

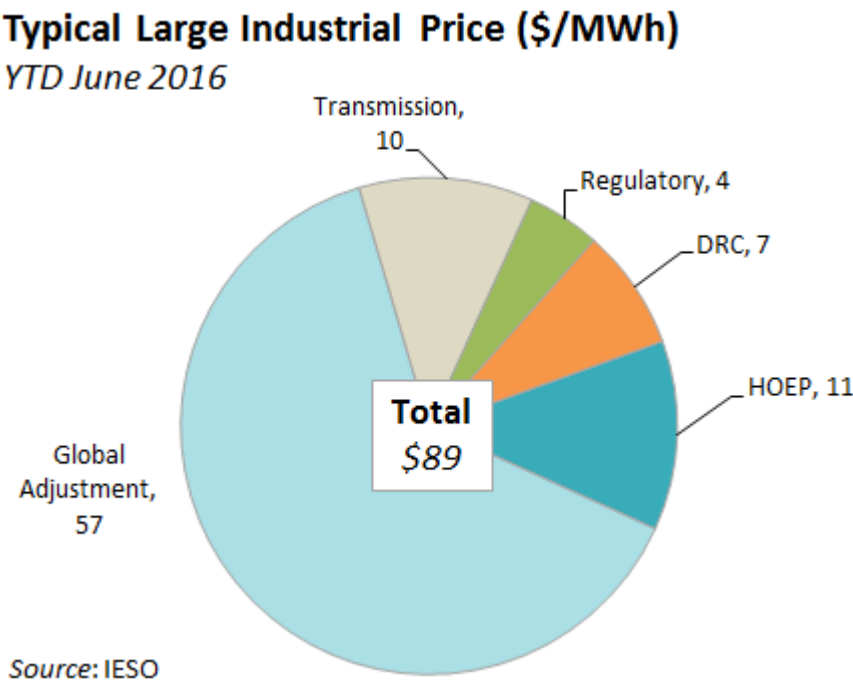
ESTIMATES 2016

TOP ISSUES

Industrial Electricity Prices/Global Adjustment/Rate Mitigation

INDUSTRIAL ELECTRICITY PRICES

- For the year-to-date June 2016, a typical large industrial consumer paid approximately \$89/MWh.¹



Key Facts

- Since 2003, significant investments have been made in Ontario’s electricity system.

About **\$35 billion** has been invested in modernizing and rebuilding **16,000 megawatts (MW)** of new, cleaner power for Ontario – that’s **40% of our current supply**.²

The province has approximately **15,800 MW** of wind, solar, bioenergy and hydroelectricity energy online, including more than **4,300 MW of wind capacity** from more than **2,000 wind turbines**.³

Ontario has the most solar photovoltaic (PV) capacity of any jurisdiction in Canada with over **2,100 MW** online.⁴

Altogether, approximately **90%** of the power generated in Ontario during 2015 came from clean sources of energy such as water, nuclear, wind, solar and bioenergy.

Since 2003, more than **\$13 billion** has been invested to enhance and renew Hydro One’s systems, including upgrades to over **11,000 kilometres of power lines** (including both transmission and distribution lines).

In 2014, Ontario became the first jurisdiction in North America to eliminate coal as a source of electricity generation. Replacing coal-fired electricity generation is the single largest climate change initiative undertaken in North America – the equivalent to taking up to 7 million cars off the road.

¹ IESO Monthly Market Report; IESO data provided to Ministry of Energy staff

² 2016 Budget, p. 83.

³ **15,500 MW wind, solar, bioenergy and hydroelectricity:** Ministry staff calculation based on 2016Q2 Ontario Energy Report data, pp. 6; **4,100 wind:** Ibid.

⁴ IESO 2016 Q2 Ontario Energy Report, p. 6.

- In real terms, average large industrial prices are expected to **remain relatively flat**. However, prices are already higher than many other neighbouring jurisdictions. There is a great deal of price disparity among industrial consumers, depending on their demand, consumption profile and connection arrangements.
- **Note:** Indicative industrial electricity prices based on data from the Independent Electricity System Operator (IESO), Hydro Quebec and US Energy Information Administration (EIA), suggests that on average, the price paid by large electricity consumers in Ontario is below the US average.⁵

Key Numbers:

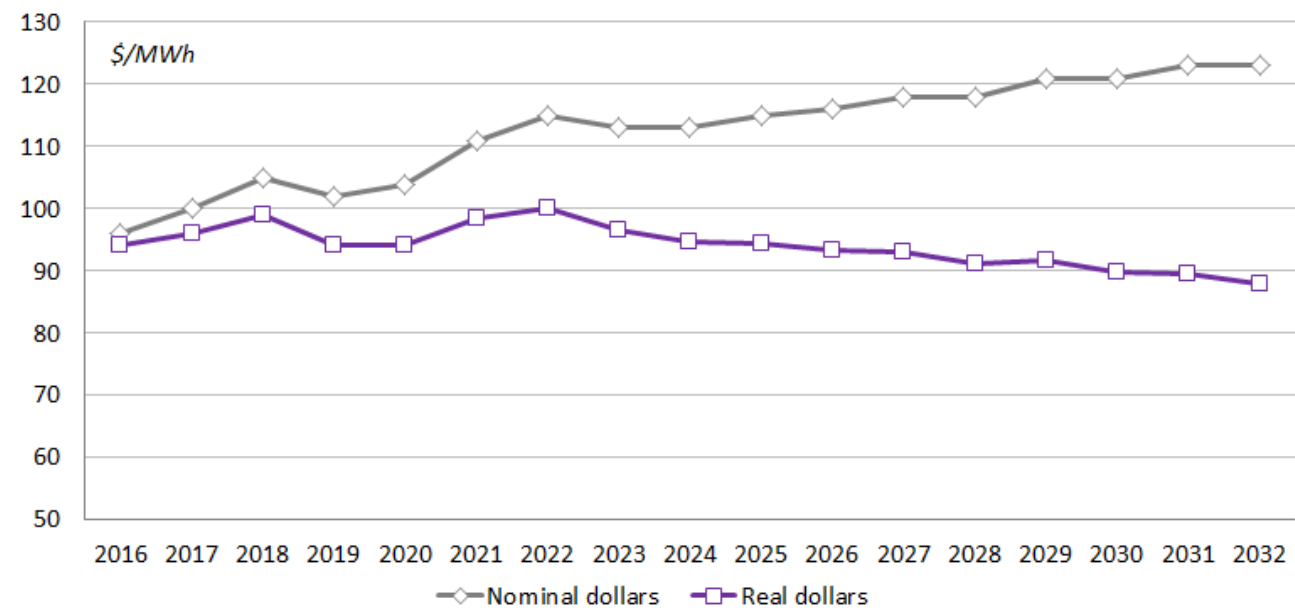
- Average industrial electricity prices are projected to increase on average by 2.0% per year in the short from 2016 to 2020 inclusive and by 1.6% per year from 2016 to the end of 2032 term.⁶
- Average savings from various programs under current market conditions:

Industrial Conservation Initiative (ICI) represents an average savings of about 34%.

Northern Industrial Electricity Rate Program (NIERP) represents an average savings of over 25% for eligible industrial consumers in northern Ontario.

LTEP Industrial Price Projections

2016 to 2032



INDUSTRIAL PRICES IN ONTARIO

⁵ EIA Electric Power Monthly, Table 5.6.B

⁶ 2013 LTEP

- Indicative industrial electricity prices suggests that on average, the price paid by large electricity consumers in Ontario is below the US average.⁷

Jurisdiction	Price (\$CAD/MWh)
Ontario (Class A)	84
British Columbia	70
Alberta	59
Saskatchewan	78
Manitoba	47
Quebec	52
New York	87
Michigan	91
Massachusetts	176
Illinois	82
Pennsylvania	96

Note: The Ontario electricity price reflects a 2015 average for Class A consumers (source: 2016 Q1 Ontario Energy Report). Prices for Canadian provinces are based on information in the 2015 Hydro Quebec *Comparison of Electricity Prices* report (prices as of April 1, 2015). All other prices are based on US EIA data (year-to-date May 2015) converted at an exchange rate of 1 USD = 1.30 CAD.

Note: As of September 20, 2016, the 2016 Hydro Quebec report had not been published.

Note: For a full list of retail industrial prices in North America, please see the appendix.

PRICE MITIGATION PROGRAMS

- Ontario has put in place a number measures to mitigate industrial electricity prices, including:
 - Industrial Conservation Initiative (ICI);
 - Northern Industrial Electricity Rate Program (NIERP);
 - Industrial Accelerator Program (IAP);
 - SaveONenergy for Business Program; and
 - Demand Response.

ICI

- The Industrial Conservation Initiative (ICI) allows qualifying large commercial and industrial consumers in specific sectors to reduce their electricity costs through reduced demand during the five peak hours of the previous year.
 - ICI now includes select electricity-intensive customers with monthly peak demand greater than **3 MW (from 5 MW)**.
- Since January 2011, Global Adjustment (GA) has been allocated based on two classes of consumers. Class A consumers, whose average monthly peak demand exceeds 5 MW, pay global adjustment based on their consumption during the five peak hours of the previous year under the ICI program. All other consumers (i.e., Class B) are charged global adjustment on a volumetric basis (i.e., flat rate \$/MWh).
 - In 2015, Class A was extended to consumers in select sectors with average monthly peak demand that exceeds 3 MW. Eligible sectors consist of manufacturing, mining, oil and gas, refrigerated warehousing, greenhouses and data processing and hosting services.

⁷ EIA Electric Power Monthly, Table 5.6.B

Eligible new Class A consumers needed to have opted-in and notified their LDC before June 15, 2015 if they wished to participate in the new Class A billing period which started on July 1, 2015.

- On Septemeber 12, 2016, the government announced that it is proposing to expand ICI to include all sectors while also lowering the threshold for participation to **1 MW**.

More than **300 businesses** are already utilizing the ICI to achieve electricity savings, and with these changes, **over 1,000 new businesses** are estimated to be eligible.

- ICI delivered an estimated **1,000 MW** of reduced peak electricity demand in 2015 and an average savings of one-third on the consumer's bill.

NIERP

- NIERP was launched in March 2010 and is administered by the Ministry of Northern Development and Mines. NIERP provides a rebate of **\$20/MWh** to northern industrials and is currently fully subscribed.
- The government has committed to an ongoing NIERP to continue to meet the needs of large industrials in northern Ontario. On average, industrial electricity prices can be reduced by over **25%** through the program.

INDUSTRIAL ACCELERATOR PROGRAM

- The Industrial Accelerator Program (IAP) assists eligible transmission-connected customers to fast-track capital investment of up to \$10 million for major energy-efficiency projects, equipment retrofits, process changes and new construction.
 - IAP is eligible to entities connected to the IESO transmission grid.
- Program streams offered through the IAP include Retrofit Program, Process and Systems, Energy Managers and High Performance New Construction. The program streams offered through IAP are similar to those offered through the saveONenergy business programs but specifically target transmission connected customers.
- The IESO expects the IAP will achieve 1.7 TWh between 2015 and 2020.
- **2015** : In 2015, the IAP resulted in 46 GWh of electricity savings which is the equivalent to removing 5,100 homes from the grid for a year.
 - In 2015, 15 projects were completed through the IAP.

SAVEONENERGY FOR BUSINESS PROGRAM

- Ontario has a number of programs in place that help industrial consumers manage rising electricity prices through the installation of energy saving measures, or by using energy wisely.
- saveONenergy for Business electricity conservation programs, which offer financial incentives for audits, retrofits and process and systems improvements to eligible distribution connected commercial and industrial customers are funded by the Independent Electricity System Operator (IESO) and delivered by local distribution companies (LDCs) under the Conservation First Framework.
- Table 1 outlines saveONenergy for Business programs relevant to the industrial sector being delivered by the province's local electricity utilities under the 2015-2020 Conservation First Framework.

Table 1: 2016-2020 saveONenergy Business Programs

Program Name	What Participants Receive
Retrofit Program	• Offers businesses incentives to help with upfront costs of

	purchasing energy-efficient equipment to improve the overall efficiency of buildings
Process and Systems	Helps organizations with complex systems and processes to identify, implement and validate energy-efficiency projects from start to finish.
Energy Managers	Helps companies take control of their energy usage, by hiring a dedicated energy manager that identifies various options for saving energy in their facility
High Performance New Construction	Provides design assistance and incentives for building owners and planners who design and implement energy efficient equipment within their new space.

- 2015: In 2015, SaveONenergy for Business programs saved 1 TWh of energy savings which is the equivalent to removing 114,000 homes from the grid for a year.
- Table 2 below summarizes total 2015 LDC-delivered participation results (preliminary and unverified) for the saveOnenergy for Business programs relevant to the industrial sector.

Table 2: Business Conservation Program Participation Results

Initiative	2015	Metric
Retrofit Program	14,657	Projects
Process and Systems	23	Projects
Energy Managers	324	Projects
High Performance New Construction	64	Buildings

Source: <http://www.ieso.ca/Documents/conservation/Q4-2015-Conservation-Progress-Report-Posting.pdf>

DEMAND RESPONSE

- The IESO has transitioned DR from a program approach to a market approach. As part of the transition, the IESO developed an annual DR auction process.
- Annual DR auctions replace the practice of multi-year contracting for DR. Under the former DR3 program, DR resources were procured for typically 5 year contract periods.
- Participation in the DR Auction is open to new and existing DR participants in Ontario with peak load greater than 1 MW, including industrial consumers and aggregators.
 - Third-party aggregators sign-up commercial and industrial consumers, generally 50 kW or larger, and sell the combined DR reductions to IESO. Typically, the aggregator takes a percentage of the DR incentive as compensation, passing the rest on to the end user.
- Table 3 shows results from the 2015 DR Auction. The first capacity-based DR auction, conducted in December 2015, is contributing ~390 MW for the 2016 summer season and ~400 MW for the 2016- 2017 winter season
- The next DR auction is expected to take place in December 2016.

Table 3: 2015 DR Auction Successful Participants

DR Participant Name	Participation Type	Commitment Season	DR Capacity (MW)
Energy Curtailment Specialists, Inc.	Aggregator	Summer	24.9
		Winter	28.0
Enernoc Ltd.	Aggregator	Summer	102.0
		Winter	131.4
EnerShift Corporation	Aggregator	Summer	99.3
		Winter	80.0
Gerdau Ameristeel Corporation	Direct Provider	Summer	72.0
		Winter	72.0
Gerdau Ameristeel	Direct Provider	Summer	2.3

Corporation – Cambridge		Winter	2.3
Resolute FP Canada Inc.	Direct Provider	Summer	51.0
		Winter	50.0
Tembec Enterprises Inc.	Direct Provider	Summer	40.0
		Winter	40.0
	TOTAL	Summer	391.5
		Winter	403.7

Sources: <http://www.newswire.ca/news-releases/ieso-announces-results-of-first-demand-response-auction-561446841.html>; http://reports.ieso.ca/public/DR-PostAuctionSummary/PUB_DR-PostAuctionSummary_2016.xml

APPENDIX

- The table below compares indicative retail industrial electricity prices across North American jurisdictions. For reference, Ontario – South reflects the average price for year-to-date May 2015. Ontario – North is based on the same figure, along with the 2 cent per kilowatt hour Northern Industrial Electricity Rate Program rebate. See footnote for more details.

Retail Industrial Electricity Prices – North America (Canadian cents/kWh)

Pricing Comparison							
2015 Industrial Electricity Prices (Canadian ¢/kWh)							
Jurisdiction	Cost	Jurisdiction	Cost	Jurisdiction	Cost	Jurisdiction	Cost
1 Manitoba	4.67	17 Arkansas	7.49	33 Newfoundland	8.65	49 Nova Scotia	10.02
2 Quebec	5.17	18 Tennessee	7.53	34 U.S. Average	8.71	50 North Dakota	10.75
3 Washington	5.64	19 Alabama	7.58	35 New York	8.72	51 Florida	10.79
4 Alberta	5.87	20 South Carolina	7.68	36 Indiana	8.74	52 Delaware	10.96
5 Ontario - North	6.35	21 Utah	7.70	37 Ohio	8.75	53 Maryland	11.86
6 Oklahoma	6.64	22 Oregon	7.72	38 Wyoming	8.87	54 Maine	12.64
7 Montana	6.68	23 West Virginia	7.80	39 Minnesota	8.89	55 Vermont	13.14
8 Kentucky	6.80	24 Saskatchewan	7.81	40 Prince Edward Island	8.90	56 California	13.85
9 British Columbia	7.04	25 Nevada	7.83	41 Colorado	9.05	57 New Jersey	14.44
10 Iowa	7.06	26 Arizona	8.00	42 Michigan	9.13	58 New Hampshire	17.17
11 Louisiana	7.06	27 Idaho	8.05	43 Virginia	9.23	59 Massachusetts	17.56
12 Canadian Average	7.31	28 North Carolina	8.09	44 South Dakota	9.31	60 Connecticut	17.58
13 Missouri	7.32	29 New Mexico	8.09	45 Kansas	9.54	61 Alaska	18.85
14 Georgia	7.35	30 Illinois	8.24	46 Nebraska	9.56	62 Rhode Island	19.97
15 Texas	7.37	31 Ontario - South	8.35	47 Pennsylvania	9.59	63 Hawaii	31.10
16 New Brunswick	7.48	32 Mississippi	8.41	48 Wisconsin	9.87		

Note: Estimates may differ from actual costs to a consumer based on location, connection, and operational characteristics. Prices exclude taxes and participation in any applicable jurisdictional benefit programs.

The Ontario industrial price is based on the average all-in price for year-to-date May 2015, and includes the Hourly Ontario Energy Price, Class A Global Adjustment, delivery, wholesale market service charges and the Debt Retirement Charge. The 2 cent per kilowatt hour difference between northern Ontario and southern Ontario reflects the Northern Industrial Electricity Rate Program rebate.

All other Canadian prices (except Ontario) are from the Hydro Quebec Rate Comparison for rates effective April 1, 2015 for select local distribution companies servicing specific cities. Where Hydro Quebec reports prices for two cities in a province (e.g., Calgary and Edmonton), an average of the two is used; in provinces where only one city is reported (e.g., Vancouver in BC, Montreal in QC), that one price is used to represent the province for indicative comparison purposes. In the Hydro Quebec Rate Comparison, a large consumer reflects 5 MW with monthly consumption of 3,060 MWh.

American jurisdictions reflect year-to-date May 2015 data from the US Energy Information Administration's survey of approximately 500 of the largest electric utilities. The price reflects the average revenue reported by the electric utility from electricity sold to the industrial sector. The value represents an estimated average retail price, but does not necessarily reflect the price charged to an individual consumer. Prices are converted at an exchange rate of 1 USD = 1.30 CAD.

Division/Branch: Energy Supply Policy Division
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 ESTIMATES 2016