

ONTARIO'S
LONG-TERM
ENERGY
PLAN 2017

***Delivering Fairness and
Choice***

Purpose

- To introduce the Ministry of Energy's 2017 Long-Term Energy Plan and provide details on the following topics:
 1. The LTEP Process
 2. Supply, Demand, and Modelling Assumptions
 3. Key LTEP Themes and Initiatives
 4. OEB Modernization Panel

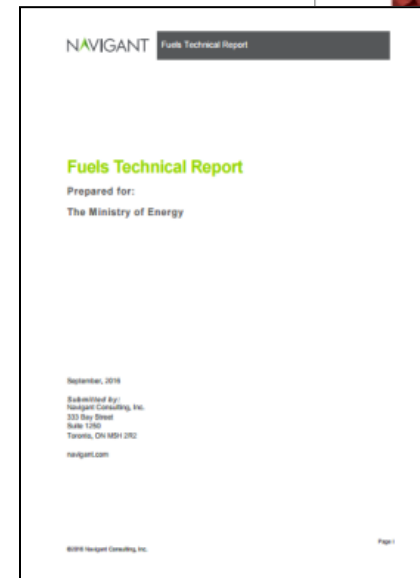
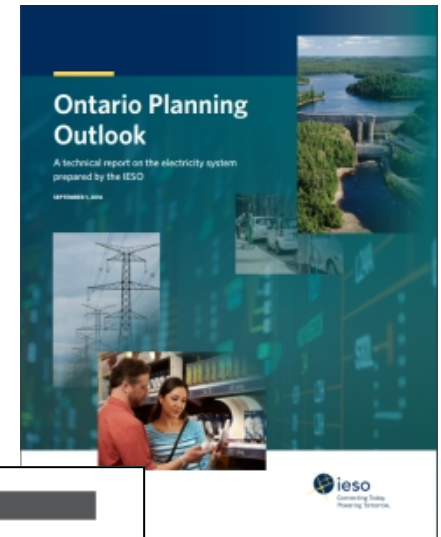


1. The LTEP Process

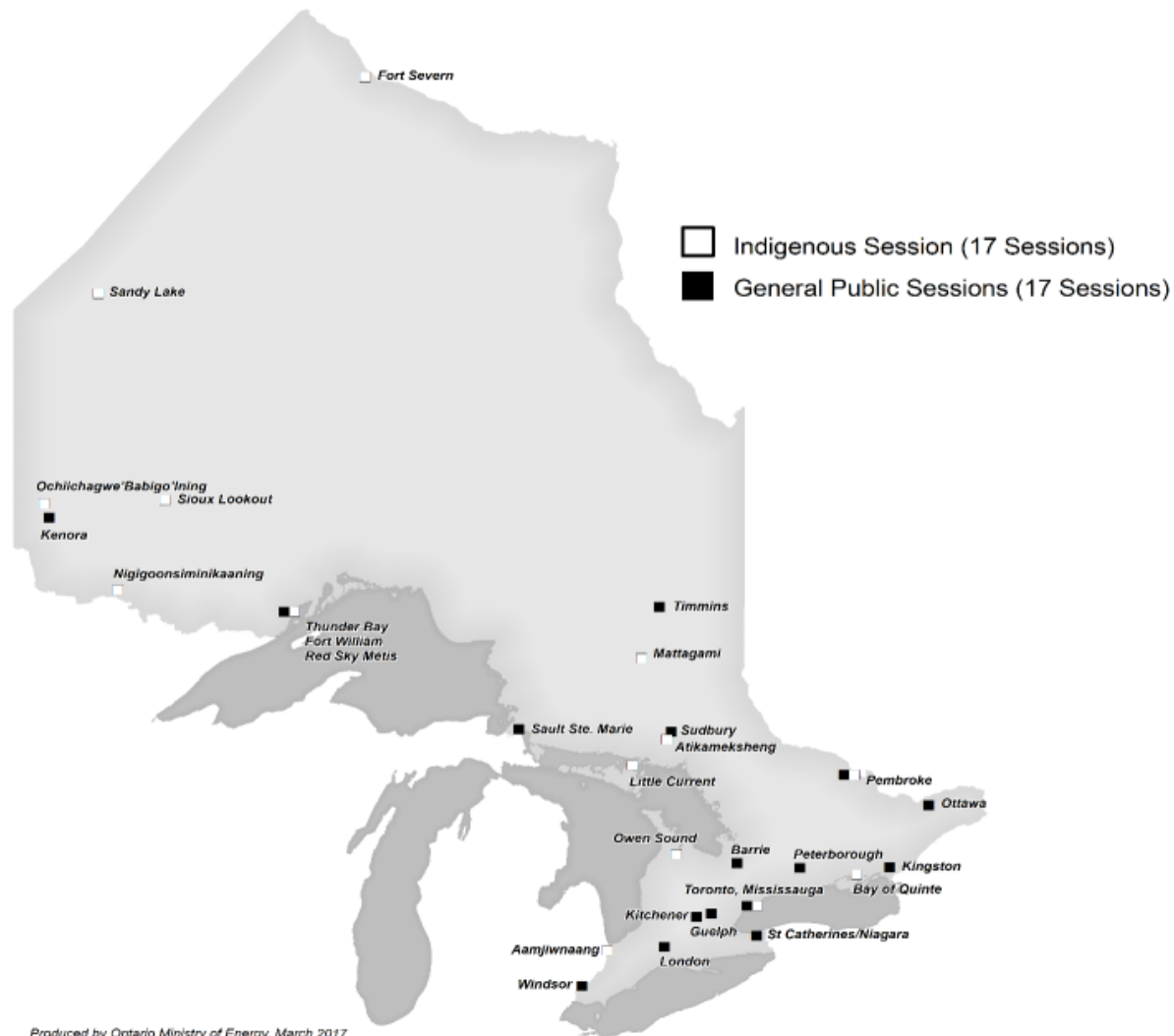
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The Long-Term Energy Planning Process

- In 2016, the Ministry of Energy enshrined in the *Electricity Act, 1998* an enhanced process for developing Long-Term Energy Plans.
- The process includes the following steps:
 - Release of technical reports
 - Engagement Process
 - Development of LTPE and Implementation Directives
 - Implementation Plans



Engagement With Ontarians



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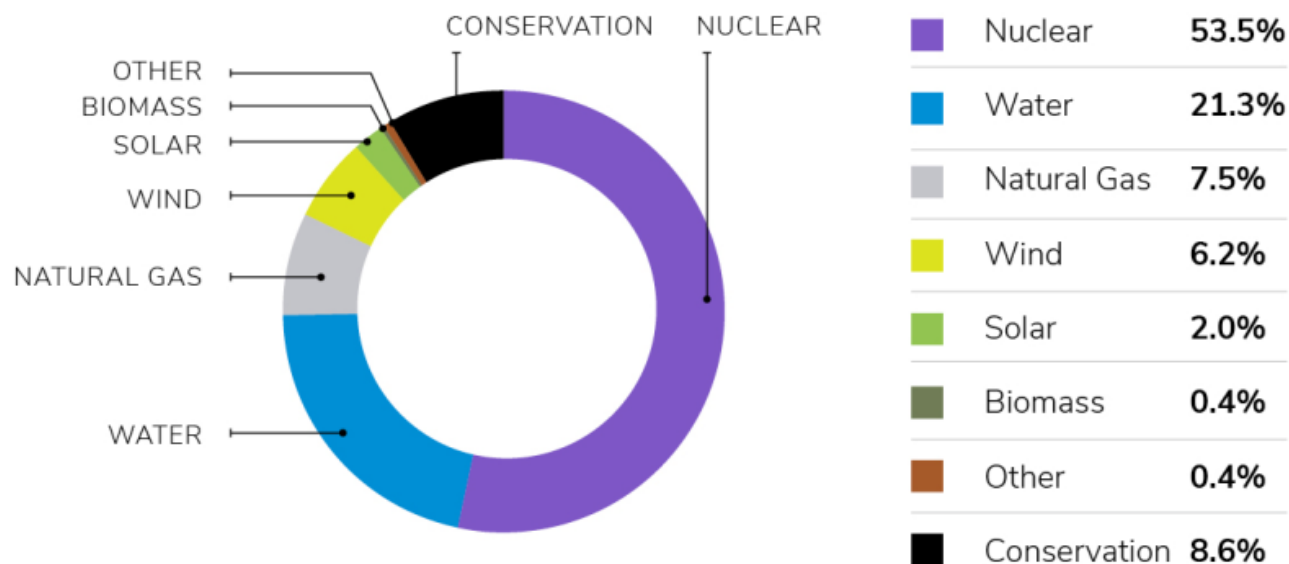


2. Supply, Demand and Modeling Assumptions

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Ontario's Supply Mix

Ontario's Electricity Generation and Conservation, 2016 (TWh)



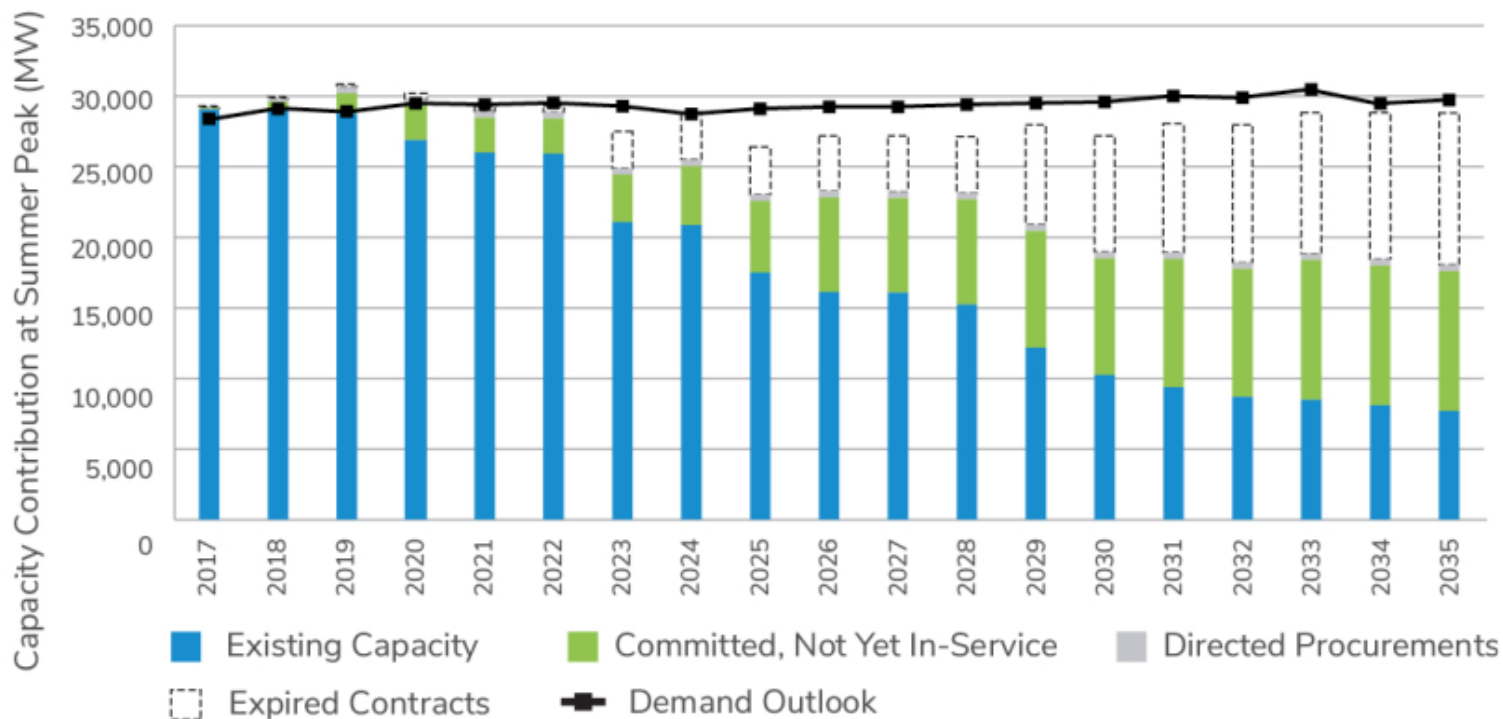
Source: Ministry of Energy

Note: Generation reflects the sum of transmission and distribution connected sources. Conservation value represents persistent savings in 2016 from programs and codes and standards since 2006.

LTEP Pg. 34, Fig. 7

Supply and Demand Outlook

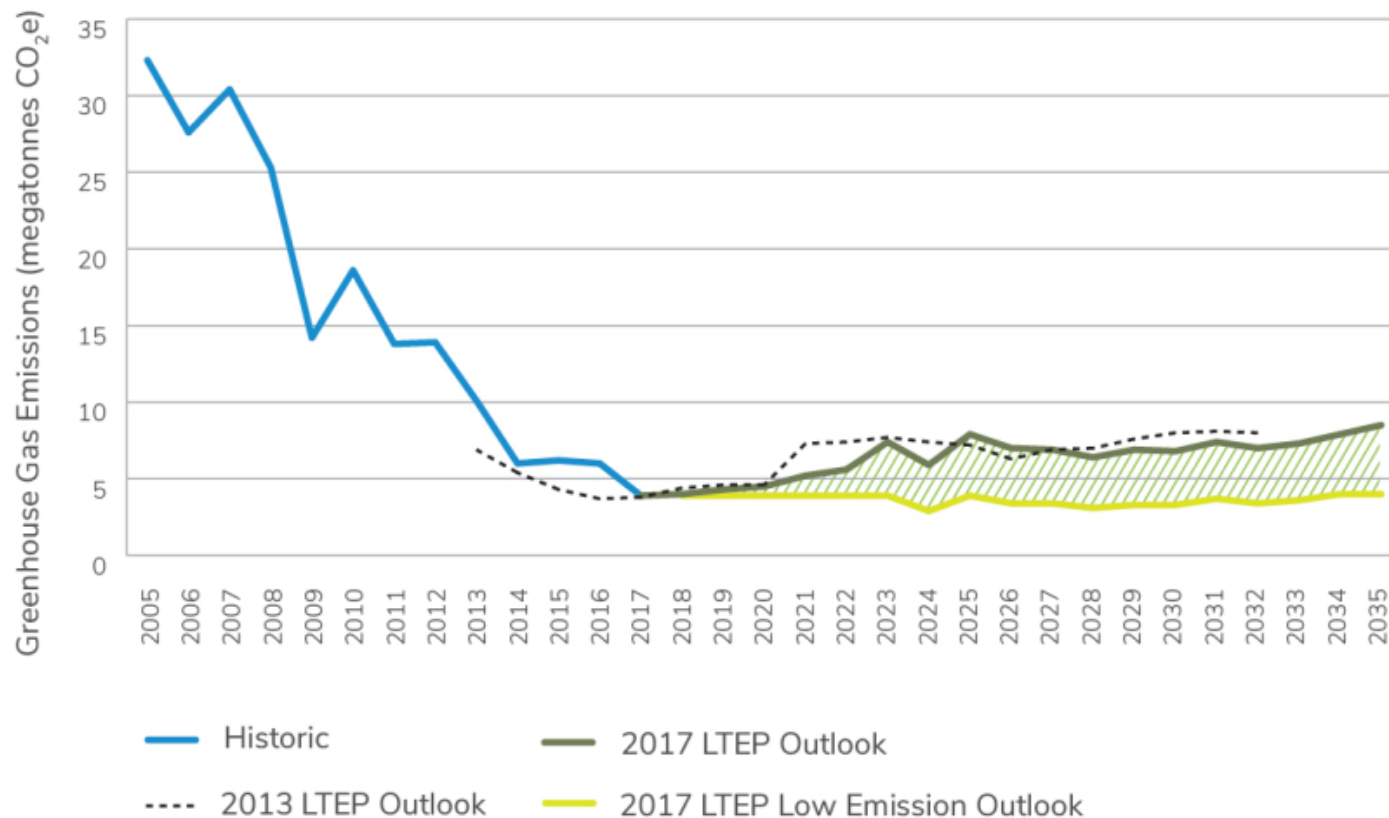
Supply and Demand Outlook (2017 - 2035)



Source: IESO

Electricity GHG Emissions Profile

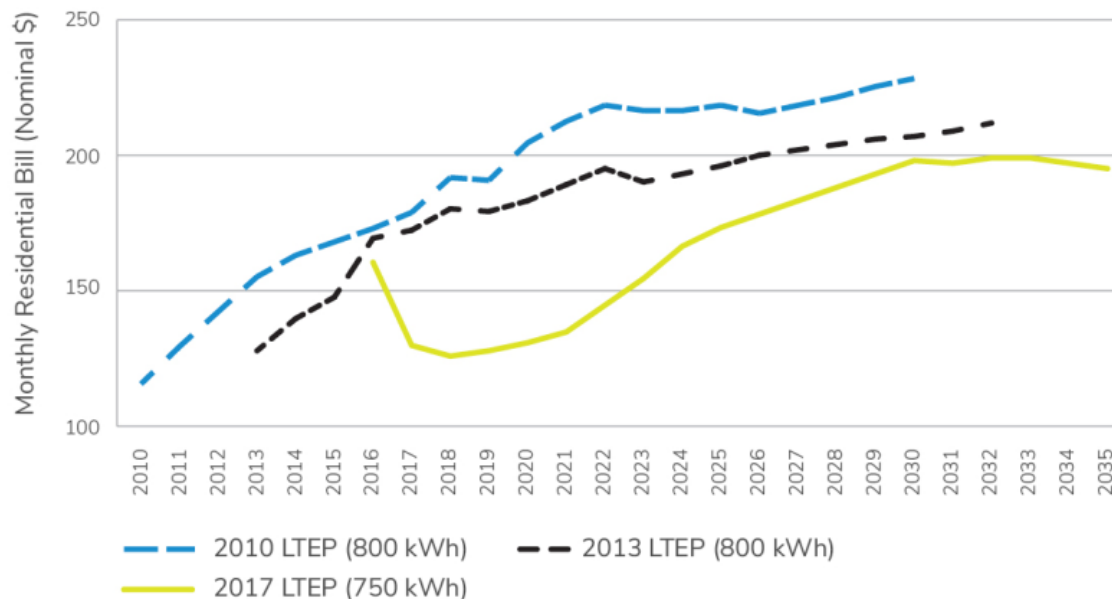
Electricity Sector GHG Emissions Outlook



Source: IESO, Environment Canada and Climate Change

Progress on Residential Electricity Prices

Electricity Price Outlook – Residential Consumers

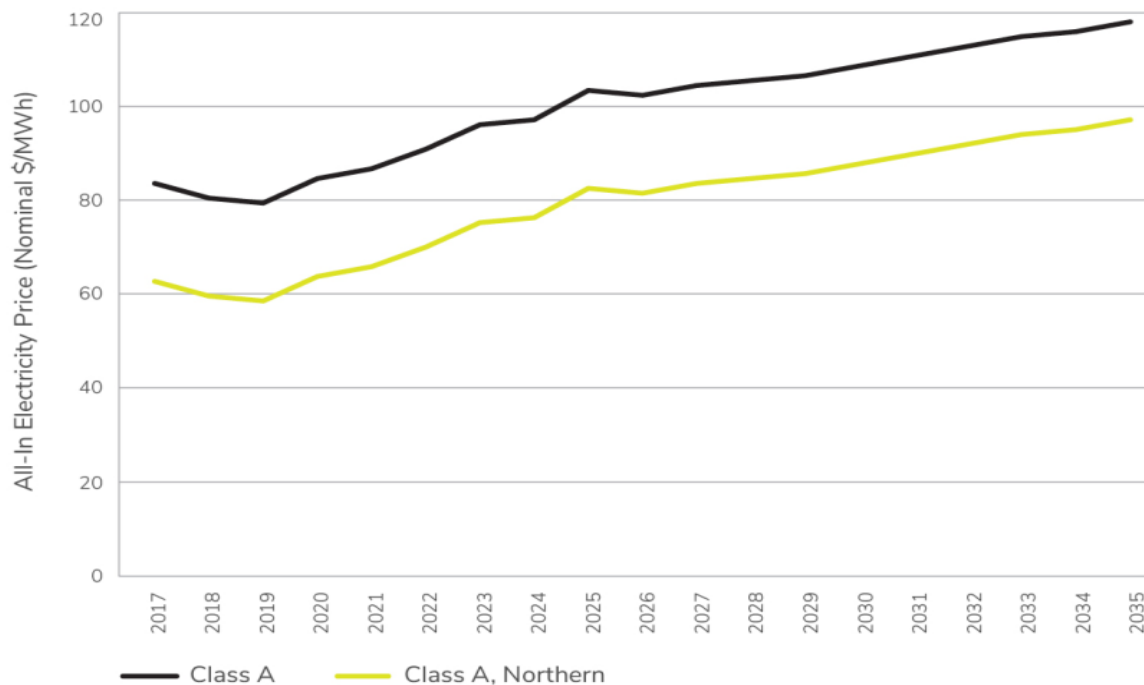


Source: IESO, Ministry of Energy

Note: Forecasts used in *Delivering Fairness and Choice* reflect prevailing patterns of consumption. Between late-2009 and mid-2016, the OEB defined the typical residential customer as a household that consumed 800 kWh of electricity per month. As of May 2016, the OEB changed their typical residential consumption to 750 kWh per month, due to declining household consumption.

Industrial Prices In-Line with Inflation

Electricity Price Outlook – Large Industrial Consumers

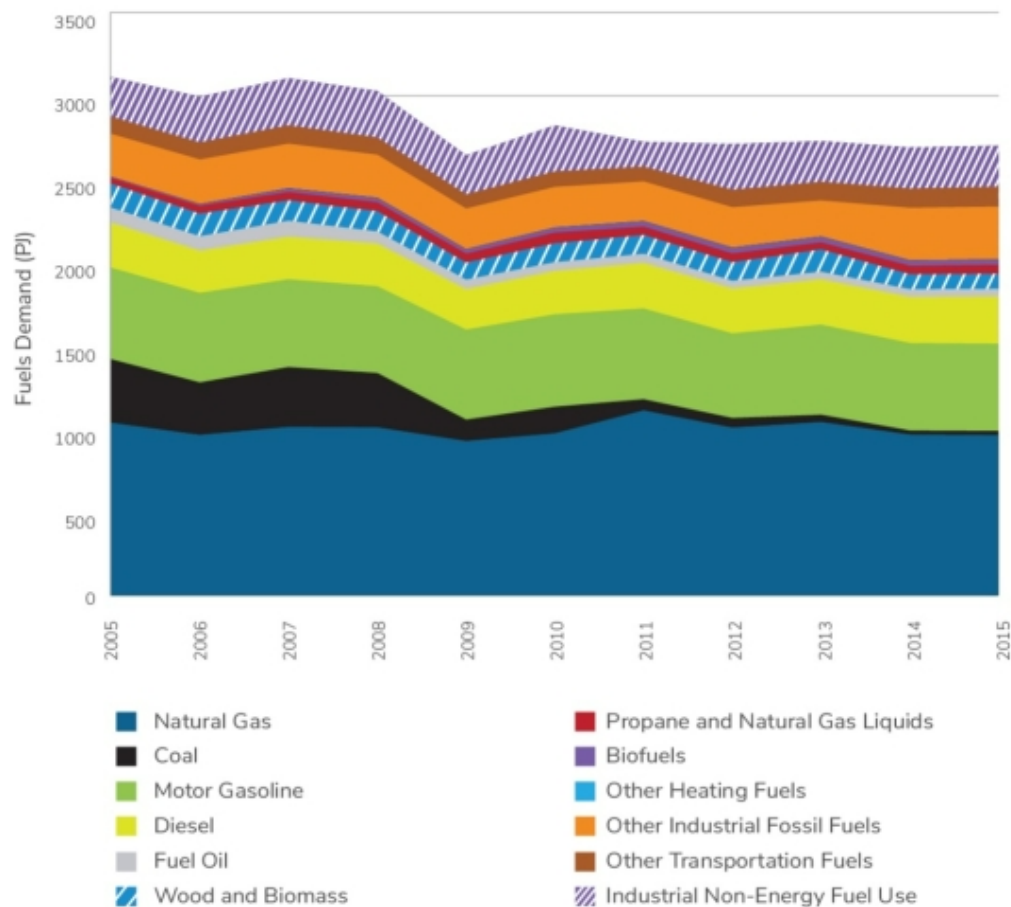


Source: IESO, Ministry of Energy

Note: Commodity price based on forecast Hourly Ontario Energy Price (HOEP) and GA averaged across Class A. Actual prices for Class A are dependent on each consumer's participation under ICI. Class A above reflects a transmission-connected facility. Participants in the NIER Program, which is funded through provincial revenues, receive a \$20/MWh reduction.

Fuels Use in Ontario

Historical Fuels Energy Use



Source: Fuels Technical Report, 2016



3. Key LTEP Themes and Initiatives

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Enabling and Encouraging Innovation

- Ontario will create the right environment for utilities to modernize their business and their systems to improve efficiency, reduce costs, and give customers more choice.
- Address codes and rules that prevent the cost-effective development of energy storage where it can provide value
- Facilitating investments in residential smart chargers that would avoid more costly system upgrades.
- The Smart Grid Fund will be renewed to support innovative companies and help address barriers to innovation
- The proposed International Energy Demonstration Fund would provide financial support for the demonstration of locally-developed technologies abroad.

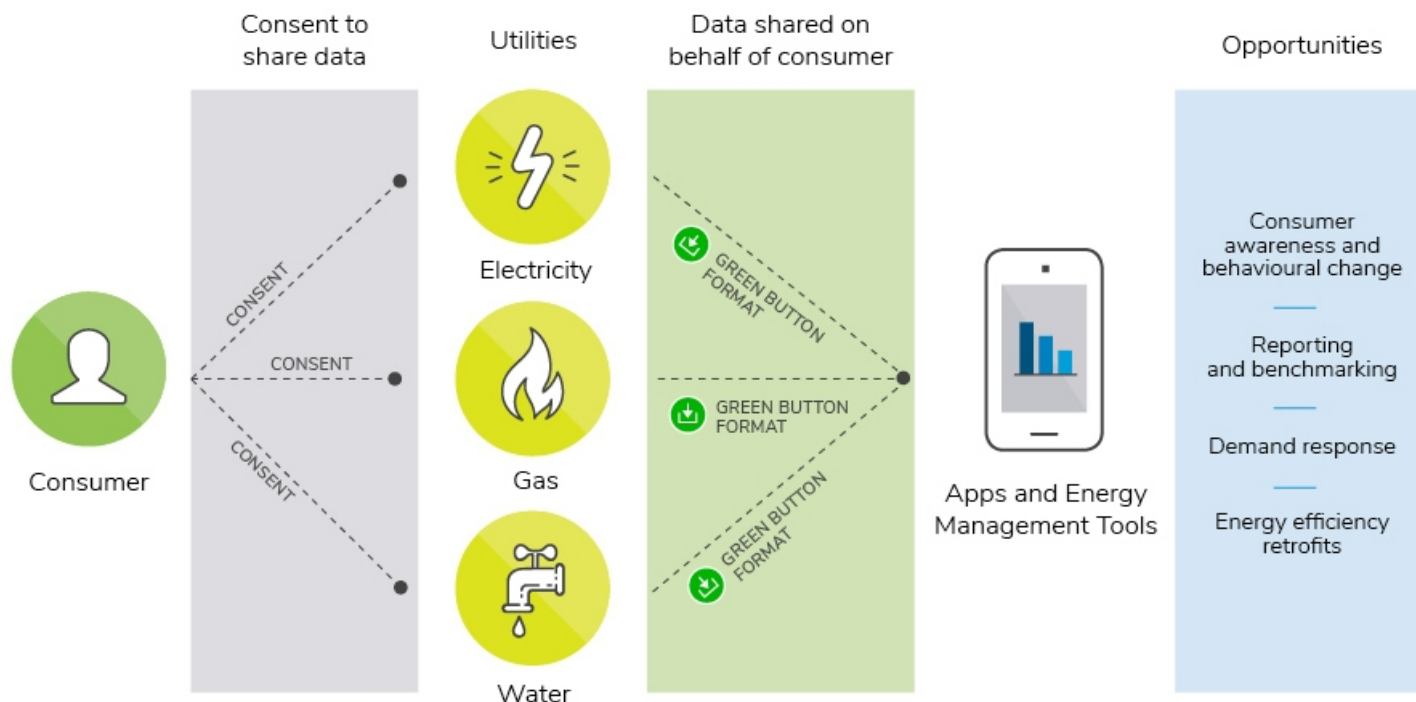
Indigenous Initiatives and Perspectives

- The Ministry of Energy encourages Indigenous participation in the electricity sector. To date, Indigenous peoples are leading or partnering on over 600 renewable energy projects across Ontario accounting for over 2,200 MW of clean energy capacity.
- Key Commitments for Indigenous communities from the 2017 LTEP
 - Addressing electricity affordability
 - Connecting off-grid First Nation communities
 - Improving availability of conservation programs.
 - Implementing community energy plans
 - Addressing barriers to financing for Indigenous led or partnered projects

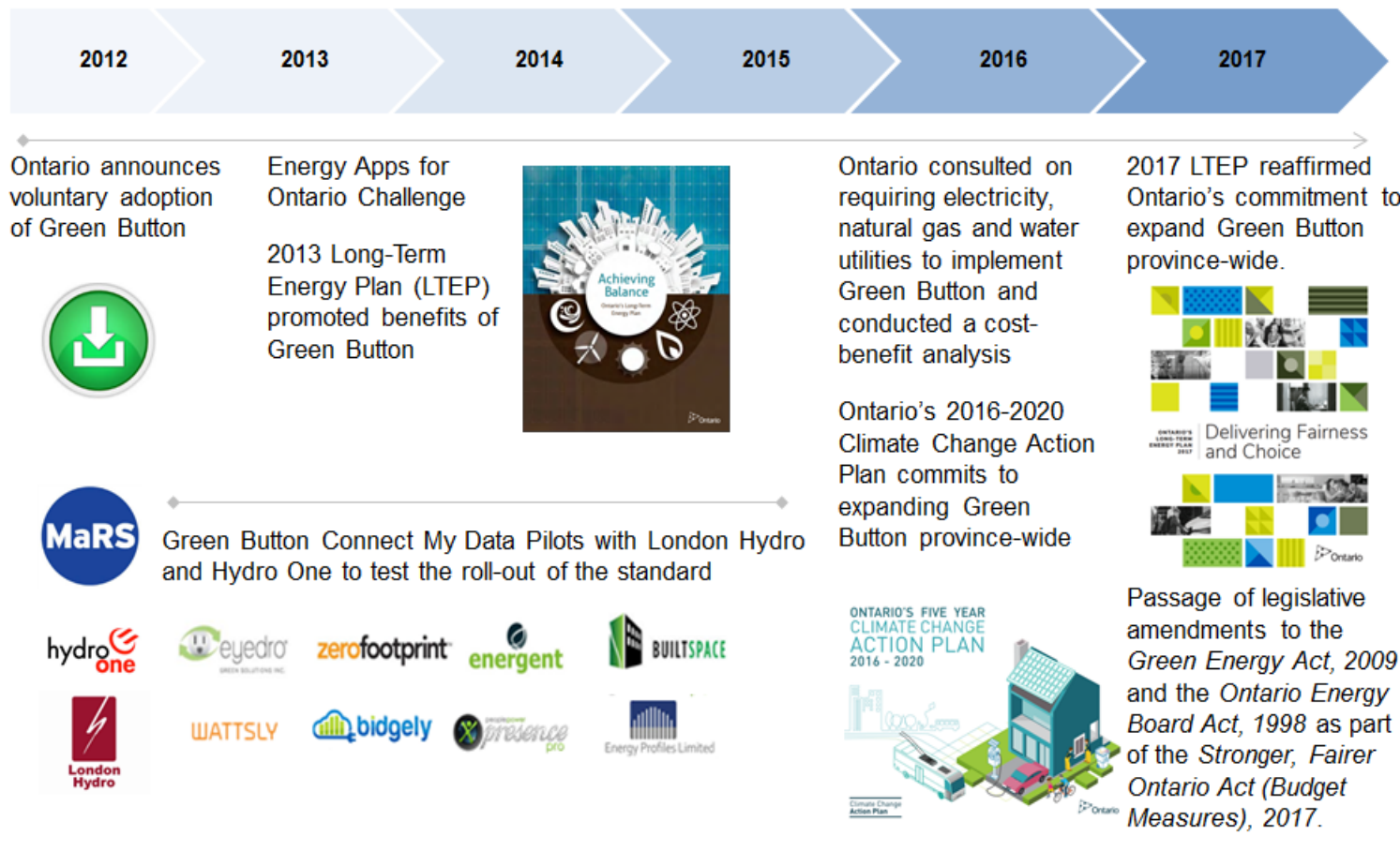
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Green Button Standard

- Green Button is a data standard that can empower households and businesses with access to their utility data (i.e. Download My Data, or DMD) and allow them to authorize the automatic, secure transfer of their own data from their utility to apps of their choice (i.e. Connect My Data, or CMD).



Green Button Standard (cont'd)



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Green Button Standard (cont'd)

Utility Implementation

- Province-wide, cost-effective implementation of Green Button by electricity and natural gas utilities
- Utilities' solutions certified for DMD and CMD
- Voluntary implementation by an increasing number of water utilities

Standard and Certification

- Ontario requirements evolve with standard and certification development, aligned with Green Button implementations across North America
- Standard and certification progress through an open, predictable process

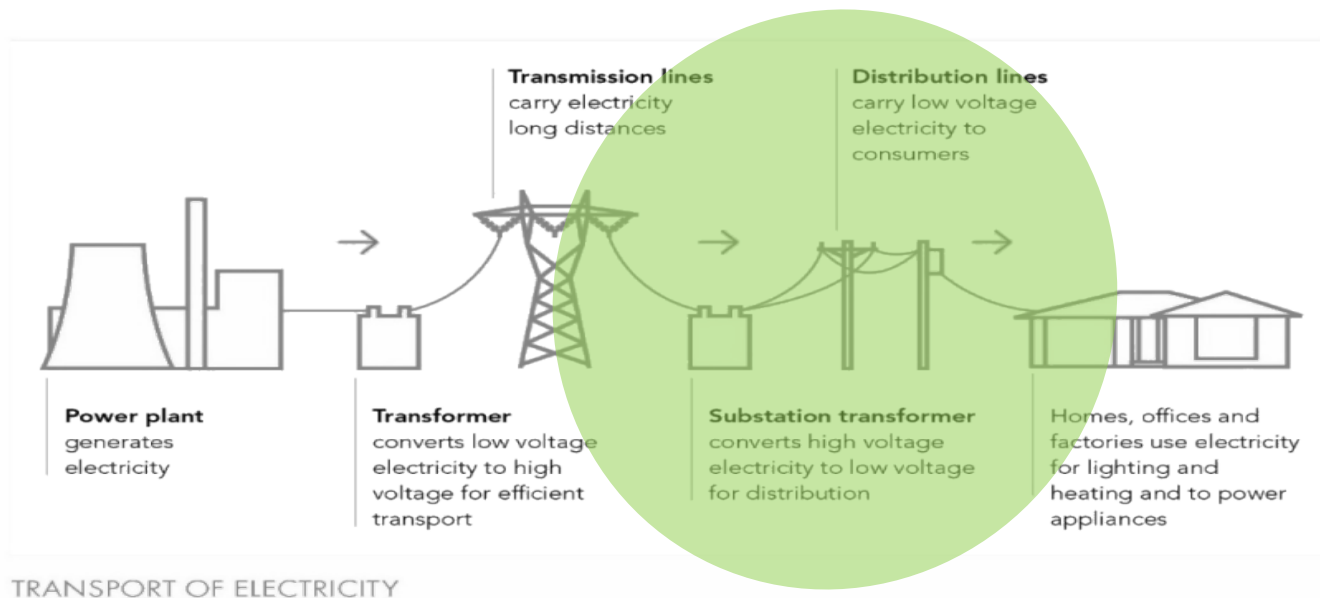
Market Development for Applications

- App store and registration platform services for utilities and solution providers
- Robust market of energy management applications and solutions

Ontario is a global
leader in
empowering
consumers with
Green Button
energy data.

In Front of the Meter Conservation

- In Front of the Meter Conservation (IFMC) technologies are deployed on the distribution system and can reduce line losses and optimize voltage levels. They can cost-effectively save electricity, reduce peak demand and defer infrastructure upgrades.



- Several pilots across North America have demonstrated the benefits of deploying IFMC technologies, and the Smart Grid Fund and the Conservation Fund have supported pilots in Ontario. {#}

In Front of the Meter Conservation (cont'd)

- In early 2017, ENERGY procured a study to explore IFMC barriers, opportunities, costs and benefits in Ontario.*
- The study found that the largest barriers to IFMC deployment in Ontario are financial and regulatory.
- Further, the study found that IFMC can be cost-effectively deployed on approximately 30% of Ontario's distribution systems.
- The 2017 LTEP is helping to address barriers by allowing LDCs to count electricity savings from distribution rate funded IFMC projects towards their Conservation and Demand Management (CDM) targets under the 2015-2020 Conservation First Framework.
- Additionally, the LTEP outlines that the OEB will identify steps for pursuing energy efficiency measures on the distribution system.

*The IFMC report conducted by Navigant can be found here:

<https://www.ontarioenergyreport.ca/data-catalogue.php#LTEP-supporting-reports>

Enhancing Ontario's Net Metering Framework

- The Ministry of Energy has been engaged in updating Ontario's net metering regulatory framework to introduce additional flexibility and choice for customers.
- Enhancements to the framework have proceeded in two phases. Initial updates came into effect on July 1, 2017, including:
 - Permitting the use of energy storage when combined with renewable generation;
 - Removing the 500 kW project size cap;
 - Extending the credit roll-over period to 12 months; and
 - Maintaining retail rate compensation for exported generation.

Enhancing Ontario's Net Metering Framework (cont'd)

- In November 2017, the government introduced legislative amendments to enable a second suite of updates to the framework and the Ministry posted regulatory proposals for public comment, including:
 - Amendments to Ontario's net metering regulation (O. Reg. 541/05), under the Ontario Energy Board Act, 1998 to enable third-party ownership and virtual net metering demonstration projects;
 - Amendments to the general regulation (O. Reg. 389/10) under the Energy Consumer Protection Act, 2010 to implement consumer protection measures for third-party ownership models; and
 - Creation of a new regulation under the Electricity Act, 1998 to ensure appropriate siting restrictions for grid-connected wind and solar PV projects.
- The Ministry is currently reviewing feedback received and expects to finalize the regulatory amendments in the coming months.

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Innovative Renewable Distributed Generation Program

- The 2017 LTEP committed the Ministry of Energy to work with the IESO on the development of a program to support the deployment of innovative renewable distributed generation (RDG) projects paired with Distributed Energy Resources (DER) and other smart grid technologies, as well as virtual net metering demonstration projects.
- Objectives of the program include:
 - gain experience with integration of DERs
 - refine methodologies for assessing value streams applicable to distributed generation and DERs
 - inform the evolution of grid systems and processes
- IESO Implementation Plan will specify timelines for program development, including stakeholder consultations, and launch.

4. OEB Modernization Panel

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OEB Modernization Panel

- Ontario is launching a review of the OEB to ensure it can best adapt to innovative services and new technologies.
- In order to build on the OEB's mandate and prepare for the future, the province has established an expert review panel, led by Richard Dicerni, a former public service executive with significant energy sector expertise. Additional members of the panel will be announced in the coming weeks.
- The panel will have a broad mandate including reviewing how the OEB can continue to protect consumers amidst a rapidly changing sector, support innovation and new technologies, and how the OEB should be structured and resourced to deliver on its changing role.
- The panel will seek feedback from the public starting in spring 2018, examine best practices from other jurisdictions and report back to government by the end of 2018.

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