Overview of Ontario's Electricity System

Queen's University

May 17, 2018

Presentation:

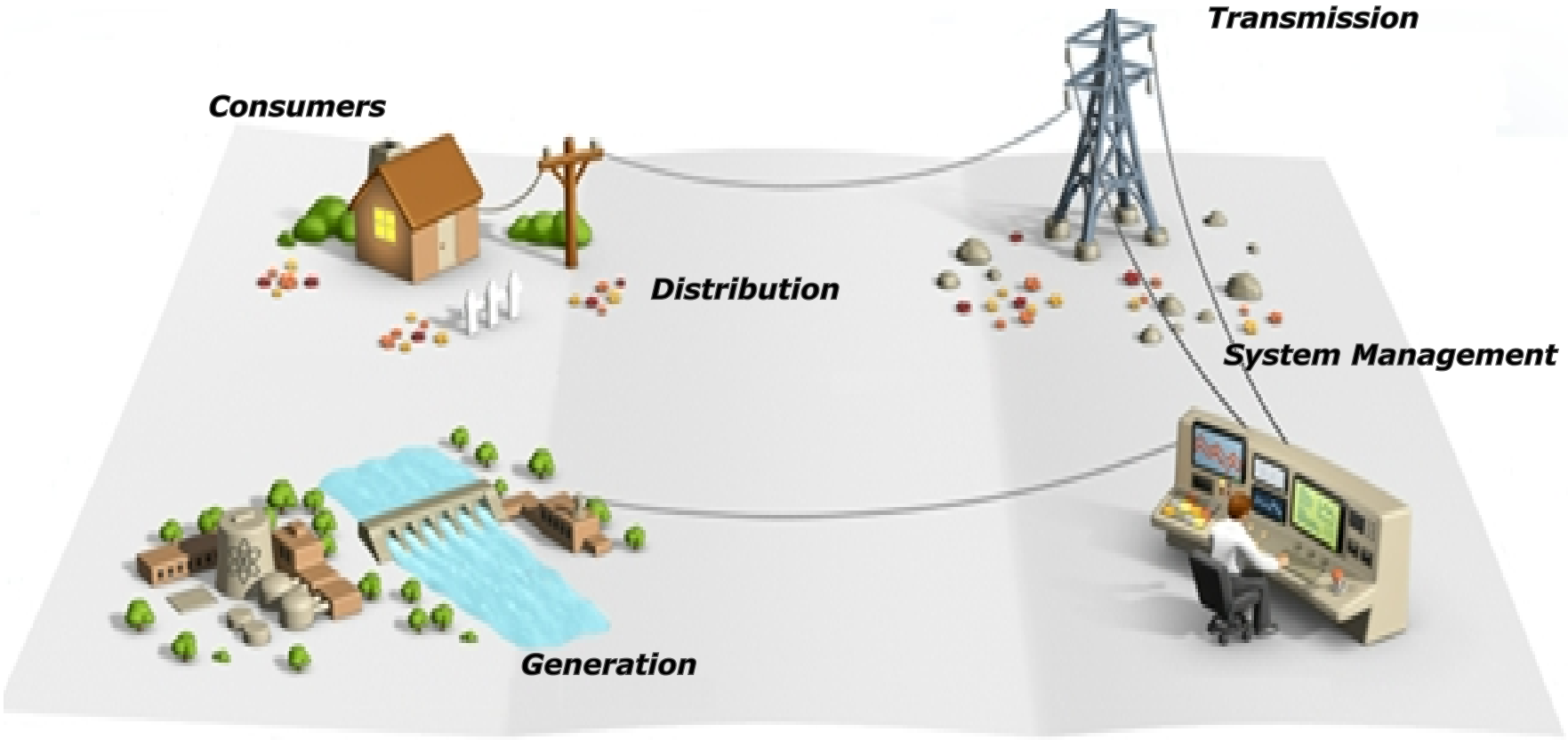
Part I – Key Features of Ontario's Electricity System

Part II – Electricity System Planning

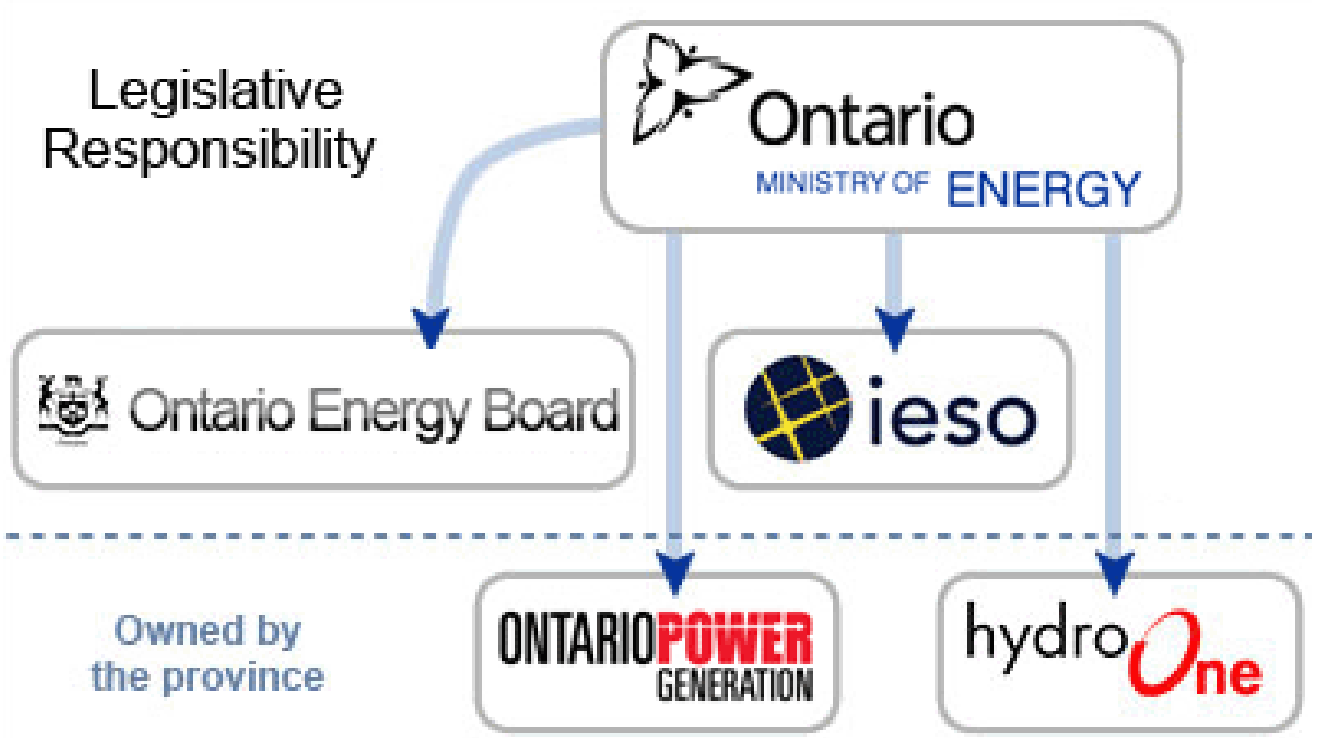
Part III – Key Trends and Initiatives

Part I – Key Features of Ontario's Electricity System

Ontario's Electricity System

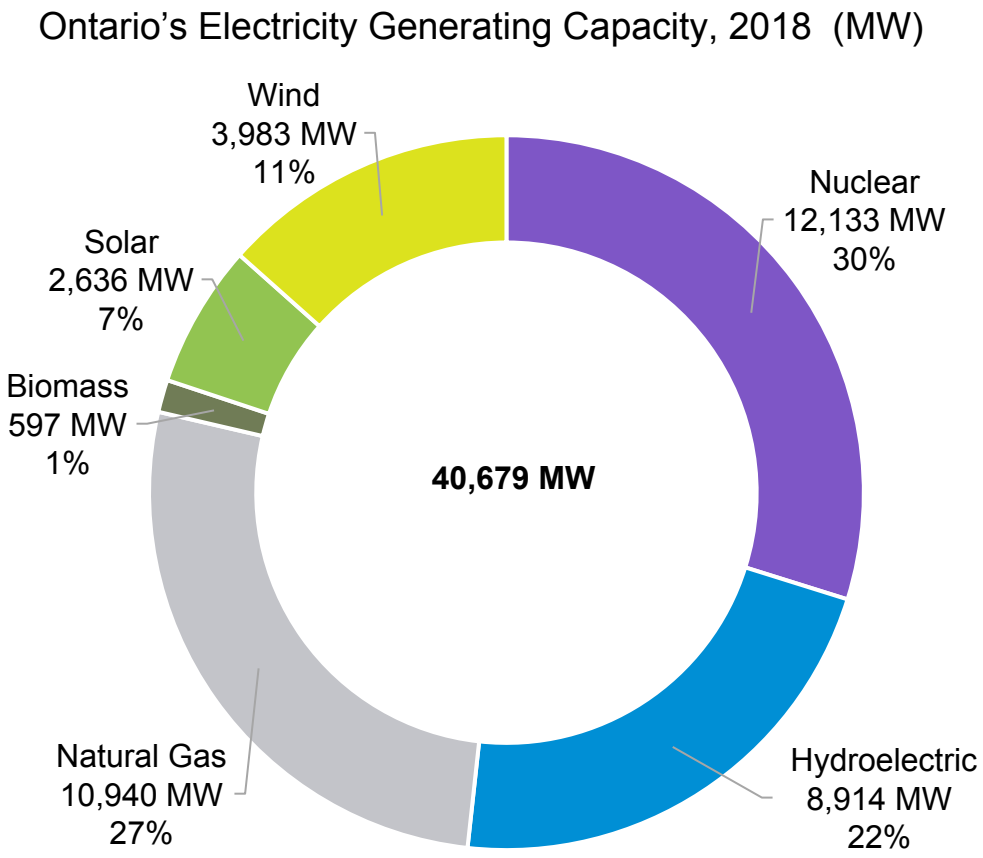


Key Players – Agencies and Corporations

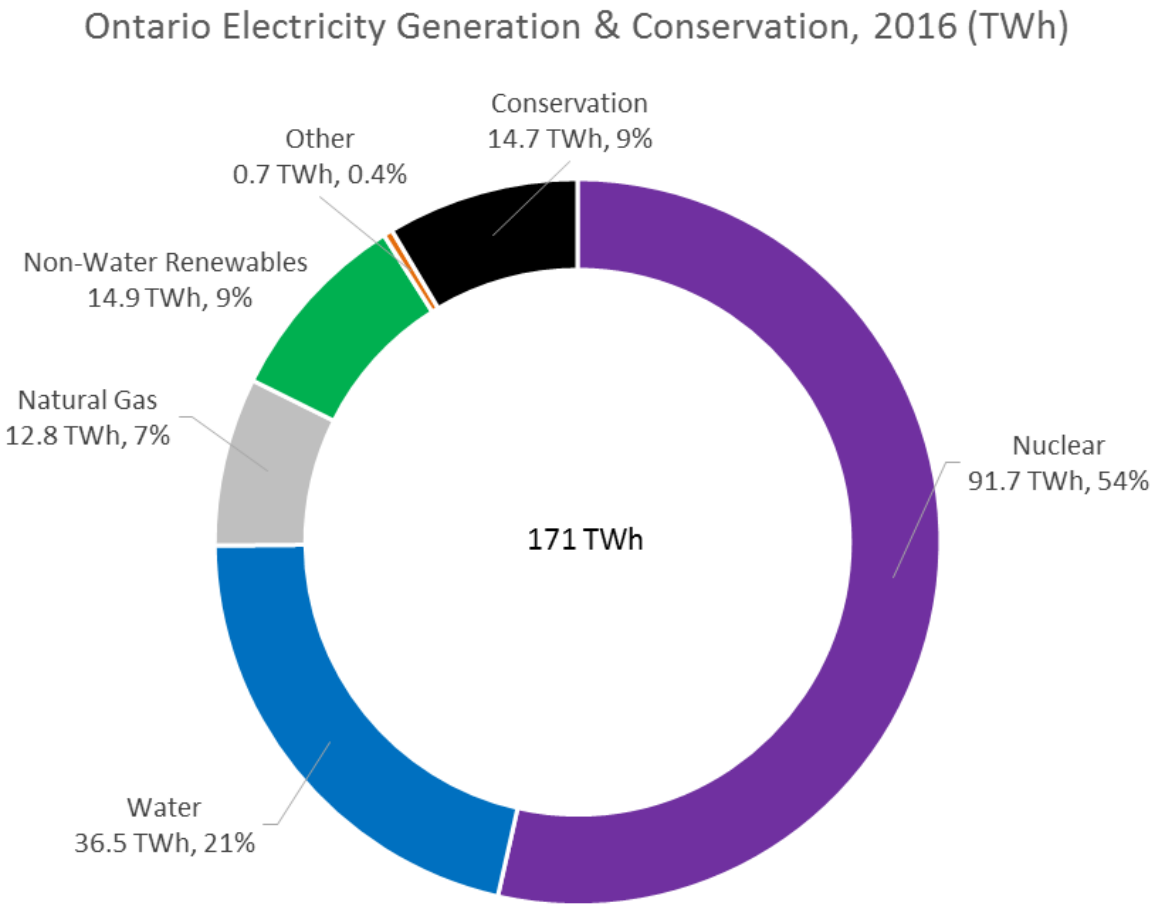


Through privatization, government's stake in Hydro One has been reduced to approximately 47.4%. (Jan 2018)

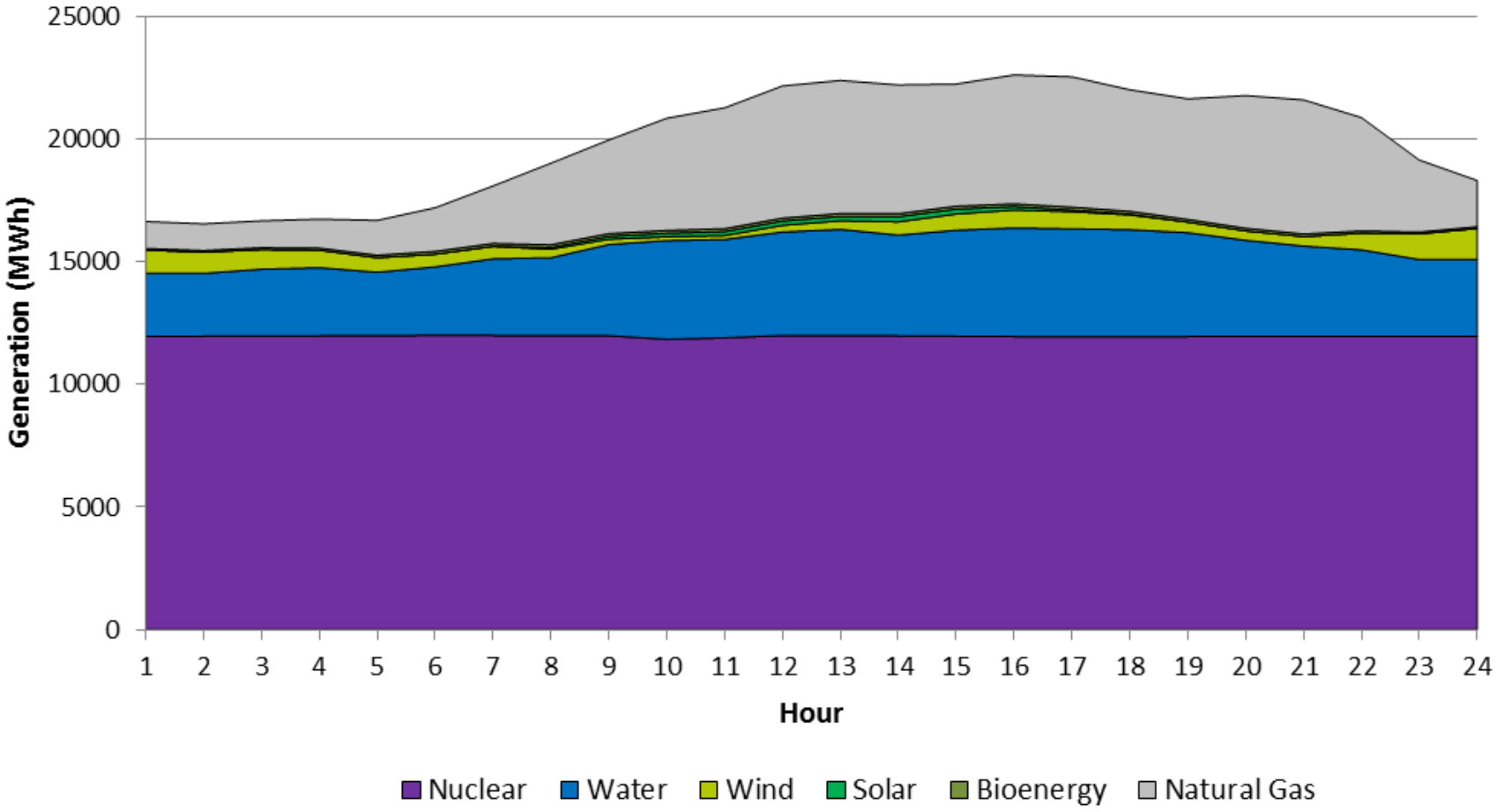
Generation Capacity by Type



Electricity Generation by Type



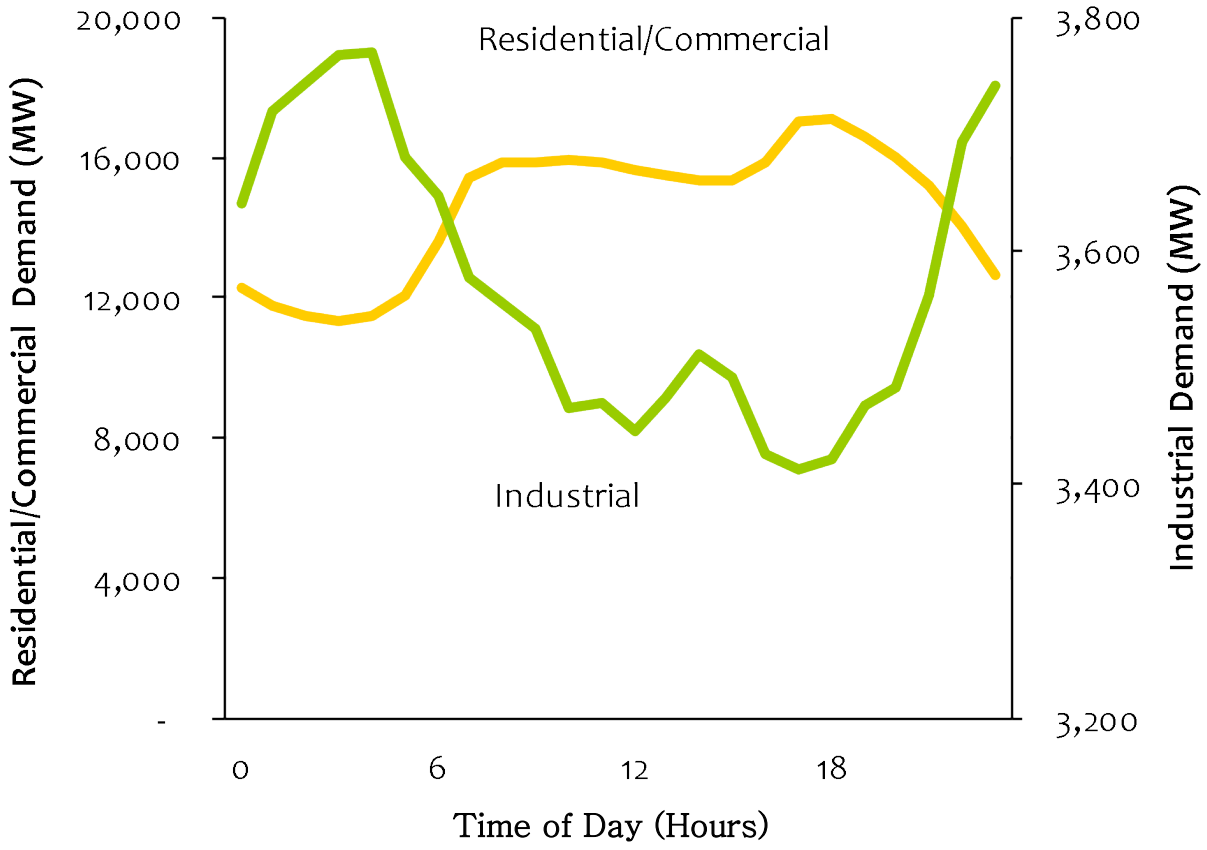
System Designed to Meet Peak Demand



Transmission-connected generation on September 7, 2016.

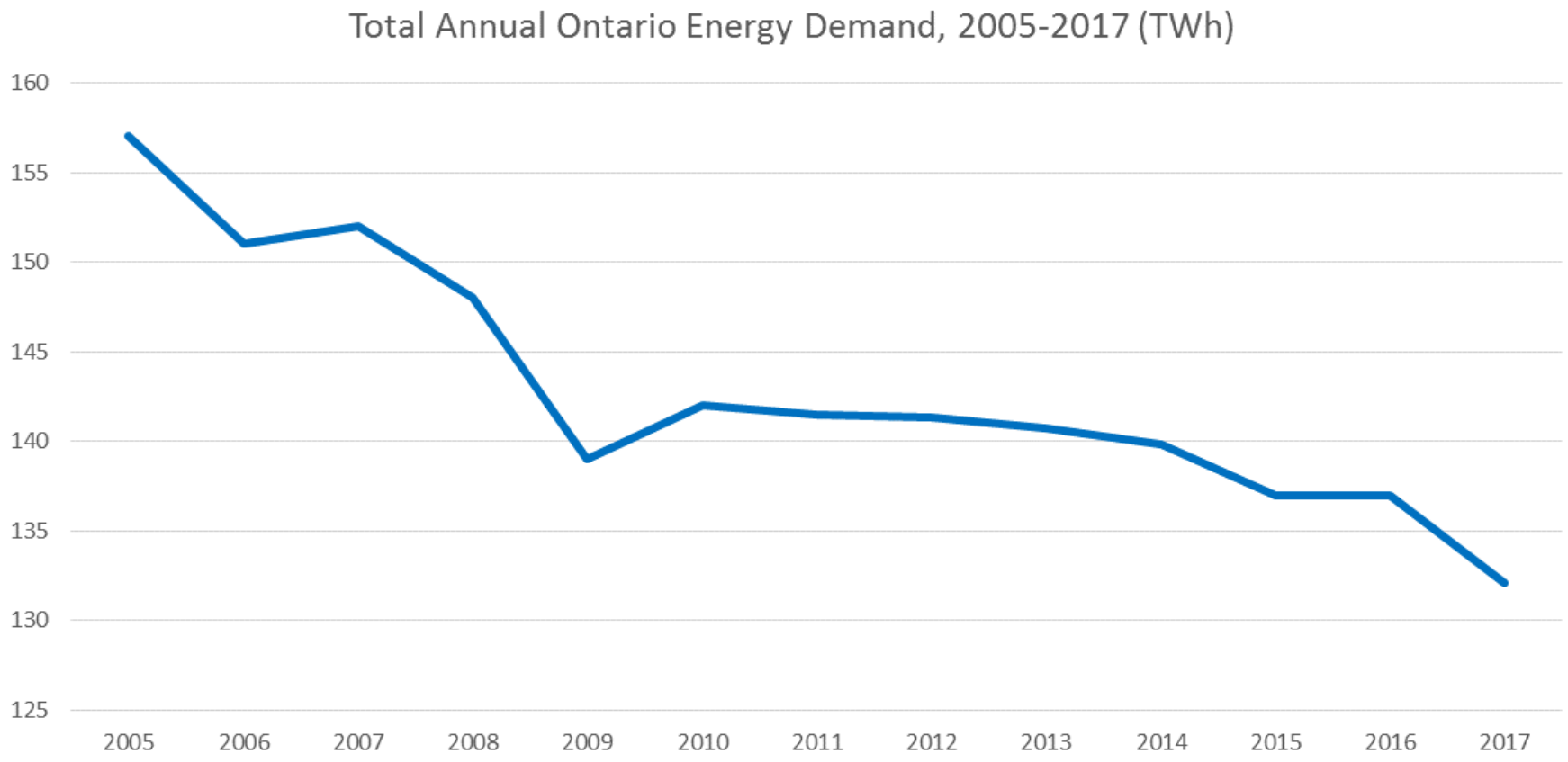
Source: Ministry of Energy

Example of Electricity Demand Through the Day



Source: Ministry of Energy

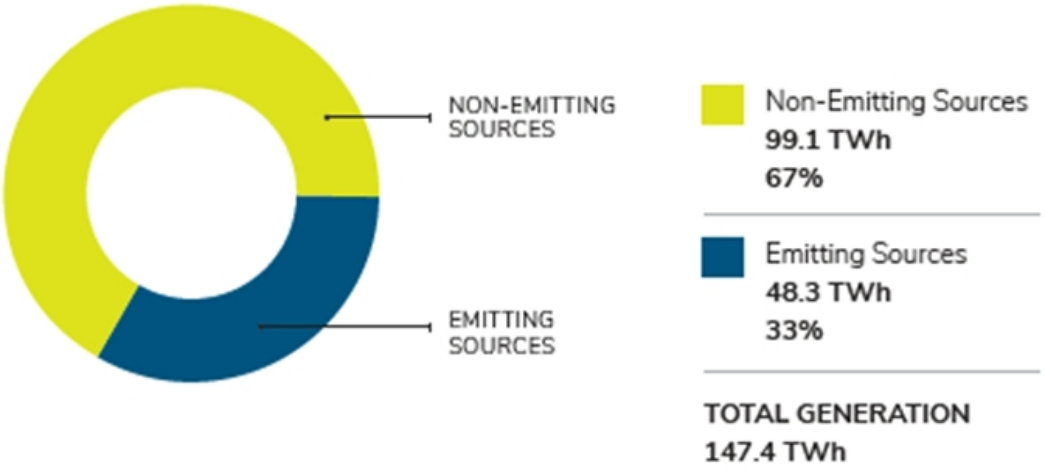
Total Demand Has Been Declining



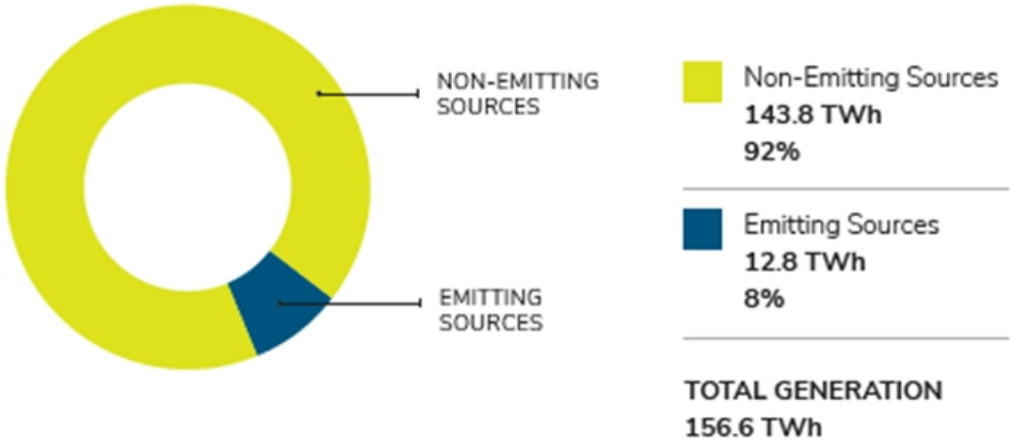
Source: IESO

Shift to Clean Energy

2003 Total Generation By Emitting and Non-Emitting Sources (TWh)

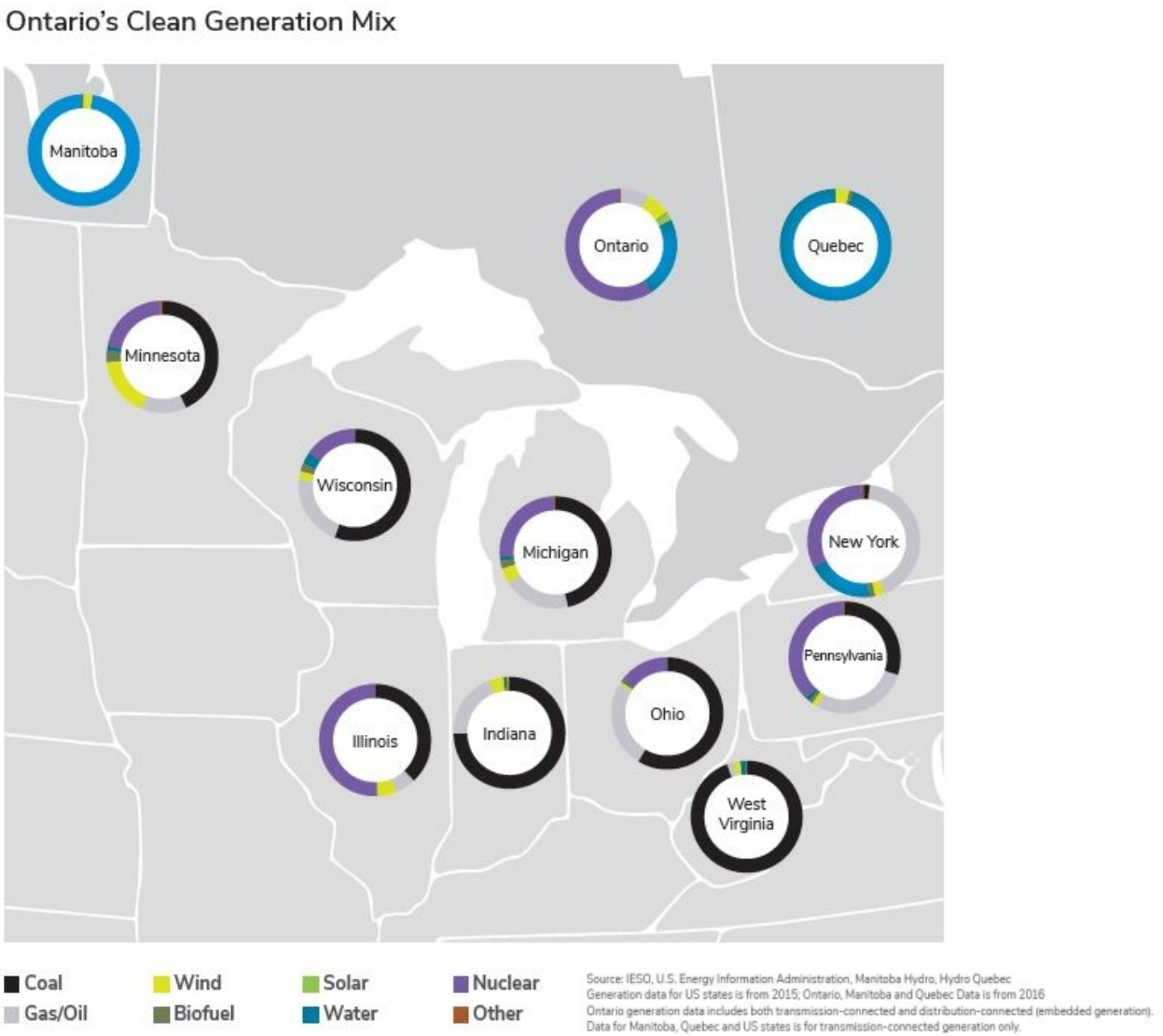


2016 Total Generation By Emitting and Non-Emitting Sources (TWh)

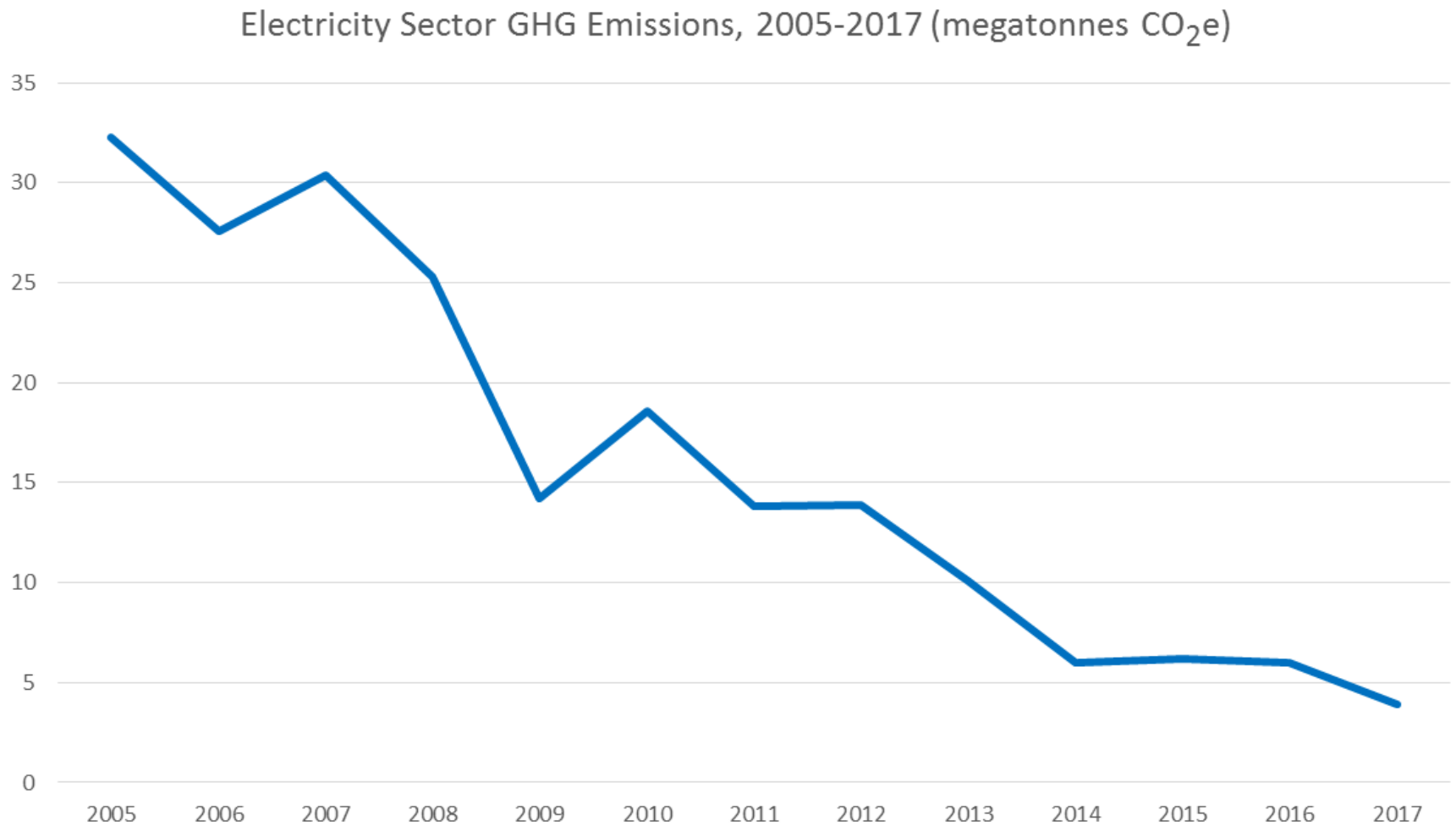


Source: IESO

Ontario Supply Mix Cleaner than Great Lake States

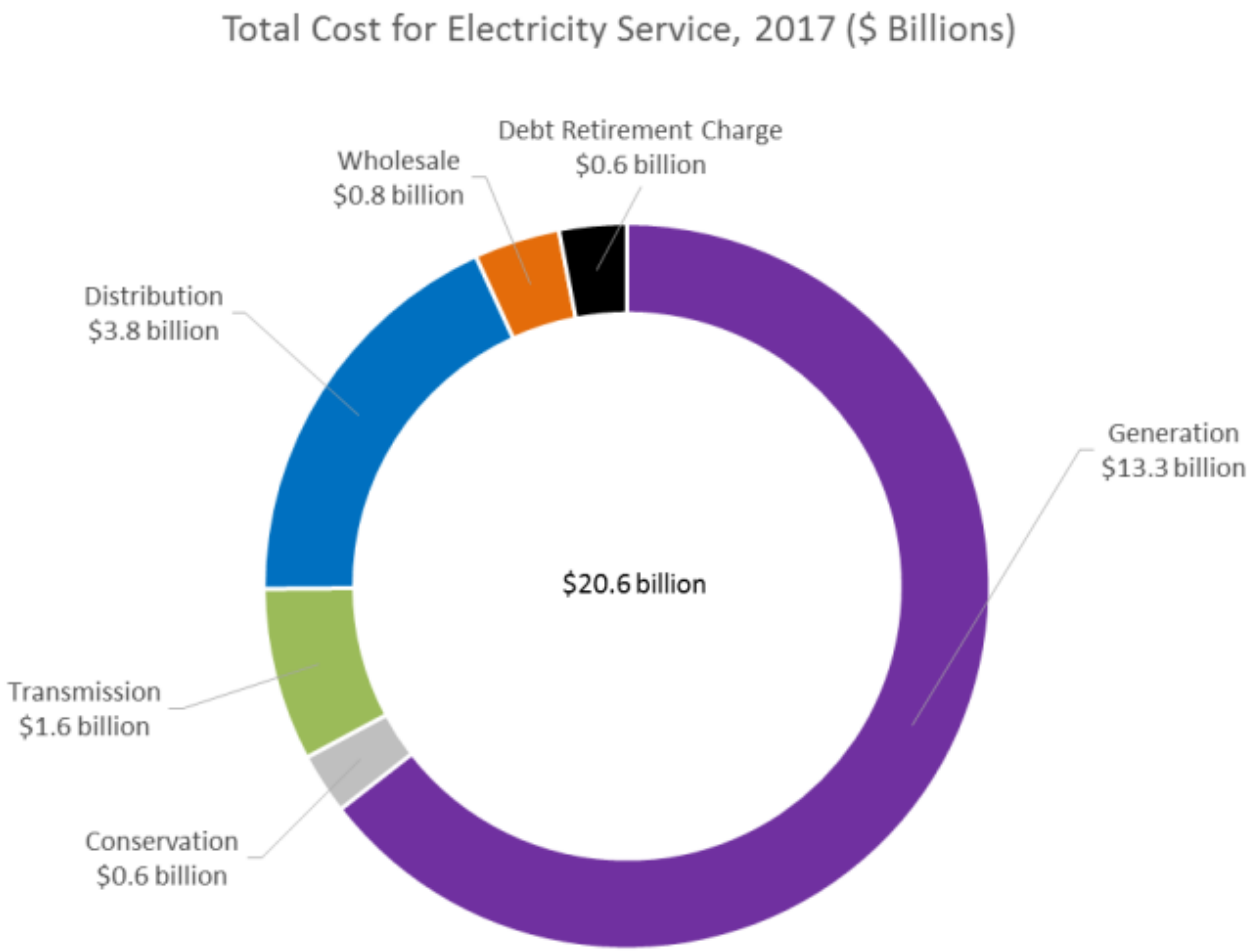


GHG Emissions Reduced Significantly



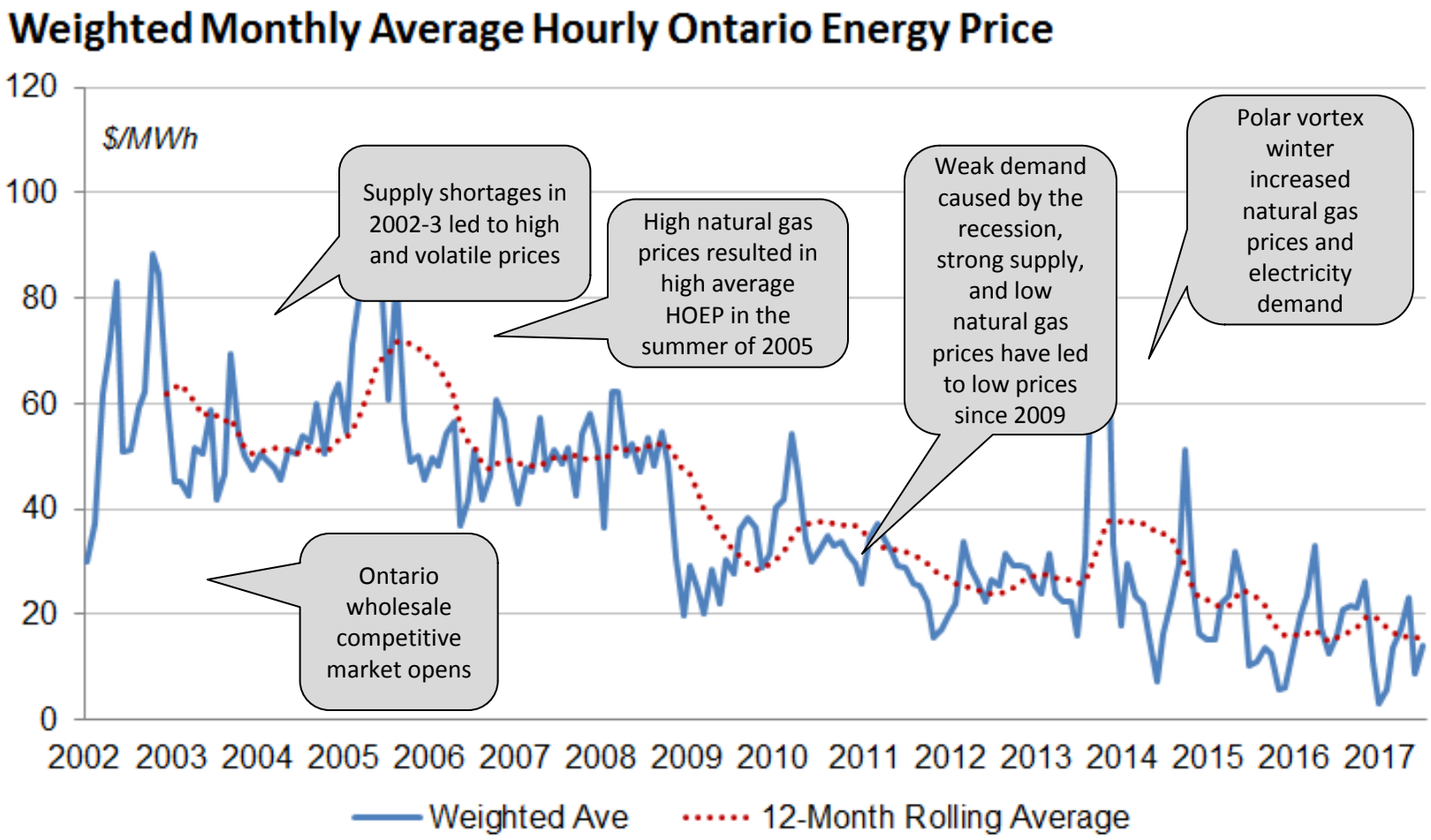
Source: Ministry of Energy

System Costs



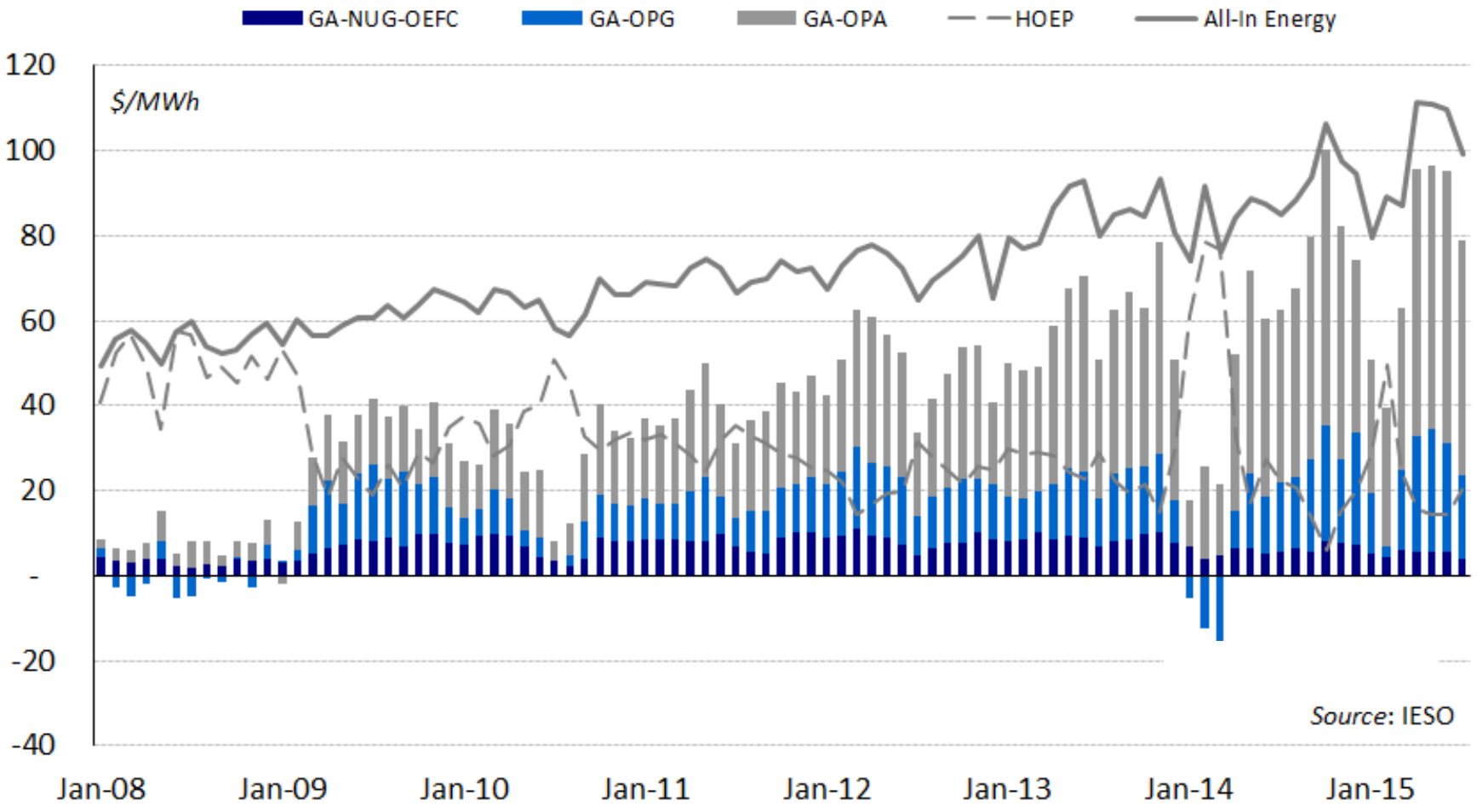
Source: IESO & Ministry of Energy, 2017 LTEP

Hourly Market Price Trending Downward



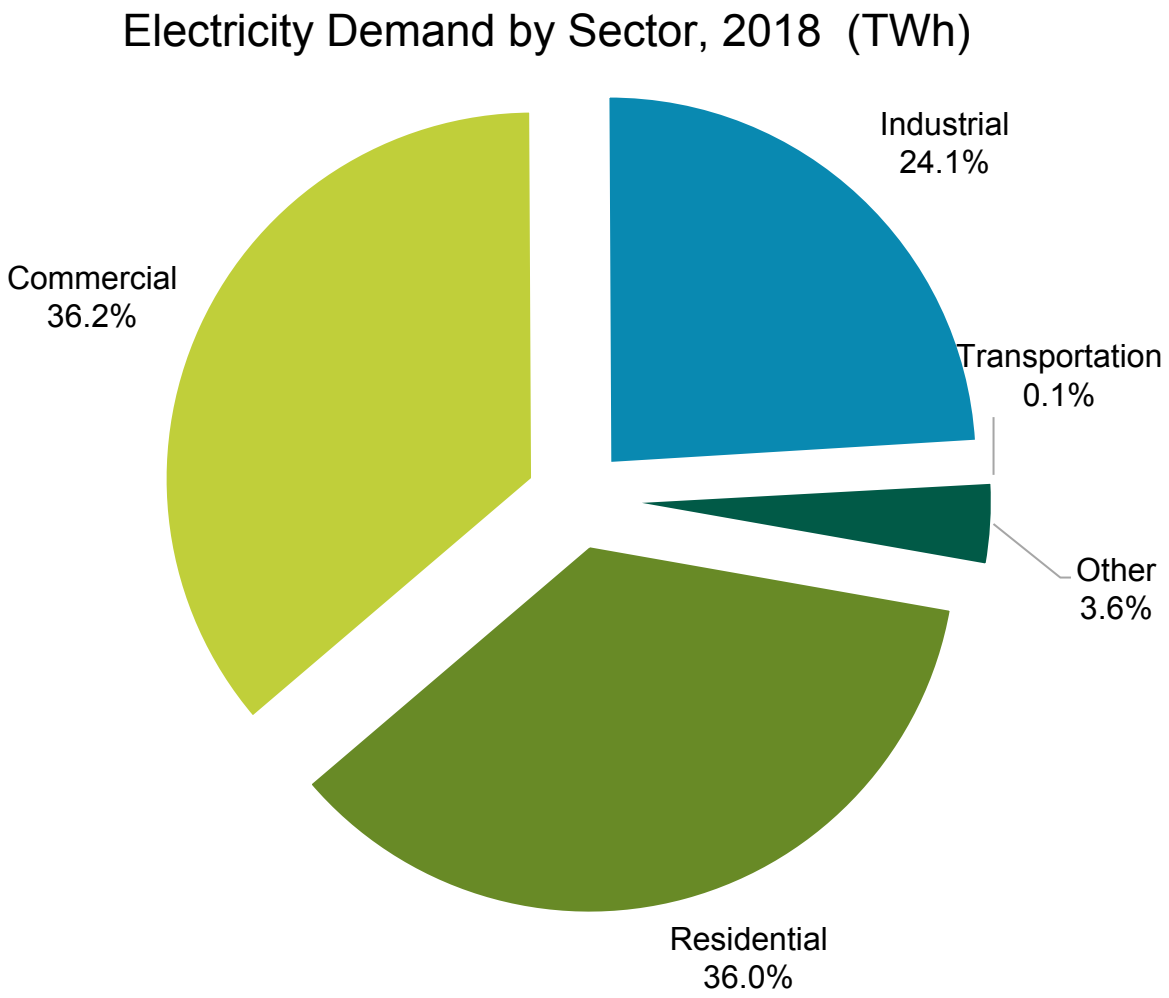
Source: Ministry of Energy

Global Adjustment Increasing



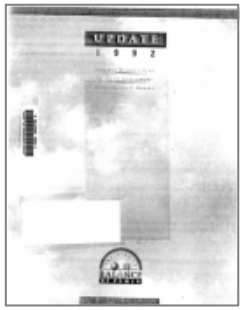
Source: IESO

Total System Demand by Consumer Type



Part II – Electricity System Planning

History of Electricity Planning in Ontario

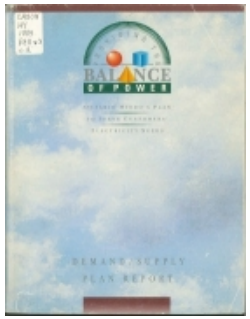


1992:
Ontario Hydro issued a revised Supply/Demand Plan Report - *Providing Balance of Power: Update 1992.*

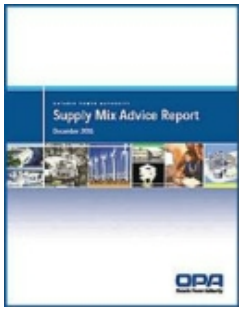
Aug 2007:
Ontario Power Authority files an application for approval of its first Integrated Power System Plan (IPSP) with Ontario Energy Board. The review was suspended in late 2008.

Dec 2013:
Ministry of Energy releases its 2013 Long- Term Energy Plan (2013 LTEP) – *Achieving Balance.*

1989 1992 2005 2007 2010 2013 2017



Dec 1989:
Ontario Hydro publishes its first 25 -year Demand/Supply Plan (DSP) Report - *Providing the Balance of Power.*

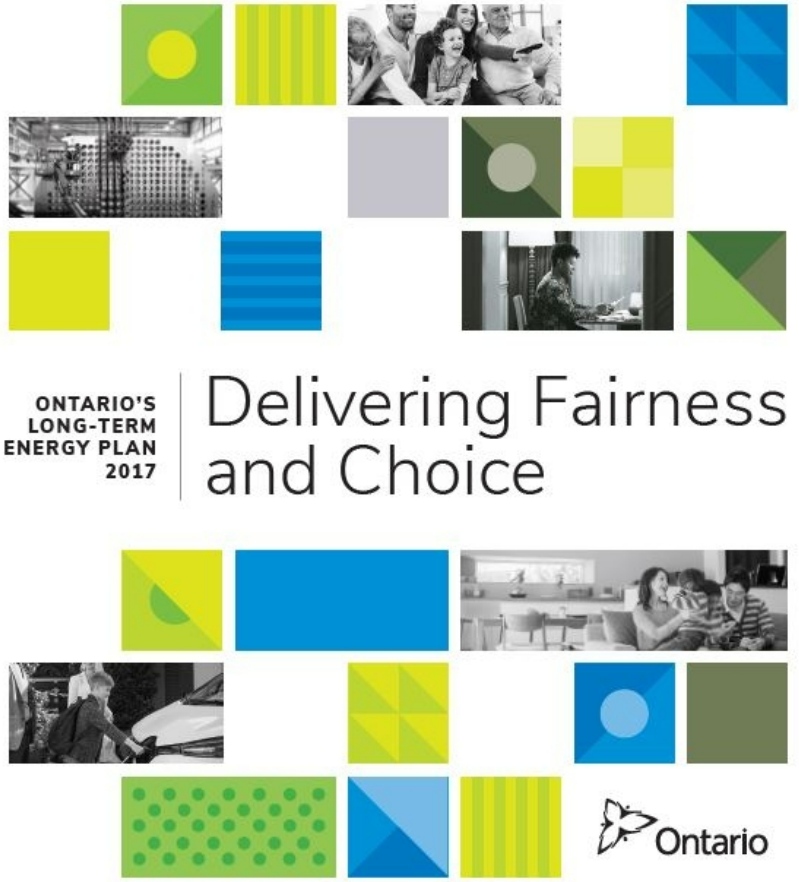


Dec 2005:
Ontario Power Authority issues a Supply Mix Advice Report in response to the Minister of Energy's request.

Nov 2010:
Ministry of Energy releases its 2010 Long- Term Energy Plan (2010 LTEP) – *Building Our Clean Energy Future*.

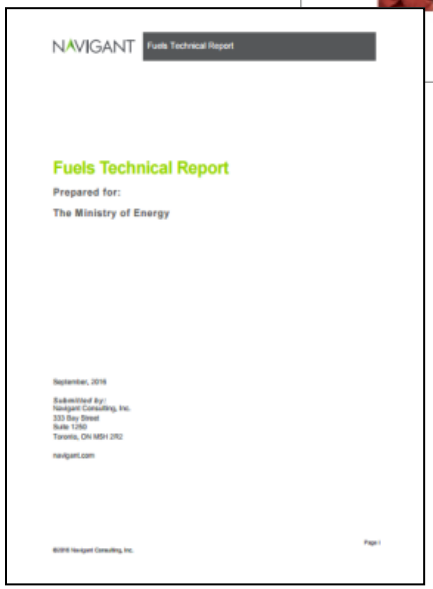
Oct 2017:
LTEP 2017 released.

2017 Long-Term Energy Plan

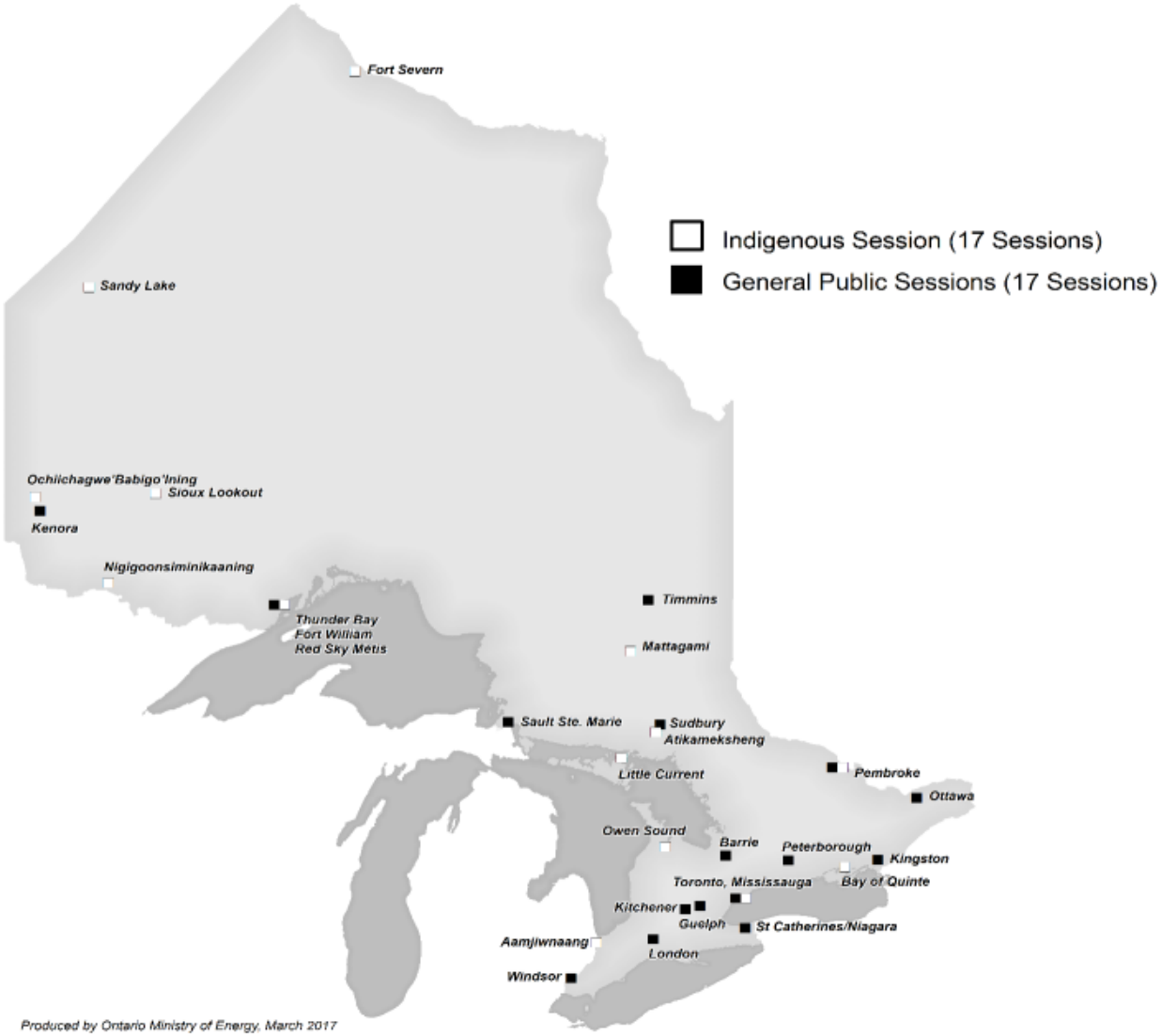


The Long-Term Energy Planning Process

- The LTEP 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 LTEP and Implementation Directives
    - Implementation Plans

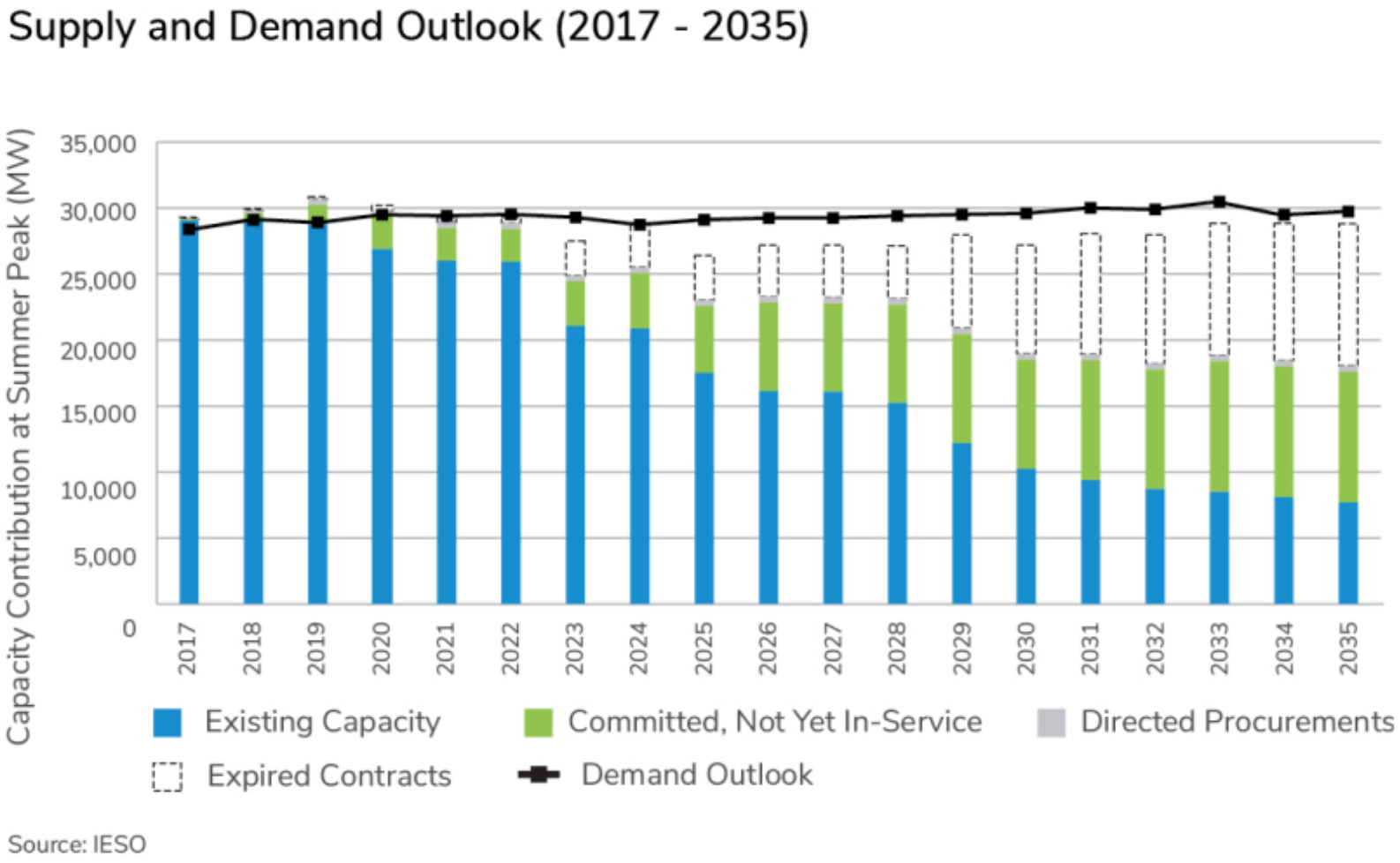


Engagement With Ontarians



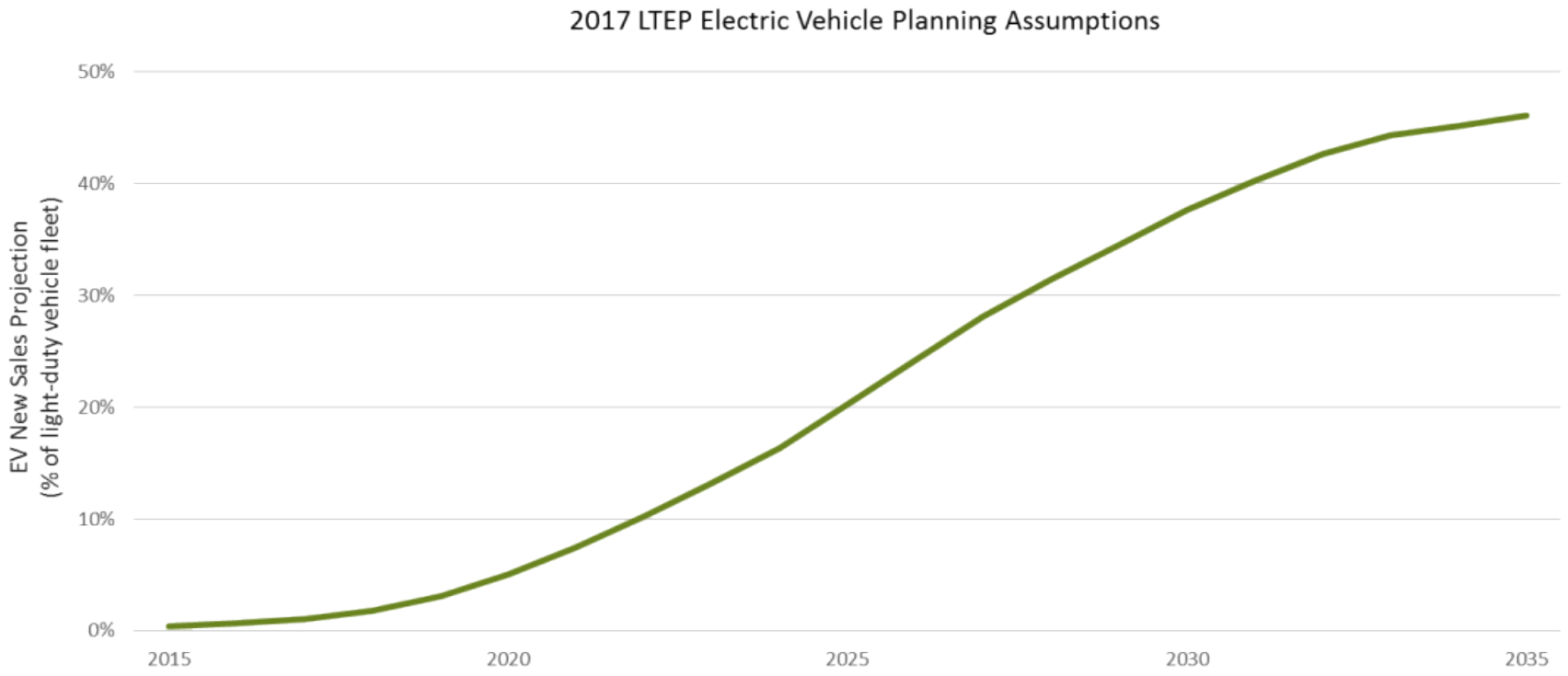
Part III – Key Trends and Initiatives

Flat Demand With Sufficient Supply Over Near Term

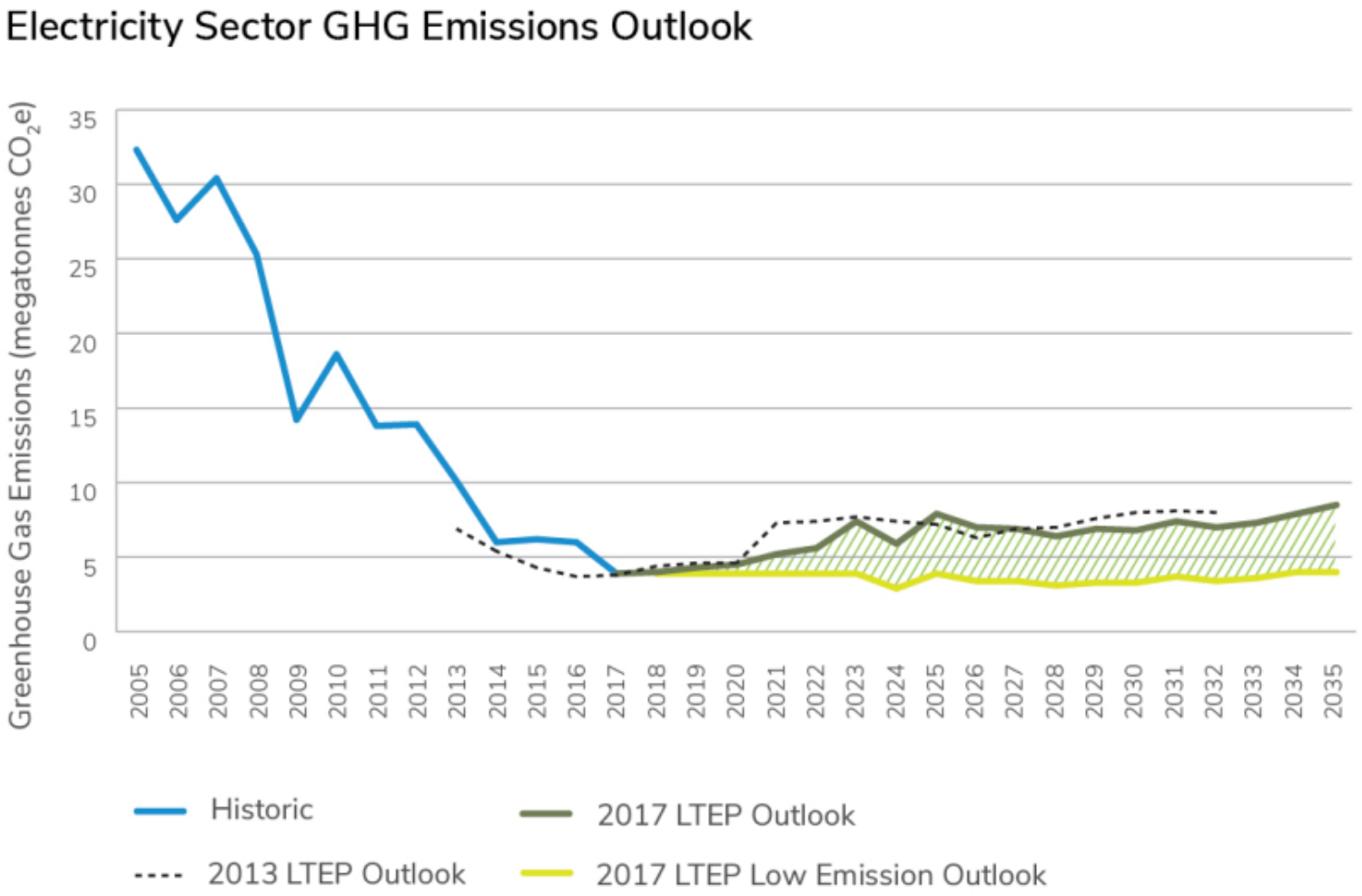


Source: IESO

Planning Assumptions on Electric Vehicles

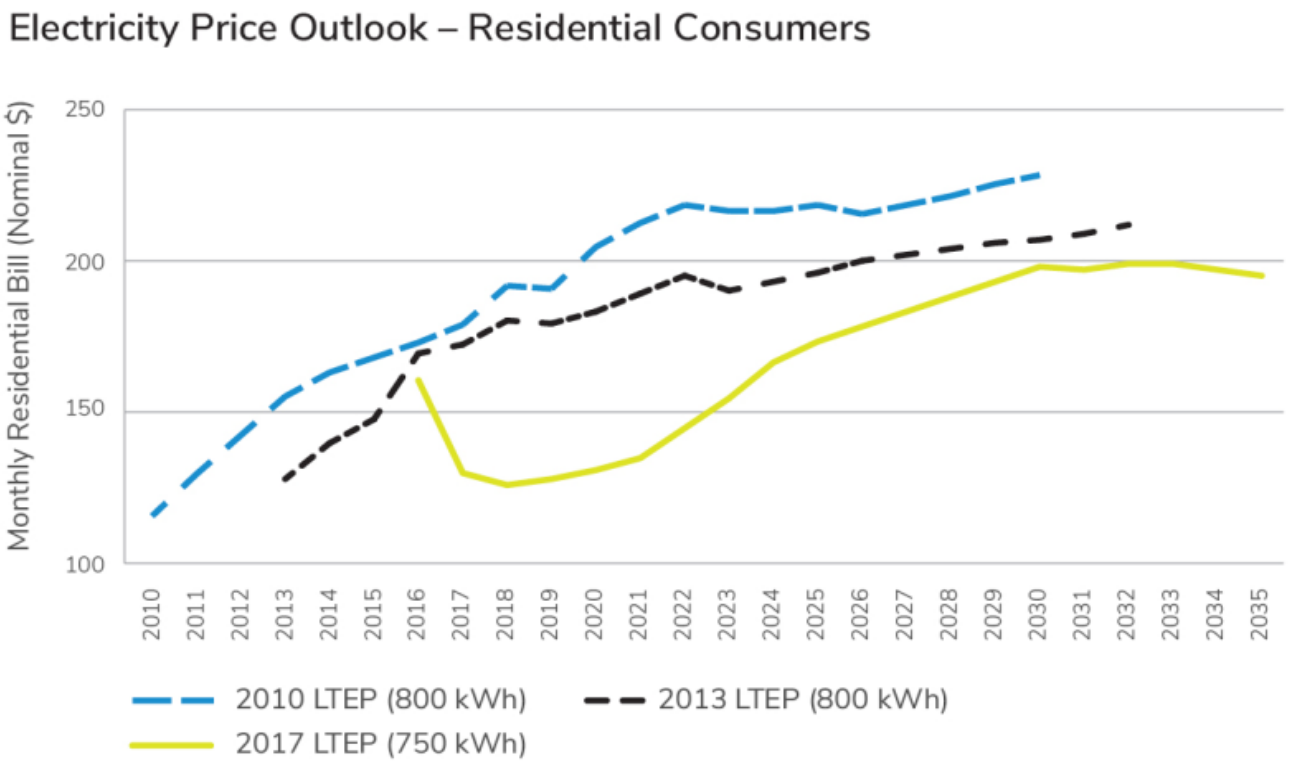


Relatively Flat GHG Emissions Profile



Source: IESO, Environment Canada and Climate Change

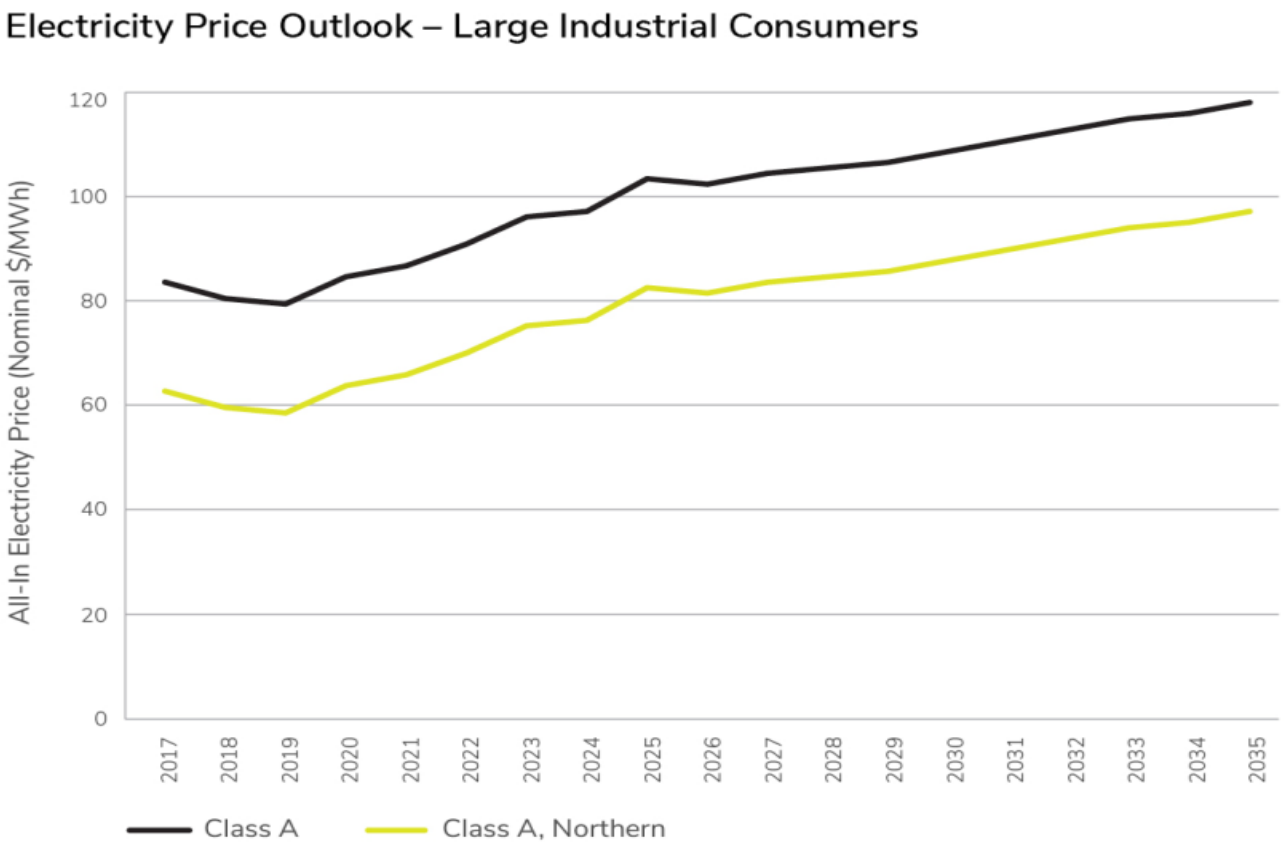
Progress on Residential Electricity Prices



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

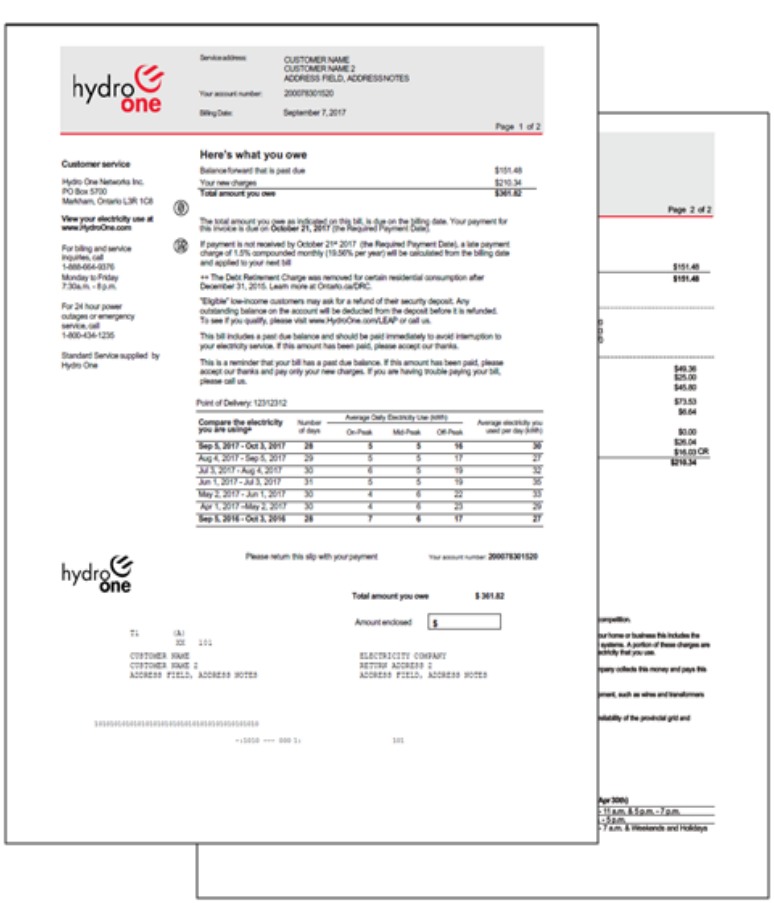


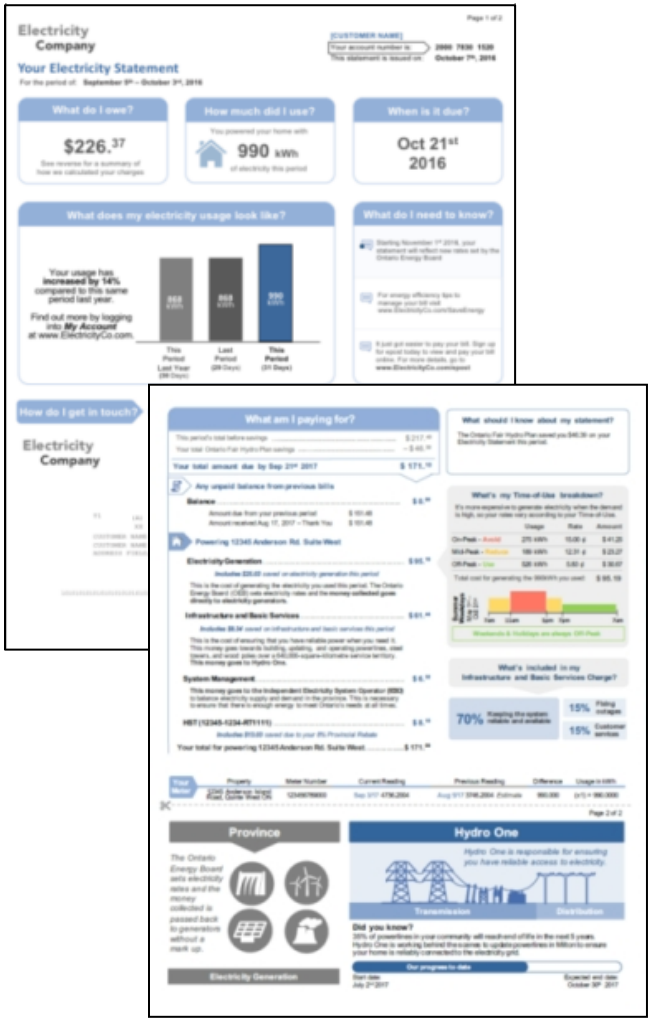
Source: IESO, Ministry of Energy

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.

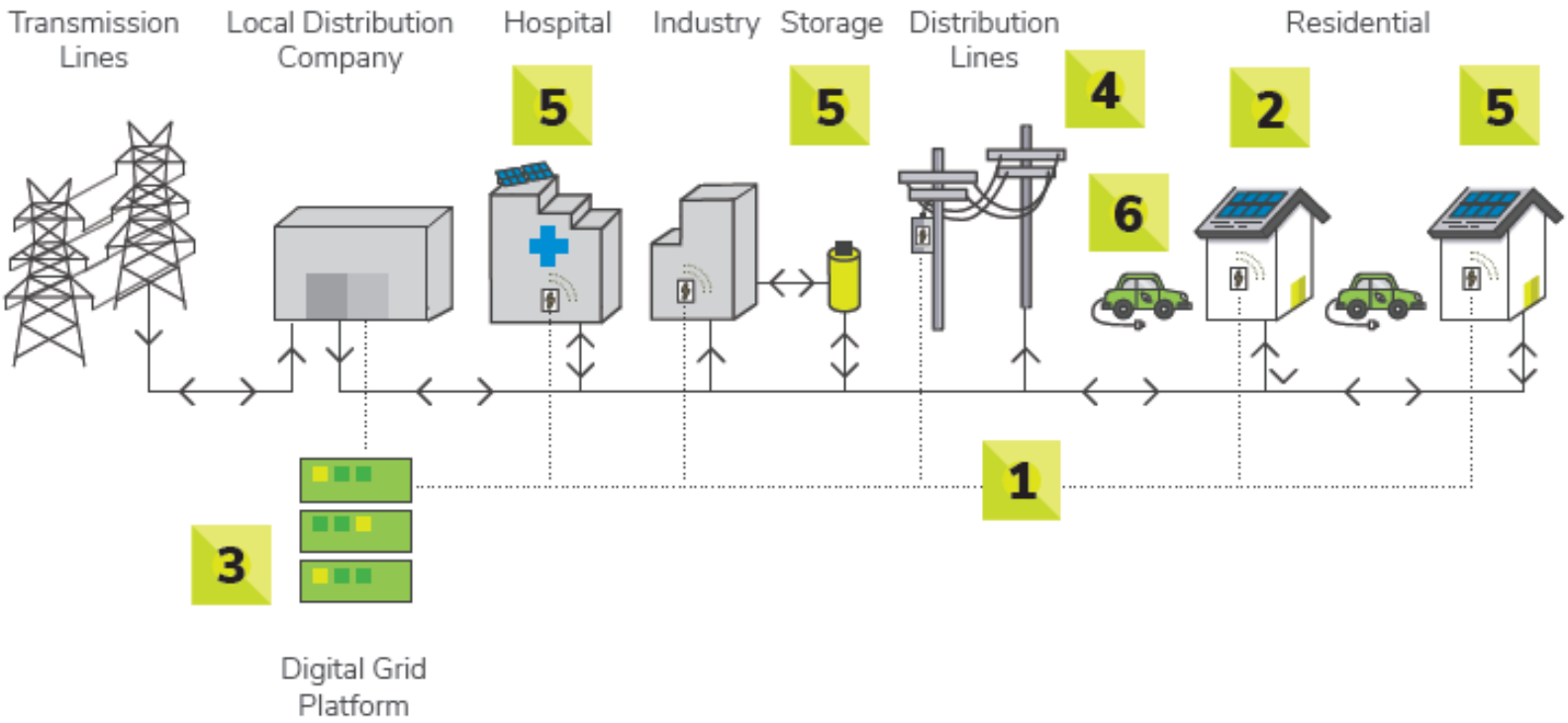
Key Initiatives

Bill Redesign





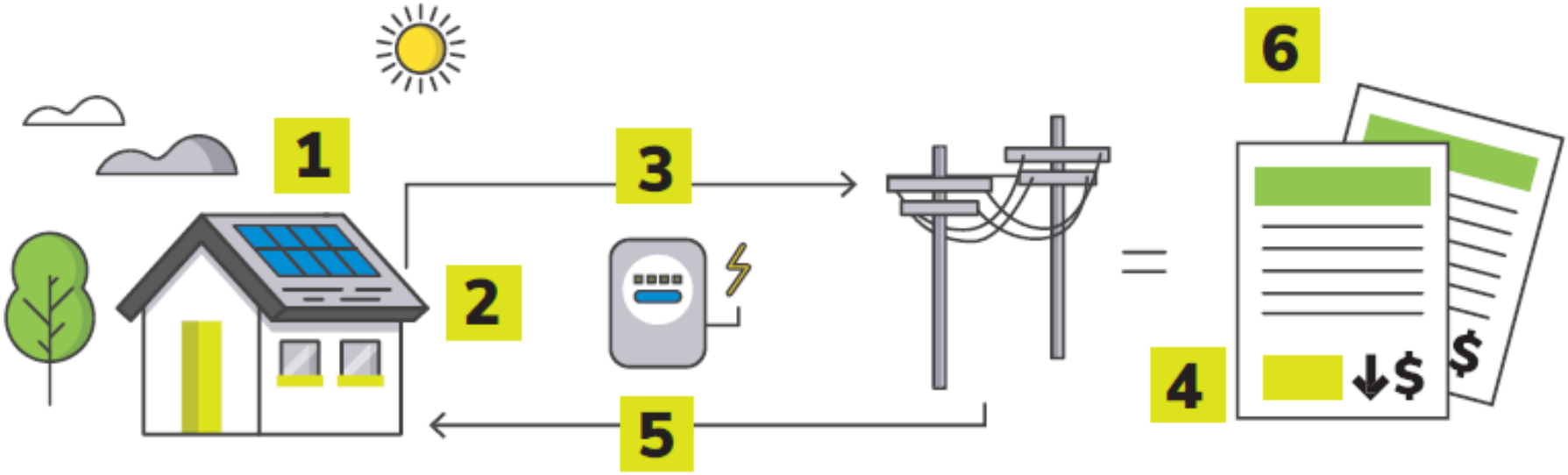
Smart Grid



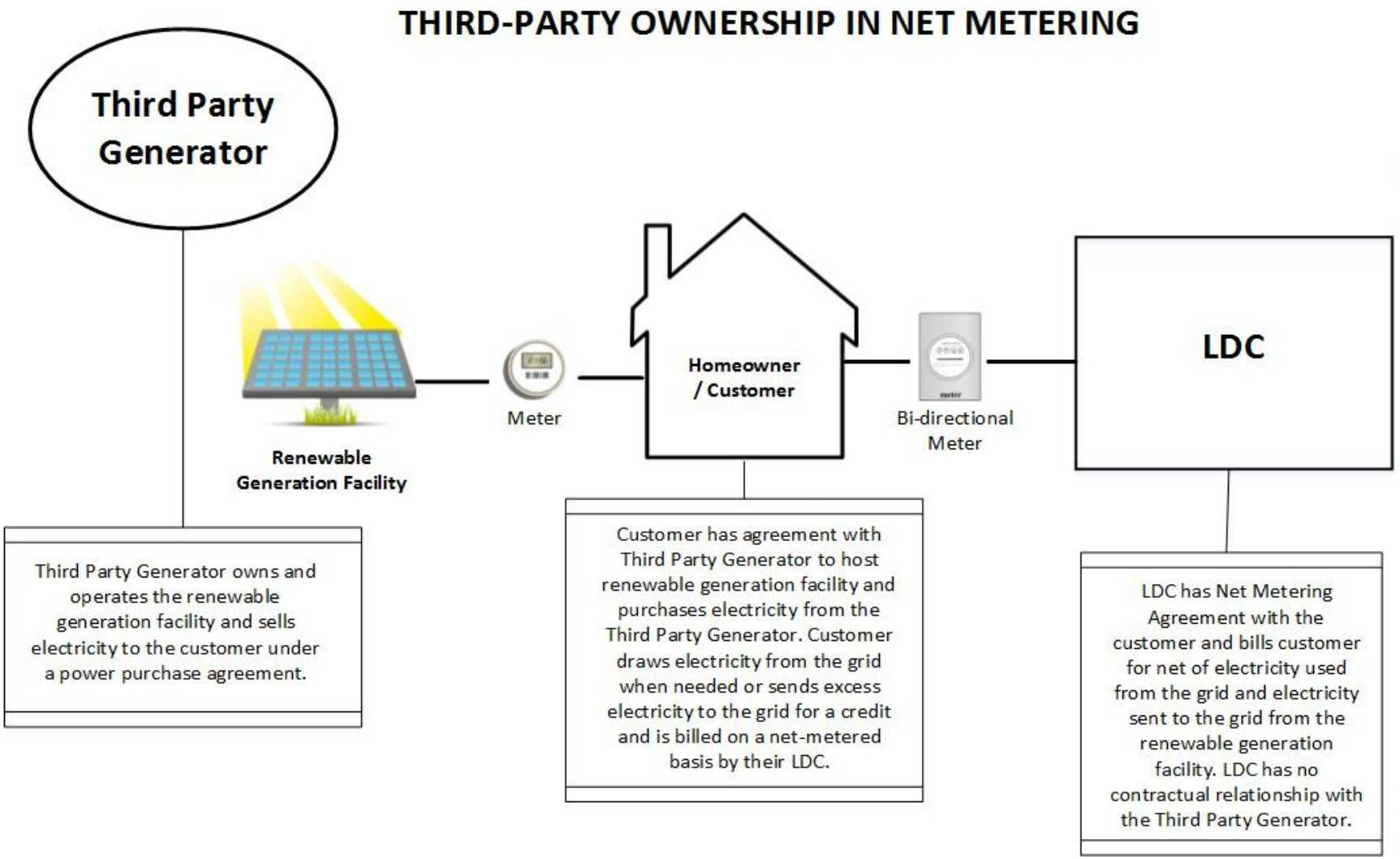
Smart Grid Fund Results

46 projects	**~800** jobs created	**~$200M** in sector investment	**21** participating LDCS

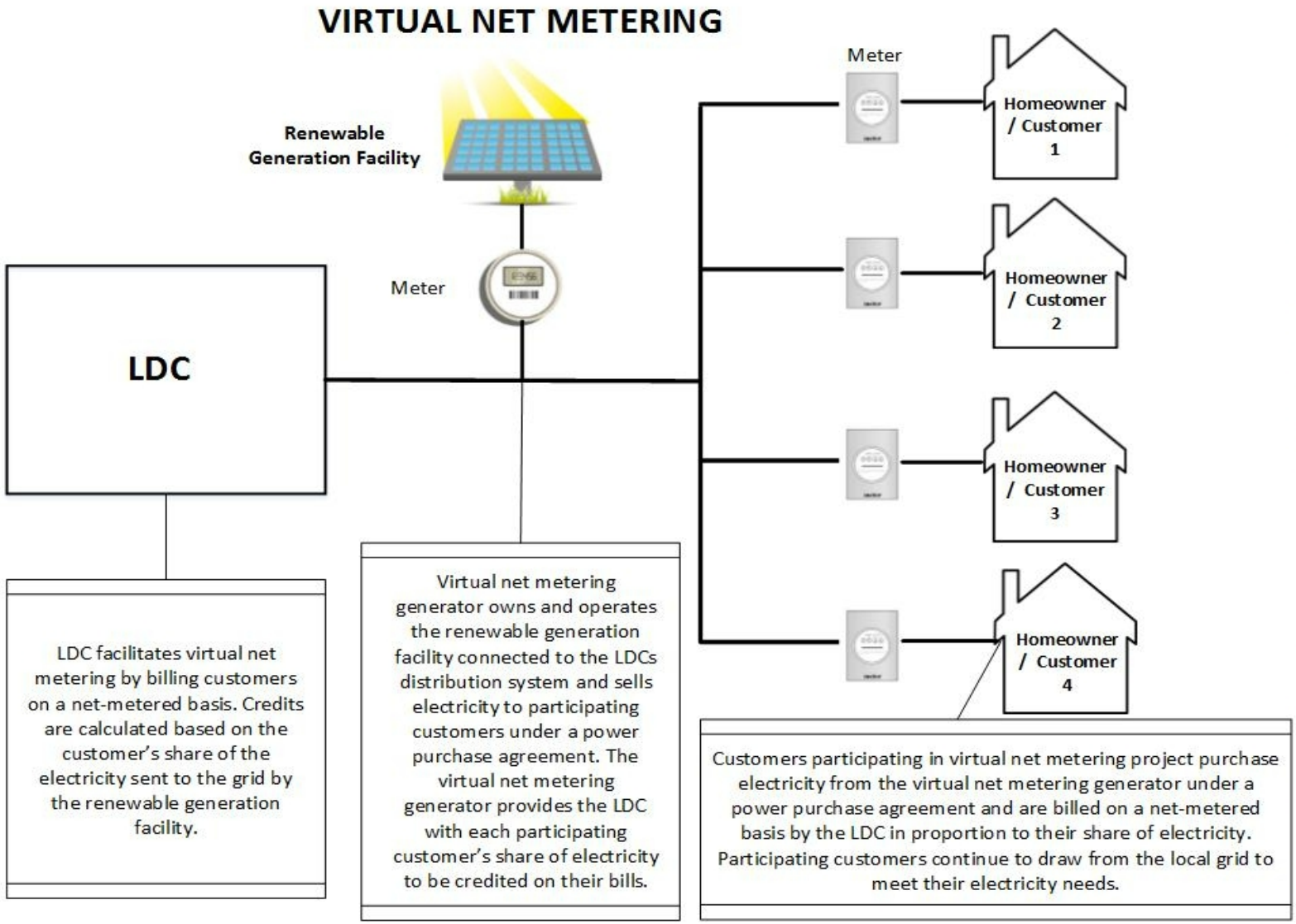
Net Metering In Ontario



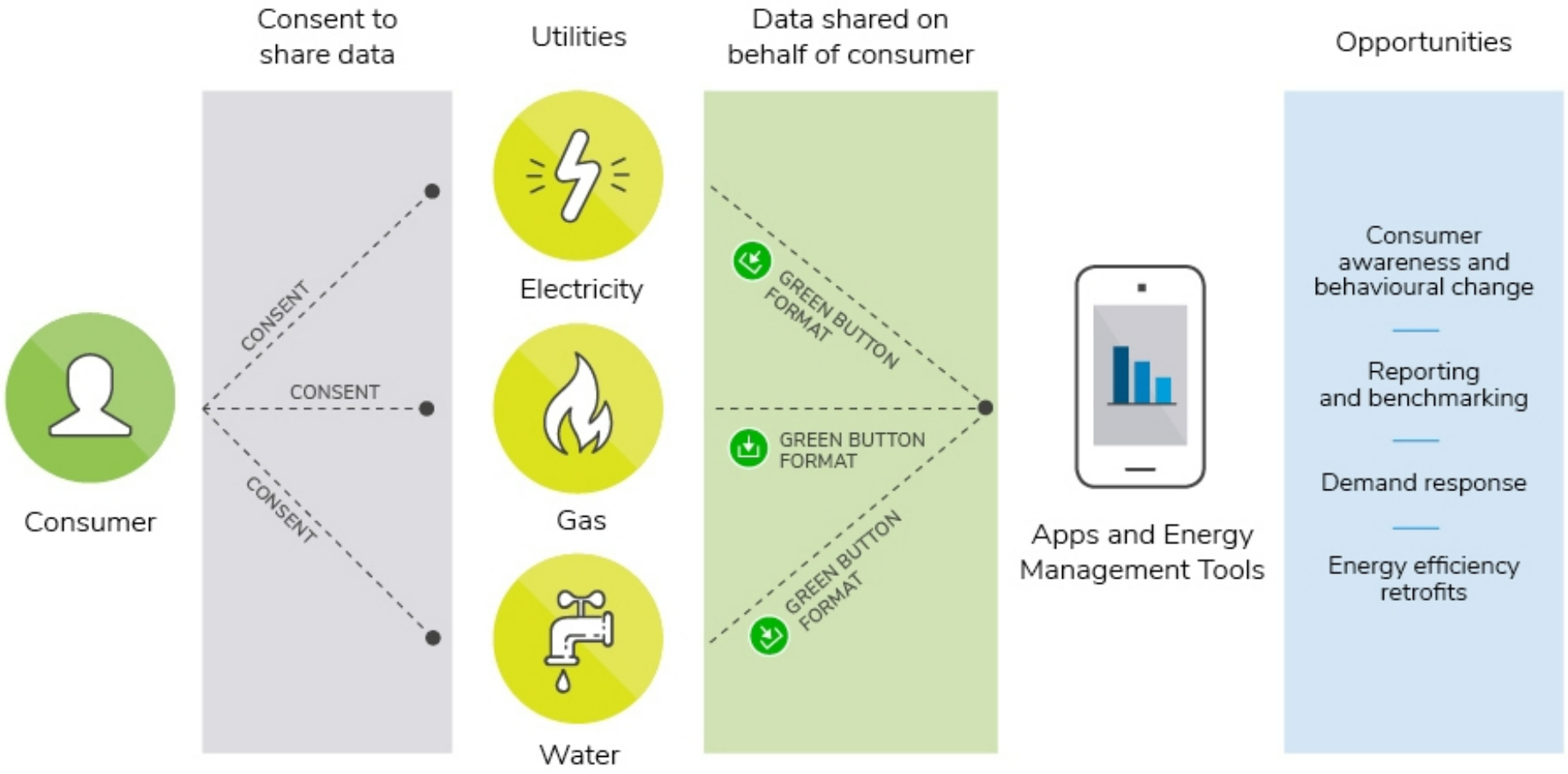
Enhancing Net Metering In Ontario



Enhancing Net Metering In Ontario



Green Button



Connecting Remote First Nation Communities

THANK YOU