects of the CCAP have the potential to move Ontario's electricity demand from summer to winter months
  - LTEP should also include plans for other energy solutions such as demand response and storage
  - LTEP should clarify how energy, climate change, and conservation policy will be aligned and integrated now and beyond the expiry of date of existing frameworks
  - The LTEP will need to address how the Province's climate change objectives will be balanced with the need for reliability, sustainability and economic goals
- The LTEP should have a detailed plan for reducing CO<sub>2</sub> in the transportation sector, Ontario's largest source of emissions

## 2) LTEP 2017 SHOULD BE FULLY COSTED

The introduction of Cap & Trade in Ontario has significant implications for energy planning in Ontario. Some options for addressing climate change, such as those set out in the CCAP, can be significantly more expensive than others. Therefore, the LTEP should include a full costing of its proposals to facilitate the achievement of the Act's emissions reduction targets through the CCAP and otherwise. This should include such details as estimates of the amount of investment required in distribution, transmission, generation, and service upgrades to achieve target levels of electrification under the CCAP. The LTEP must also identify the changes in peak day electric demand that electrification programs (homes, vehicles, etc.) will likely yield and build in the associated infrastructure cost (generation, transmission, distribution, etc.).

Like the Independent Electricity System Operator's (IESO's) OPO, LTEP 2017 should provide more than just a single planning outlook for demand. Demand, supply and consumption patterns will be affected in the future by the pace of technological change and government policy. Therefore, ranges (e.g., baseline, high, low) for the demand forecast will help plan for potential economic opportunities for Ontario's energy industry to capitalize on changes to demand. Each of these options should be fully costed and a fuel supply strategy for each should be outlined.

A strategy for enhancing the efficiency of the heating/cooling of Ontario's building stock should be outlined in the LTEP. In particular, any consideration of an option to switch the heat source of existing buildings from natural gas to electricity should be costed, as this option may involve significant infrastructure investment requirements and have significant impacts on annual energy affordability for consumers and on Ontario's economy. This costing should also incorporate upstream and downstream costs on consumers that result from reductions in the number consumers or amount of consumption on the existing grid.

The LTEP should seek to minimize the cost per tonne of carbon abatement. Related to this, there should be transparency through reporting of actual emissions reductions and the associated costs in aggregate and on a per initiative basis, both in absolute terms and on a cost per tonne of CO<sub>2</sub> basis.

Finally, the LTEP should make clear to consumers, energy companies, the regulator, the market operator, and other stakeholders what the appropriate method(s) are of recovering the costs of implementing the LTEP. Reducing market and regulatory uncertainty will expedite the pace and lower the costs of implementation.

### 3) LTEP 2017 SHOULD FOCUS ON OPTIMIZATION

The OEA recommends that the LTEP chart an optimal path to bring together all of the government's' objectives on Cap & Trade, CCAP, security and reliability of supply, energy affordability, customer choice, and economic growth.

#### Setting Objectives, Not Prescribing Solutions

The fast pace of technological change, together with the innovation capacity and creativity of Ontario's energy industry, means that there are often many approaches to meet the full breadth of the government's objectives. Therefore, the LTEP should not prescriptively pick specific technologies or solutions. Rather, clear objectives should be set, and Ontario's energy sector should be given the opportunity to provide cost effective solutions that meet those objectives. To that end, the OEA recommends the following:

- There should be competitive procurement of all capacity and energy resources
- All fuel and capacity sources should compete with each other on a level playing field to best meet government objectives
- Programs to meet GHG reduction targets should be prioritized on a cost per tonne of CO<sub>2</sub> in order to maximize program achievement at the lowest cost
  - this costing should include the cost of generation and other capacity resources such as demand response and storage, transmission, distribution in comparison with other options on a fully costed basis per Priority #2 above

## Optimize Use of Existing Infrastructure

As a result of the commitments and contributions from energy companies, governments, and other stakeholders over many generations, Ontario now has the benefit of excellent energy infrastructure. This infrastructure includes not only the fuel supply, generation, transmission, storage, and distribution infrastructure; it also includes human resources, customer-facing energy programs, and key stakeholder relationship infrastructure that provides tremendous opportunity for cost effective utilization. LTEP 2017 should therefore incorporate the following:

- Optimize the use of existing infrastructure to meet Cap & Trade, security and reliability, economic, and affordability objectives
  - Options for decarbonizing and the more efficient use of natural gas
  - Options for re-contracting electric generation resources and deploying other resource options
  - Options for Demand Response and conservation
- Take advantage of Ontario's DSM/CDM infrastructure:
  - Ontario's utilities and the IESO have strong customer relationship infrastructure that can be leveraged to facilitate the attainment of GHG reduction targets; they can assist with a number of expected challenges including: program take-up; customer awareness; communication and information requirements; one window energy information; etc.
  - The Conservation First Framework and 2015-20 Natural Gas Framework have delivered results and should be extended
  - Demand Response should be utilized to enhance capacity and help meet peak demand
  - The LTEP should call for natural gas use for building heating and electricity generation (e.g. combined heat and power) so as to achieve all of the Province's energy related objectives
- Avoid duplication that undermines existing infrastructure and leads to consumer confusion with respect to program delivery (DSM and CDM)
- Pace electrification having regard to the capacity of consumers to afford and infrastructure to adopt and adapt
- Energy needs are often regional rather than provincial and those that are should be identified, evaluated and resolved on a regional basis, particularly with respect to large urban centers

## 4) LTEP 2017 SHOULD MODERNIZE ONTARIO'S REGULATORY SYSTEM

The pace of innovation, technological change, and customer needs and expectations related to energy are accelerating. The regulatory framework should keep pace with the speed and degree of transformation in energy markets and systems to ensure that Ontario homes and businesses have access to energy sources that are aligned with GHG reduction targets, secure and reliable, good for the economy, and are affordable. The Province's regulatory framework should be designed so as to enable all energy market participants to meet their diverse needs

and expectations. The Ontario Energy Board's regulatory system is not currently designed to adapt to this changing environment. For example, it is not uncommon for cost effective innovative solutions to be rejected by the OEB because they do not fit within the current structure. To address this, the OEA recommends that:

- A modernized regulatory framework should keep pace with the speed and degree of transformation in energy markets and systems
- Regulatory barriers at the OEB that prevent or dissuade regulated utilities from investing in innovative technology should be removed
  - The use of innovative technologies within rate base should be permitted and encouraged
- The OEB should establish fast and efficient processes to facilitate increased dialogue between the OEB, regulated entities, and stakeholders on key priorities, trends, challenges, and opportunities confronting the energy sector to inform their policy making decisions with respect to the proper regulatory treatment of new technologies and services (e.g. energy storage, electric vehicle charging)
- Regulatory frameworks should be sufficiently flexible so as to enable regulated utilities to participate in energy markets while ensuring a level playing field for all participants
- Customer choice of providers of innovative technology should be facilitated
  - Regulated utilities and other providers of innovative technology should be granted sufficient flexibility to compete for those customers and to help the government achieve its objectives
  - Regulatory and market reforms must continue to evolve and be progressive to enable greater customer participation and to factor in impacts to customers
- Alignment and consistency should be ensured between provincial energy, climate, and conservation policy, along with accompanying regulations.
- LTEP 2017 should expand options for consolidation, financing, and funding of regulated utilities through appropriate regulatory incentives
- The OEB should be required to keep pace with other jurisdictions that operate genuine incentive regulation frameworks for regulated utilities that not only invest in infrastructure but that provide platforms for regulated and unregulated companies to market services to customers
- In that other jurisdictions provide years of lead time to ensure that thorough consideration is given to the design of new regulatory requirements and to provide for the cost effective implementation of them, the OEB should operate according to similar parameters
- Just as the LTEP should integrate Cap & Trade, security and reliability, economic, and affordability objectives, the OEB should too
  - Rate decisions should have regard for utilities' pursuit of these objectives and the importance of applied for funding to facilitate performance in these areas
  - Policy-making should prioritize these objectives
- The OEB should be required to operate according to provincial Red Tape Reduction requirements, including

- Removing existing regulatory requirements when introducing new ones
- Only issuing new regulatory requirements twice per year
- Regulating on a less prescriptive basis (e.g. how to operate); instead focus on setting out performance requirements and leaving program design to regulated utilities

# 1 INTRODUCTION

The Ontario Government will be issuing the next version of Ontario's Long-Term Energy Plan (LTEP) in 2017 and will facilitate stakeholder consultations relating to the development of the LTEP during the remaining months of 2016. This Paper represents the culmination of the OEA's consultation with its diverse membership in order to develop key recommendations to the government as it moves to finalize the LTEP 2017.

The Ontario Government is striving to achieve specific climate change goals and objectives, maintain security and reliability of supply along with resiliency, and make cost effective resource decisions, all while accommodating customer choice. As is clear from the Cap & Trade emissions targets and the Climate Change Action Plan (CCAP), the contributions of the energy sector will be vital to the success of these objectives. Within an environment of multiple resource choices and innovative technology changes, some of which are noted in the Independent Electricity System Operator's (IESO's) Ontario Planning Outlook (OPO)<sup>1</sup> and the Ontario Government's Fuels Technical Report<sup>2</sup>, regulatory reforms and changes to Ontario's market are necessary and must integrate environmental and economic considerations, potential for fuel switching, and increased competition by lowering barriers to entry. Therefore, rational pathways to achieve these outcomes should rely on sound principles that maximize use of existing energy infrastructure, expanded use of CDM delivery capabilities of utilities, and prioritization of actions based on lowest cost of carbon abatement.

Overall, LTEP 2017 should strike an optimal balance of ensuring: 1) security and reliability of supply; 2) climate change goals and objectives are met; 3) Ontario's economic prosperity; and, 4) cost effectiveness and affordability of energy and energy related products and services for homes and businesses.

The remaining sections within this Paper address key topics for LTEP 2017 and the OEA's positions and recommendations.

## ABOUT THIS DOCUMENT

This document was developed with the participation and input of a variety of OEA members. A specific LTEP Working Group was established by the OEA to develop a number of drafts for internal consultation within the OEA. A draft document was circulated to the OEA membership to collect feedback. In addition, OEA Committees and Working Groups also provided input to the LTEP Working Group as it worked on this submission. In addition, the

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<sup>1</sup> See <http://www.ieso.ca/Pages/Ontario%27s-Power-System/Ontario-Planning-Outlook/default.aspx>

<sup>2</sup> See <http://www.energy.gov.on.ca/en/archive/fuels-technical-report/10year/>

OEA held a consultation session with the membership in order to solicit feedback on a draft of this document.

## 2 ONTARIO'S ENERGY MIX AND DRIVERS OF TRANSFORMATION

Ontario's energy sector has undergone much transformation over the past several years mostly through investment in electricity infrastructure that has resulted in a cleaner energy system. Based on the results of these investments, LTEP 2013 clearly stated its "pragmatic approach" based on five principles: cost-effectiveness; reliability; clean energy; community engagement; and an emphasis on CDM before building new generation. Since the adoption of LTEP 2013, much energy infrastructure has been developed, and Ontario presently enjoys an abundance of supply from clean energy and renewable resources along with a clear conservation-first culture. Now that Ontario has transformed its energy infrastructure in this manner, LTEP 2017 provides new opportunities to use Ontario's cleaner and renewable energy infrastructure to meet broader climate change goals and objectives and to facilitate innovative technologies that will further advance the efficient use of energy.

Considering Ontario's new Cap & Trade commitments and the CCAP that proposes means of pursuing those targets, as well as the importance of rising energy costs to customers<sup>3</sup>, LTEP 2017 must respond to these factors, continuing a conservation-first culture, ensuring reliability in a cost effective and affordable manner, and maintaining support of innovative and emerging technologies.

Before considering these broader themes and their applicability to components within LTEP 2017, it is prudent to first note some facts about Ontario's energy sector.

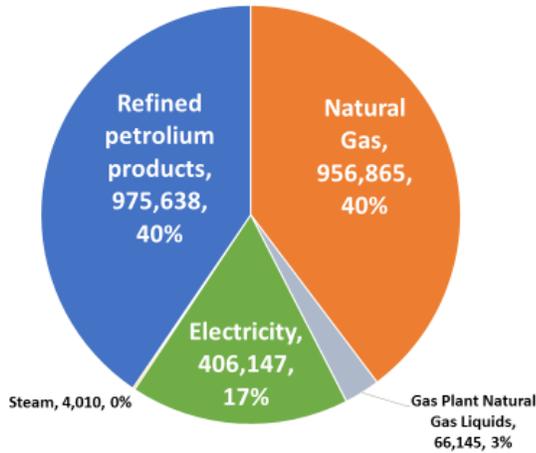
Ontario's energy consumption by fuel type is dominated by natural gas and petroleum products, while the electricity supply mix has significantly changed within the last several years.

The figure below<sup>4</sup> shows the 2014 percentage share of primary fuel use within Ontario in terajoules (TJ).

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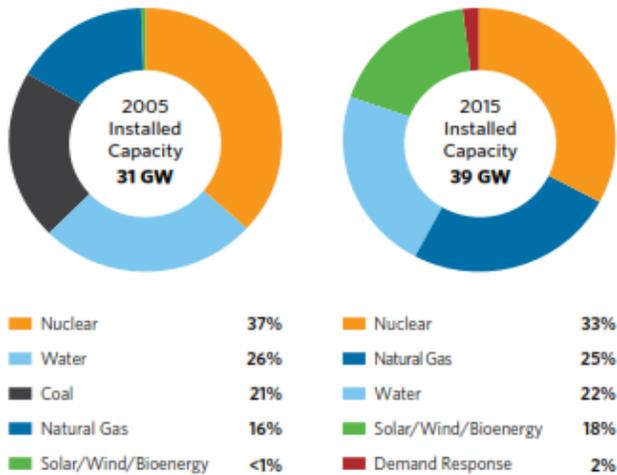
<sup>3</sup> See September 12, 2016 Ontario Government announcement, re: Keeping Clean, Reliable Electricity Affordable and Lowering People's Bills at [https://news.ontario.ca/opo/en/2016/09/keeping-clean-reliable-electricity-affordable-and-lowering-peoples-bills.html?\\_ga=1.16520630.1015334448.1394890158](https://news.ontario.ca/opo/en/2016/09/keeping-clean-reliable-electricity-affordable-and-lowering-peoples-bills.html?_ga=1.16520630.1015334448.1394890158)

<sup>4</sup> Source: Statistics Canada, prepared by Enbridge



Source: Statistics Canada CANSIM table 128-0016.

The figure below<sup>5</sup> shows changes to installed generation capacity from 2005 to 2015.



With Ontario's present climate change policies, a few key points need to be kept in mind relating to Ontario's energy sector in meeting these policies. First, future plans to evolve Ontario's energy mix should take into account principles of cost effectiveness, affordability, security and reliability of supply while ensuring the lowest abatement cost for greenhouse gas (GHG) emissions. Second, existing energy infrastructure should be utilized to the greatest extent possible in order to make efficient use of those resources in order to meet climate

<sup>5</sup> Source: IESO OPO (September 1, 2016)

change goals and objectives while ensuring security and reliability of supply that is cost effective.

## Guiding Principles for LTEP 2017

As stated in the previous section, LTEP 2017 should strike a reasonable balance amongst the following four principles by ensuring: 1) climate change goals and objectives are met; 2) security and reliability of supply; 3) Ontario's economic prosperity; and, 4) cost effectiveness and affordability of energy products and services for homes and businesses.

The CCAP charts the future course defining how Ontario intends to meet its GHG reduction targets. LTEP 2017 will account for the CCAP but must do so by balancing the remaining principles. Two key points should be kept in mind in developing LTEP 2017 in accordance with meeting the GHG reduction targets. First, Ontario should ensure it is optimizing its use of existing energy infrastructure before committing to new energy infrastructure. Second, while the CCAP points to increased future electrification, LTEP 2017 must strike an optimal balance of electricity and natural gas usage (and other fuels) towards meeting climate change goals and objectives.

Serving Ontario's energy customers and maintaining security and reliability of energy supply should never be compromised. Therefore, it is expected that LTEP 2017 will not compromise security and reliability of supply when setting direction towards how Ontario will meet its future energy needs while ensuring climate change goals and objectives will be met. For example, regarding Ontario's electricity sector, considering the magnitude of planned retirements and refurbishments of many nuclear generating units, LTEP 2017 must consider the possibility future supply uncertainties by identifying applicable risks and setting out applicable contingency plans.

Ontario's future economic prosperity is tied to the sufficiency of energy supply and the cost effectiveness of choices LTEP 2017 will make regarding future energy resources and energy affordability for all customers. Therefore, LTEP 2017 must optimize Ontario's future energy resource mix by meeting policies and objectives (e.g., climate change) that are cost effective and affordable.

The OEA has identified the following key drivers that are continuing to transform the energy landscape in Ontario: the province's climate change activities; innovation; and the evolving role and needs of customers.

## Ontario's Climate Change Action Plan

On June 8, 2016, Ontario's CCAP was released. Through a series of incentives and programs, the CCAP encourages a greener transportation system, more efficient buildings, and a more

rapid adoption of clean technologies in pursuit of Ontario's GHG reduction targets. The CCAP will be supported by the expected \$1.9 billion annual revenue from the Cap & Trade program<sup>6</sup>.

In previous long-term planning documents and activities, the Ontario Government focused primarily on electricity, with key objectives being reliable, secure, and affordable electricity for customers. The introduction of the GHG reduction targets and the CCAP means that long-term energy planning necessarily must involve all aspects of energy supply and consumption (e.g., natural gas consumption and distribution, transportation fuels, impacts and uptake of emerging technologies, impacts of electrification, etc.). Therefore, the implementation of CCAP will require a much different LTEP 2017 compared to LTEP 2013. Given this focus, it is even more important to balance these climate change goals and objectives with security and reliability of supply, economic prosperity and cost effectiveness and affordability.

Moreover, it is important to recognize that the implementation of Cap & Trade will have direct and indirect impacts on energy consumption and future investment needs. Estimating the impacts of Cap & Trade and the CCAP on the energy sector as a whole is difficult partially due to unknown consumer reaction, though it is possible that implementation of CCAP will create a drive to increased electrification. The one question that remains – what form of “green” electricity will be available to grow the electric system in Ontario as electrification advances (nuclear, or imported hydro based power etc.)? Therefore, it will be important for the LTEP 2017 to have multiple scenarios (e.g., considering impacts to natural gas, electricity, emerging technologies, etc.) that will define at least the range of possible future outcomes.

### **Recommendations:**

- LTEP 2017 needs to be integrated with Ontario's climate change activities and the implementation of Cap & Trade
  - Since the CCAP impacts are not yet clear, LTEP 2017 should recognize this lack of certainty by providing ranges (e.g., baseline, high, low) for several metrics including demand and supply
- LTEP 2017 needs to support an optimized solution, considering all fuel and capacity sources to ensure the GHG reduction targets are attained while optimizing the use of existing natural gas and electricity infrastructure
  - LTEP 2017 must include the full infrastructure cost for each scenario. Scenarios that include increased electrification need to consider the full cost of increased generation, transmission, distribution, and service upgrades in homes and other buildings. This costing should also incorporate upstream and downstream costs on

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<sup>6</sup> On May 19, 2016, the Ontario Ministry of Environment and Climate Change (MOECC) published final versions of the Cap-and-Trade Regulatory Proposal and Revised Guideline for GHG Emissions Reporting

- consumers that result from reductions in the number consumers or amount of consumption on the existing grid as well as overall GHG emission impacts
- The expected rapid evolution of policy drivers due to economic changes driven by Cap & Trade and the CCAP should be anticipated through an increase in the modernization of Ontario's regulatory regime and electricity market design
  - LTEP 2017 should provide clarity on how provincial energy and conservation policies will interact and align with significant actions being undertaken at multiple levels of Government (i.e., federal, provincial, municipal) to address climate change, and on how local distribution companies (LDCs) will be granted sufficient flexibility to deliver services and programs in support of all of the various initiatives
    - Programs should be prioritized and funded on a cost per tonne of CO<sub>2</sub> basis in order to maximize program achievement and help achieve GHG reduction targets
  - Because of the CCAP's focus on electrification, LTEP 2017 should take into account the cost of generation, transmission, and distribution of electricity in comparison with other decarbonizing options for existing energy infrastructure
  - LTEP 2017 should optimize the use of existing energy infrastructure while reducing GHG emissions. Conservation, decarbonizing natural gas and other fuels, upgrades to existing facilities, and renewable electrification options should be carefully examined to achieve the targeted emission reductions at lowest cost

## Innovation

Technological innovation is rapidly introducing new resources that are providing new and emerging options to enhance consumption and production within energy markets and systems. Innovation is enhancing customers' control and understanding of how they consume and some cases produce energy, while enabling utilities and other energy providers (e.g., service providers, producers, etc.) with a variety of mechanisms and means to serve the needs of their customers. There are many examples of innovative technologies that are rapidly emerging within energy markets and systems, including but not limited to: distributed generators, energy storage, electric vehicles (EVs), micro turbines, micro CHP units, control systems, etc. The general trends with these emerging technologies are declining costs and economies of scale that are enabling economic entry into energy markets and systems.

While innovative technologies continue to emerge and be deployed, it is important to continually monitor and understand their applications within energy markets and systems. For example, these areas require understanding in the Ontario context when considering present policy objectives: innovation that drastically reduces energy use in various applications; innovation that decarbonizes fuels within existing energy infrastructure (for example renewable natural gas or hydrogen injection); and, innovative technologies that sequester carbon generated from continued fossil fuel use. Therefore, energy planning and regulatory mechanisms must be sufficiently flexible in order to leverage technological innovation within

energy markets and systems rather than pick technology winners prematurely that may disadvantage an already existing and relatively low cost energy infrastructure.

Deployment of innovative technologies must work within Ontario's energy structure. For example, utilities are well positioned to provide new resources and offer new products to their customers. At the same time, third parties should be able to also provide new resources and products on a competitive level playing field, which is consistent with enabling greater customer choice.

From a natural gas perspective, renewable natural gas (RNG) can offer additional opportunities to decarbonize natural gas delivered to homes, commercial buildings, industrial applications, and the transport sector, while providing more cost effective energy compared to burning raw biogas to produce electricity. RNG may initially be sourced from landfills and waste water plants, but applications in the agricultural sector and industrial sectors will also provide opportunities with innovation. Power to gas is a technology that can store renewable electricity in the form of hydrogen in existing natural gas infrastructure for seasonal use. Innovation in carbon neutral fuels such as synthetic natural gas produced by combining hydrogen and recycled carbon. Finally, carbon sequestration and carbon capture at the point of combustion or offsite are also technologies that will lower carbon foot print.

### **Recommendations:**

- Barriers to investing in innovative technologies and market penetration should be addressed
- Rapid innovation will require efficient coordination between utilities (e.g., LDCs, etc.), generators, regulators, and Government policy to ensure costs are reasonable and benefits are realized. LTEP 2017 should determine an appropriate forum to recognize and support the benefits of emerging innovative technologies
- LTEP 2017 should facilitate customer choice of providers of innovative technology services/resources while enabling utilities and other providers of innovative technologies (e.g., producers, etc.) to compete for such supply to customers on a level playing field
- LTEP 2017 should reaffirm the Government's commitment to the existing conservation frameworks for electricity and natural gas and demand response should be enhanced in order to help the province achieve its current climate change objectives, and to meet applicable CDM/DSM targets
  - These demand-side resources can be cost effective alternates to more expensive infrastructure investments for peak demand management as the province trends towards greater electrification.

## Evolving Role and Needs of Customers

With the recent policy emphasis on CDM and renewable generation resources connecting to distribution systems (e.g., conservation framework and targets, Feed-in Tariff program, etc.), energy customers of all classes now find themselves with a multitude of demand and supply resource options to which they can control, new product offerings (e.g., tools providing data and information, etc.) helping to facilitate and enable active energy market participation, and more choices of service providers (i.e., self-supply, distributors, retailers, etc.).

In addition to more choice and ability to actively participate within Ontario's energy market, customers have conveyed preferences for cleaner and greener product offerings and sources of energy supply, which is consistent with its alignment of the Ontario Government's present climate change policies.

Because of the factors listed above, LTEP 2017 is expected to continue enabling Ontario's energy customers through its policy direction and plans. Therefore, it is important for the needs of customers to be sufficiently met. This should include the need to hold energy costs to a minimum, as customer tolerance for price increases has sharply declined. The role of customers within Ontario's energy market must continue to evolve by increasingly enabling their greater participation.

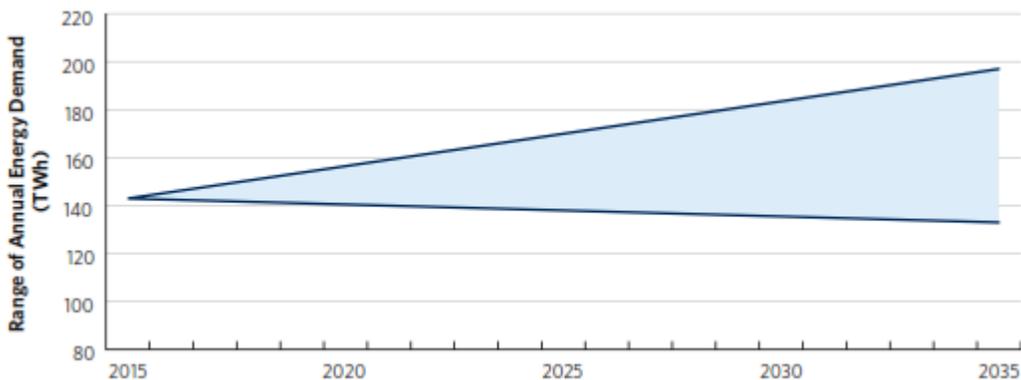
### **Recommendations:**

- Barriers should continue to fall in order to increase and enable the level of customer participation within Ontario's energy market
- Customers should continue to have multiple choices regarding supply, service, products, etc.
- Customers must be afforded with mechanisms they can access and use to help mitigate rising prices.
- Customers should be able to have 'prosumer' options so as to partially or fully self-supply their energy needs
- Regulatory and market reforms must continue to evolve and be progressive so as to enable greater customer participation within Ontario's energy market. Changes to regulatory and market regimes and rules must always factor in potential impacts to customers as well as other market participants as a primary focus

### 3 DEMAND-SIDE CONSIDERATIONS

Cap & Trade and the CCAP will impact many sectors of Ontario's economy and result in changes to energy demand and the consumption patterns of energy customers. The energy sector must be prepared for changes in peak demand and total consumption, but also changes to daily and seasonal consumption patterns.

The IESO's OPO 2016 indicates significant uncertainty for future electricity demand driven by uncertainties regarding Ontario's economy, demographics, energy and environmental policies, etc. The figure below<sup>7</sup> illustrates the IESO's range of electricity demand possibilities.



The IESO lists four demand outlooks within the OPO which are net of the impacts of CDM and DERs. The differences in the demand outlooks are:

- Outlook A represents declining demand from today;
- Outlook B represents a flat demand outlook essentially maintaining today's demand; and
- Outlooks C and D are higher demand outlooks driven by different levels of electrification associated with climate change policies.

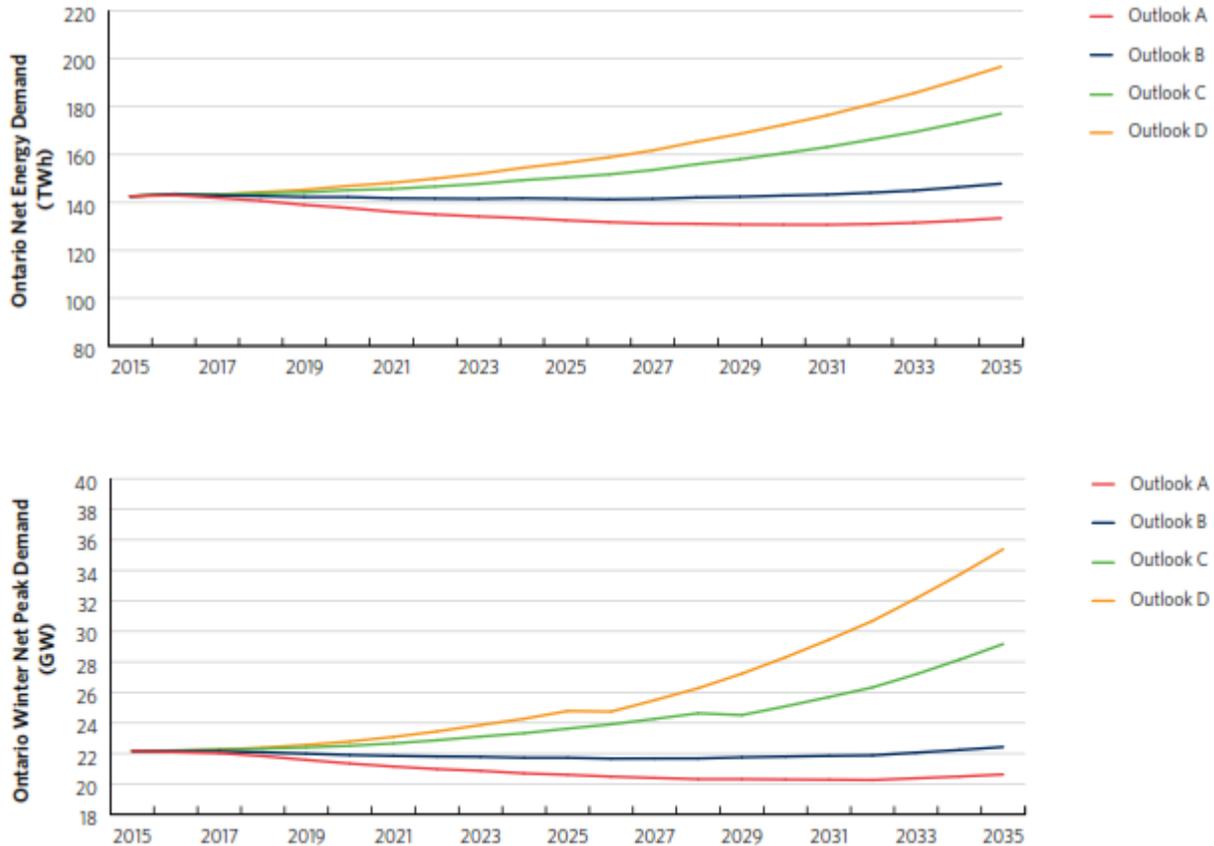
The figures below<sup>8</sup> show the differences of these demand outlooks on a net electricity demand basis and on a net winter peak demand basis. If demand outlooks C or D were to materialize resulting from electrification, Ontario projects to become a winter peaking system<sup>9</sup>.

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<sup>7</sup> Source: IESO OPO (September 1, 2016)

<sup>8</sup> Source: IESO OPO (September 1, 2016)

<sup>9</sup> Since the early 2000's, Ontario has been summer peaking



There is a lack of clarity regarding which actions would have the greatest impact on demand through electrification. From a transportation perspective, the impact of switching has focused narrowly on the potential changes of personal vehicles. A broader view (e.g. commercial fleet vehicles, mass transit, etc.) is needed with a more in-depth analysis of the impact of EVs. Consideration is also needed regarding the role natural gas may play in replacing diesel trucks and buses.

Specifically relating to Outlooks C and D and the potential impacts of increased electrification that drives these Outlooks, the scenarios are based on the assumption that there may be significant potential for oil and natural gas heating along with water heating loads to convert to electricity by 2035. The full cost implications to end-use customers resulting from this change needs to be considered in LTEP 2017. In addition to the costs of switching heating fuels, other costs need to also be factored in (e.g., potential new electricity generation, transmission, distribution, etc.) in order to likely facilitate such change. Converting the peak day winter gas load in Ontario into an electrical demand, results in the need for approximately 80,000 Mw of additional generation/transmission and distribution infrastructure – approximately a quadrupling of the current infrastructure. Alternatives need to be reflected in LTEP 2017, such as a hybrid solution that maximizes the use of existing gas and electric infrastructure to heat homes on peak days.

In the building sector, impacts of net zero building standards for new builds versus retrofits must be compared. While an economic case may exist for building codes to require new net zero ready homes, there may not be an economic case to retrofit existing homes to the same standard (although efficiency gains can still be economic). Achieving GHG reduction targets through affordable solutions that preserve the security and reliability of supply require differentiated strategies that help customers make significant but manageable strides in reducing their carbon footprint, while maintaining affordability. A net zero ready home is extremely efficient with energy required for heat approximately 70-80% lower than homes built to today's building code. At this level of energy a small gas furnace or a combined air sourced heat pump/gas furnace (for peak days) would meet Ontario's GHG targets yet have little impact on either the gas or electric existing infrastructure.

LTEP 2017 will need to provide greater clarity on how the plan will shift demand patterns on an annual, monthly, weekly, and daily basis from regional as well as provincial perspectives. When considering the impact on existing infrastructure, it is the peak load requirement that will determine the impact on regional and provincial infrastructure.

New transmission development or re-enforcement of existing assets will need to support changing demand patterns and the uptake of DERs. While there are benefits to DERs, there are also limitations to the citing of those resources. Capacity limitations exist in Ontario's current electricity system. Regarding distribution systems, policy and regulation changes may be needed to provide adequate certainty of cost recovery to support distribution system investments for future connection of DERs. Increased variability in demand due to DERs and the rise of intermittent renewables likely means a greater role for DR and other CDM resources.

Overall, the patterns of demand will be different in the future. The province's electricity system must prepare for significant variations from historic experience.

### **Recommendations:**

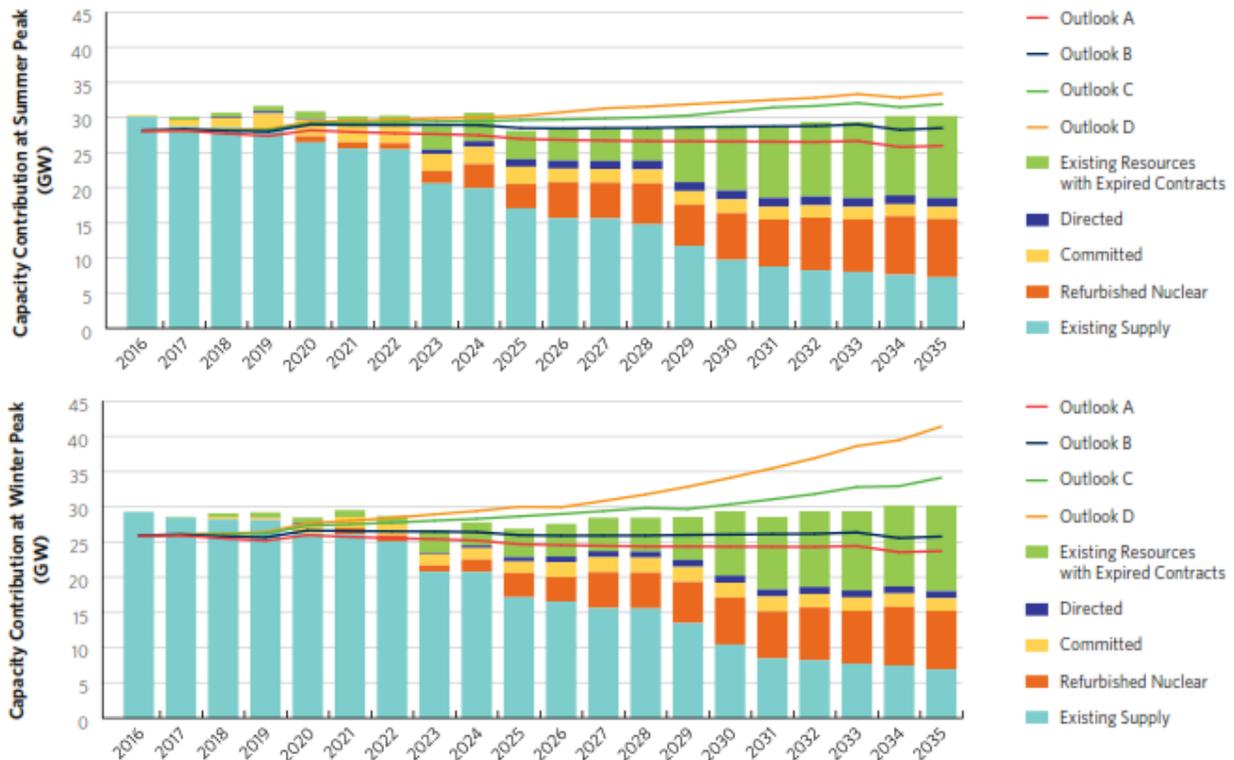
- Like the IESO's OPO, LTEP 2017 should provide more than just a single planning outlook for demand. Ranges (e.g., baseline, high, low) for the demand forecast will help in planning for potential economic opportunities for Ontario's energy industry to capitalize on changes to demand
  - The baseline demand forecast should be based on achieving GHG reduction targets through CCAP initiatives
  - The high demand scenario should assume aggressive electrification of transit and homes with minimal connection of DERs (i.e., system cannot support further uptake without investments)
  - The low demand scenario should assume modest electrification combined with a strong uptake in DERs and significant efficacy of CDM

- LTEP 2017 should be used as an opportunity to outline a robust economically efficient strategy for driving efficiencies and reduced GHG reductions in all sectors, thereby securing significant economic and environmental gains for the province. The LTEP 2017 should provide clarity on an expected impact range of electrification in the transit and building sectors
- LTEP 2017 needs to support an optimized solution to ensure GHG reduction targets are attained while optimizing the use of existing gas and electric infrastructure
- The pace of electrification must be managed having regard to the capacity of consumers to afford and infrastructure to adopt and adapt
- Expectations of uptake of DERs under different planning scenarios should be discussed along with commentary on changes to procurement processes for DERs (e.g., potential transition to net-metering from the standard offer Feed-in Tariff program)
- IESO's OPO did not assess regional demand and potential resource needs. Therefore, LTEP 2017 should explore Ontario's regional energy needs. For example, the Greater Toronto Area (GTA) represents the largest energy load on Ontario's system and more insight regarding the GTA's needs is required. In the event that the GTA requires additional resources to meet future needs, CDM and DR are particularly well suited to meet certain specific local needs

## 4 SUPPLY-SIDE CONSIDERATIONS

Based on the four electricity demand Outlooks, the IESO's OPO assesses the projected supply adequacy to meet Ontario's future electricity supply needs. On balance, Ontario is projected to have sufficient generation supply resources to meet Ontario's future needs through 2035. However, if electrification is to significantly impact electricity consumption and peak demand, Ontario projects to require additional supply resources around the mid 2020's.

The figures below<sup>10</sup> show Ontario's projected generation supply needs based on meeting projected summer peak and winter peak electricity demand requirements.



When comparing the IESO's OPO to LTEP 2013 projected future supply needs have also changed resulting from:

- Life extension of the Pickering nuclear generating units over a longer time period;
- Different schedule for applicable Bruce and Darlington nuclear generating units;
- Potential (or potential lack thereof) re-contracting existing generation and their future operations; and

<sup>9</sup> Source: IESO OPO (September 1, 2016)

- Impacts of electrification of buildings, vehicles, and industrial processes contained in the CCAP result in uncertainty of future supply needs (i.e., factors driving electricity demand Outlooks C and D).

Supply needs for natural gas have also changed as a result of Cap & Trade. Specifically, electrification of existing buildings would reduce the amount of natural gas required on an annual basis within the province. However, depending on how natural gas versus electric technology is deployed, it may or may not affect peak day natural gas use. For example, for residential buildings, a hybrid solution that keeps the peak day heat load on natural gas may be an optimum solution.

RNG that is bought in Ontario will reduce the carbon emissions of natural gas use in Ontario, and will reduce the amount of natural gas imported into Ontario. Studies have shown that up to 18% of Ontario's natural gas supply could be met with RNG. RNG has significant GHG benefits in that the alternative is to emit unburned methane into the atmosphere which has a significantly greater GHG impact compared to release of CO<sub>2</sub> as a product of natural gas combustion. Beyond RNG, synthetic natural gas (i.e., combining hydrogen with recycled CO<sub>2</sub>) offers further potential in later years.

The economics of supply resource options have evolved and will continue to evolve. Maturing forms of renewable electricity like wind and solar are falling in cost quickly, as are related technologies like storage, with DERs more generally increasing in appeal. The resulting increased uncertainty of future demand patterns raises the need for an assessment of optimal supply mixes to meet different possible future scenarios. It also raises the need for optimal utilization of existing electric and gas infrastructure, while meeting GHG reduction targets.

On balance, even though the IESO's OPO suggests that Ontario will be supply sufficient through 2035 under electricity demand Outlooks A and B, and supply sufficient into the mid 2020's under all outlooks, risks to supply adequacy exist. First, over 10,000 MW of nuclear generating units will retire or undergo during LTEP 2017's period forecast. Given the sheer magnitude of these energy infrastructure projects, some degree of uncertainty should be acknowledged in all supply forecasts and considered in contingency planning. Second, there is much ambiguity whether contracted generation will continue to operate post contract expiry.

OEA members have undertaken some preliminary work that suggests that the cost impacts of electrification outlined in Outlooks C and D in the IESO OPO may be higher than outlined. This reinforces the need for LTEP 2017 to provide more comprehensive and detailed costing estimates for the various outlook scenarios so that all stakeholders will be able to anticipate the cost trade-offs of varying degrees and pacing of electrification. The OEA encourages the Government to consult with the OEA and its members in preparing those estimates.

## Recommendations:

- LTEP 2017 should provide fully costed contingency plans through multiple supply mix scenarios considering risks to refurbishing nuclear generating units and operation of gas-fired and renewable generators post contract expiry
- The supply mix within LTEP 2017 must align with applicable LTEP 2017 demand projections by integrating appropriate and needed supply resource attributes (i.e., different attributes will be needed to meet different demand requirements)
- LTEP 2017 should consider the potential benefits of demand response and storage as a fast, reliable, flexible, cost-effective, and clean resources in the multiple supply mix scenarios
- Consistent with the above point regarding supply attributes, LTEP 2017 should identify the changes in load factors for gas-fired generators under different future scenarios and GHG emission profiles, which acknowledges the need to coordinate natural gas consumption for electric generation
- LTEP 2017 should include the cost of electricity generation, transmission, distribution, and electric service upgrades to homes and buildings in all scenarios that require increased electrification pursuant to the CCAP
- LTEP 2017 should present multiple scenarios that show potential changes to the nuclear retirement and refurbishment schedules based on contingency planning.
- The cost-effectiveness of re-contracting of generation resources should be clearly presented compared to other resource options
- Analysis is needed regarding changes to generation needs due to sensitivities regarding different electricity demand profiles. This analysis should align with the different electricity demand outlooks as previously described
- Analysis is needed regarding changes to natural gas supply needs (both annual as well as peak day) due to electrification of Ontario as contemplated under the CCAP
- LTEP 2017 should consider the impact of RNG as an alternative to help meet GHG reduction targets. Any RNG consumed does not require consumers to pay for carbon allowances. High concentrations of RNG in the natural gas stream would significantly reduce the carbon impact of natural gas and would significantly reduce the amount of allowance required. This scenario would result in a reduced need to electrify homes and businesses
- Natural gas use for building heating and electricity generation should be appropriately planned for within LTEP 2017

## 5 REGULATORY AND MARKET REFORM

Considering the changes to Ontario's energy market and system that have occurred over the past several years, coupled with more significant changes to come resulting from the GHG reduction targets, CCAP and technological innovation, the rules and design that govern Ontario's energy market and system must necessarily evolve in order to enable all of these changes. While LTEP 2017 will shape Ontario's future energy policy direction along with the complement of energy resources to meet Ontario's future needs, Ontario's regulatory regime and market design/rules will largely define how policy direction will be implemented. Therefore, Ontario's regulatory regime governing the electricity and natural gas sectors under the purview of the Ontario Energy Board (OEB) and the wholesale electricity market design and rules under the administration of the IESO must evolve in order to ensure directions set within LTEP 2017 can be implemented.

Past regulatory reforms provide examples of regulatory evolution in response to changing needs. For example, the OEB adopted the Renewed Regulatory Framework for Electricity (RRFE) in order to set rates by recognizing long-term value for money regarding investments in transmission and distribution assets especially during a time with significant changes within the sector. Another recent example is the IESO's launch of their Market Renewal Initiative which will examine significant changes to the present wholesale electricity market design and rules in accordance with meeting future system needs through changes and implementation of new market mechanisms. With the acceleration of changes expected for the energy sector, Ontario's regulatory system will need to continue adapting to ensure optimal outcomes for all energy consumers and market participants.

Commercial and industrial electricity customers are increasingly demanding services tailored to their site-specific needs, such as high degrees of reliability and power quality or cost minimization. Often, conventional solutions are cost prohibitive, which makes them unavailable to companies competing for thin margins in a tough global marketplace. Meanwhile, innovative solutions have uncertain regulatory treatments despite delivering grid-level benefits, including offsetting investments in traditional distribution assets. Some of those innovative solutions, such as energy storage, also provide broader societal benefits by helping to combat climate change. In the absence of mature commercial markets for these solutions, regulatory mechanisms should allow and encourage utilities to be at the leading edge of customer service delivery in order to meet these increasing and more sophisticated customer expectations. These tools will enhance the value that utilities can provide to customers, which will help them succeed as Ontario-based economic drivers, benefit the broader grid-connected customer base, and serve critical public policy objectives.

LTEP 2017 needs to consider regulatory and market changes so as to ensure that future energy demand and supply plans can actually be implemented and meet the government's key objectives.

## Recommendations:

- A modernized regulatory framework should keep pace with the speed and degree of transformation in energy markets and systems
- Regulatory frameworks should be sufficiently flexible so as to enable regulated utilities to participate in energy markets while ensuring a level playing field for all participants
- The regulatory system should provide the flexibility to allow utilities to provide tailored solutions to meet varied customer needs
- Customer choice of providers of innovative technology should be facilitated
  - Regulated utilities and other providers of innovative technology should be granted sufficient flexibility to compete for those customers and to help the government achieve its objectives
  - Regulatory and market reforms must continue to evolve and be progressive to enable greater customer participation and to factor in impacts to customers
- Regulatory barriers at the OEB that prevent or dissuade regulated utilities from investing in innovative technology should be removed
  - The use of innovative technologies within rate base should be permitted and encouraged
- Alignment and consistency should be ensured between provincial energy, climate, and conservation policy, along with accompanying regulations
- The OEB should establish fast and efficient processes to facilitate increased dialogue between the OEB, regulated entities, and stakeholders on key priorities, trends, challenges, and opportunities confronting the energy sector to inform their policy making decisions with respect to the proper regulatory treatment of new technologies and services (e.g. energy storage, electric vehicle charging )
- LTEP 2017 should expand options for consolidation, financing, and funding of regulated utilities through appropriate regulatory incentives
- Bending the cost-curve can be achieved by offering greater incentives to parties that deploy lower-cost, innovative solutions that offset higher-cost, traditional investments.
- Any changes to the IESO administered wholesale electricity market design and rules must be able to effectively facilitate Ontario's climate change policies through cost effective market mechanisms
- Because of the uniqueness of Ontario's market structure and design, coupled with relatively aggressive climate change policies impacting Ontario's electricity sector, the IESO should look to develop 'made in Ontario' solutions to change in the electricity wholesale market design and rules, and not simply adopt design platforms and rules from other jurisdictions that are fundamentally different to Ontario
- The OEB should be required to keep pace with other jurisdictions that operate genuine incentive regulation frameworks for regulated utilities that not only invest in

- infrastructure but that provide platforms for regulated and unregulated companies to market services to customers and other grid-connected parties
- In that other jurisdictions provide years of lead time to ensure that thorough consideration is given to the design of new regulatory requirements and to provide for the cost effective implementation of them, the OEB should operate according to similar parameters
  - Just as the LTEP should integrate Cap & Trade, security and reliability, economic growth, and energy affordability objectives, the OEB should too
    - Rate decisions should have regard for utilities' pursuit of these objectives and the importance of applied for funding to facilitate performance in these areas
    - Policy-making should prioritize these objectives
  - The OEB should be required to operate according to provincial Red Tape Reduction requirements, including
    - Removing existing regulatory requirements when introducing new ones
    - Only issuing new regulatory requirements twice per year
    - Regulating on a less prescriptive basis (e.g. how to operate); instead focus on setting out performance requirements and leaving program design to regulated utilities

## CONCLUSION

The OEA has gone through a process of reviewing the various factors influencing the energy sector and evaluating their impact on long-term energy planning needs in Ontario. This included assessing the key drivers of change in the industry, including climate change planning, innovation, and the evolving needs of the customer. Both demand and supply side considerations were reviewed in some detail. Finally, the regulatory system was reviewed in terms of what will be needed to manage the fast-paced changes anticipated for the sector.

This review has found that Ontario's energy sector is going through a fast paced transformation which is expected to continue to accelerate. Because of this, detailed long-term energy planning is critical to ensuring that provincial energy policies lead to optimized outcomes for the province's energy consumers.

Prior to developing recommendations, the OEA established core principles which we believe should underpin and guide long-term energy planning in Ontario. The OEA believes that LTEP 2017 should be founded on the following core principles:

- 1) Security and reliability of supply;
- 2) Attaining climate change objectives;
- 3) Ontario's economic prosperity;
- 4) Cost effectiveness and affordability of energy products and services for homes and businesses.

Based on our review, this report makes a number of detailed recommendations as to how the Government should go about developing an optimized plan that balances the above noted objectives. Altogether, these recommendations reinforced four key themes which the OEA believes should guide LTEP 2017. The OEA believes LTEP 2017 should:

- 1) **BE A COMPLETE ENERGY PLAN**  
Previous LTEPs have primarily been electricity plans. LTEP 2017 should be a complete energy plan.
- 2) **BE FULLY COSTED**  
LTEP 2017 should include a full costing that considers all aspects of achieving the four principles. This should include detailed estimates of the amount of investment required in distribution, transmission, generation, and service upgrades to achieve target levels of electrification under the CCAP.
- 3) **FOCUS ON OPTIMIZATION**
  - a. Setting Objectives, Not Prescribing Solutions

LTEP 2017 should not prescriptively pick specific technologies or solutions. Rather, clear objectives should be set, and Ontario's energy sector should be given the opportunity to provide cost effective solutions that meet those objectives.

b. Optimize Use of Existing Infrastructure

Ontario has the benefit of excellent existing energy infrastructure. This infrastructure includes not only the fuel supply, generation, transmission, storage, and distribution infrastructure; it also includes human resources, customer-facing energy programs, and key stakeholder relationship infrastructure such as conservation programs and demand response infrastructure. LTEP 2017 should take advantage of this existing infrastructure to meet climate change, security and reliability, economic, and affordability objectives.

4) MODERNIZE ONTARIO'S REGULATORY SYSTEM

Given the accelerating changes that are anticipated for the energy sector, the rules and design that govern Ontario's energy market and system must necessarily evolve in order to enable all of these changes. Therefore, LTEP 2017 needs to consider regulatory and market changes so as to ensure that future energy demand and supply plans can actually be implemented and meet the government's key objectives.