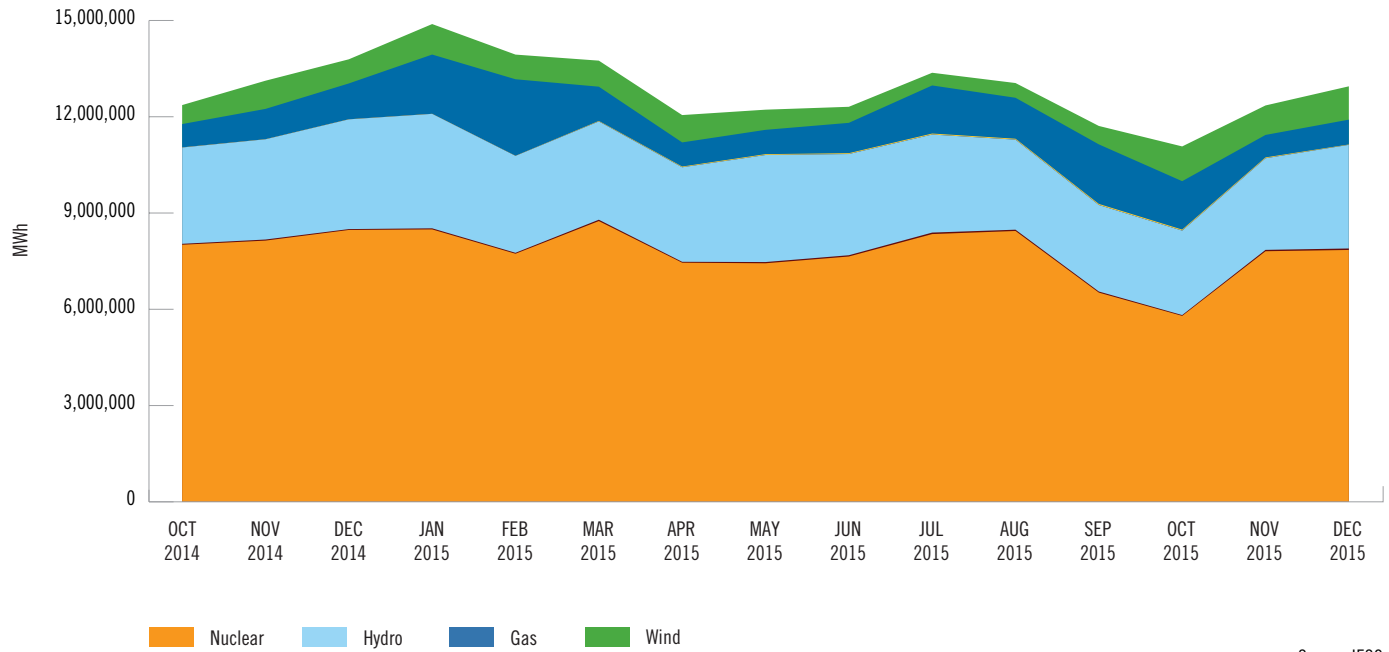


Electricity Supply

Monthly Energy Grid Output by Fuel Type (MWh)

Ontario’s bulk electricity grid has a diverse supply mix, featuring baseload generators that provide energy around the clock, intermittent generators that generate when they are able (primarily wind and solar), and flexible generators that can change their output quickly (primarily natural gas).



Source: IESO

Note: Total MW value may not add up to sum of column totals due to rounding.

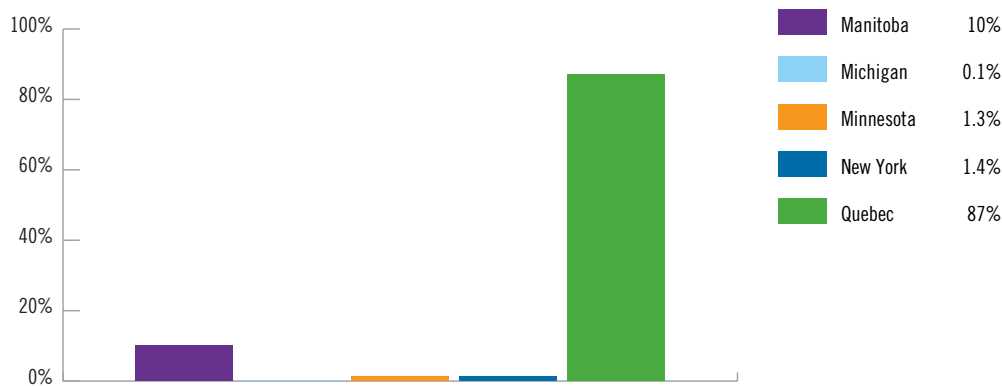
The data shown above is sourced from a report developed by the IESO, available at http://reports.ieso.ca/public/GenOutputbyFuelMonthly/PUB_GenOutputbyFuelMonthly.xml. The report uses settlement data to provide information for all self-schedulers, intermittent and dispatchable Ontario generators registered as a Market Participant. The report – which includes all grid-connected generators, plus those embedded generators that are also registered as market participants – is published monthly as per the Physical Settlement calendar.

Imports and Exports

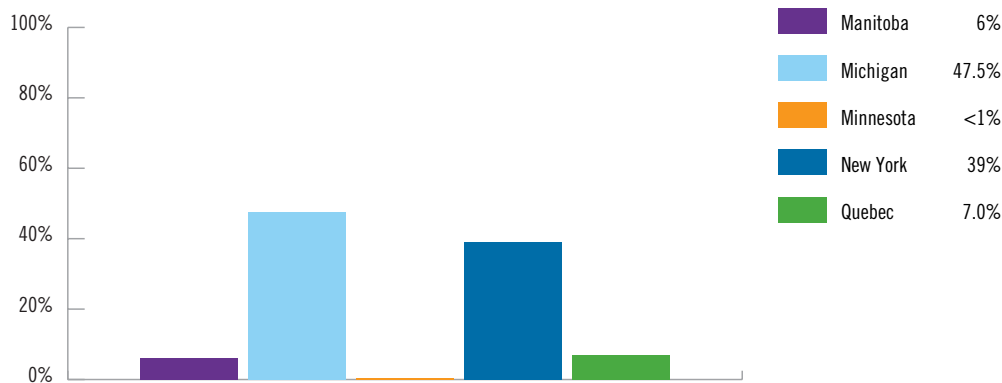
Ontario is connected to a large, stable network of transmission systems across North America, which supports system reliability and economic efficiency. Imports compete against domestic generation to provide energy at the best possible price and to support the province’s needs during periods of high demand. Ontario also exports energy when prices are higher, which helps to bring in revenue that helps offset other system and infrastructure costs and can help maintain system reliability during times of surplus generation.

Ontario imports and exports power across 26 interties with two provinces and three states. While Ontario is electrically interconnected with Manitoba, Michigan, Minnesota, New York and Quebec, the interties allow for electricity trade in transactions that can reach across eastern North America, contributing to a more diversified and competitive pool of supply.

Imports



Exports



Q4 (GWh)	Manitoba	Michigan	Minnesota	New York	Quebec	Total
Imports	176	2	23	25	1,515	1,742
Exports	312	2,566	26	2,106	390	5,401

Source: IESO

Note: Numbers may not add up to totals due to rounding.

Installed Capacity Connected to Transmission Grid

Changes to installed transmission grid capacity in this quarter highlight the continuing process of renewal in Ontario’s electricity sector. While nuclear, hydroelectric and natural gas production accounted for the vast majority of bulk supply, new wind, biofuel and solar generators continued to connect to the transmission grid.

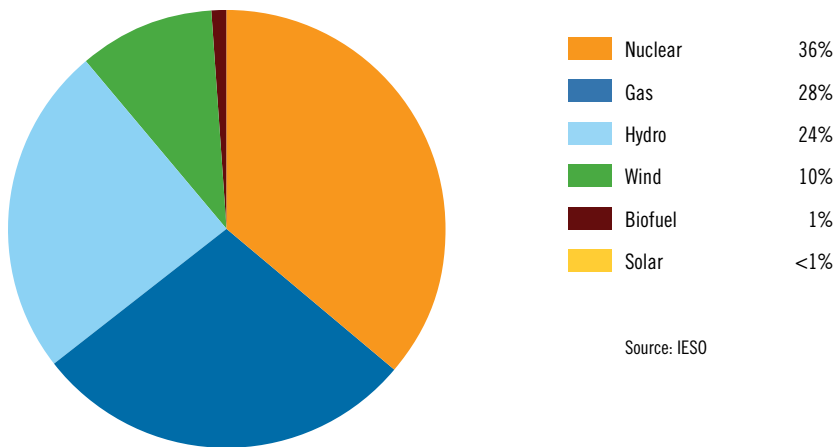
Source: IESO

New Facilities Registered in Q4

The following projects have completed commissioning and the market entry process and are included as part of total installed IESO Market Participant generator capacity:

- Thunder Bay Condensing Turbine – 40 MW
- K2 Wind – 270 MW
- Kingston Solar – 100 MW

Grid-connected Generation Capacity



Note: Data include all transmission-connected generation facilities and distribution-connected facilities that are Market Participants. Numbers may not add up to totals due to rounding.

The table below shows the increased use of renewable resources for generating electricity in the province.

Grid-connected Generation Capacity

Year	Nuclear	Hydro	Coal	Gas ¹	Wind	Biofuel	Solar	Total
Q4 2015 (MW)	12,978	8,432	0	9,942	3,504	495	240	35,591
Q4 2015 (%)	36%	24%	0%	28%	10%	1%	<1%	
2014 (MW)	12,947	8,462	0	9,920	2,543	455	40	34,367
2013 (MW)	12,947	7,939	2,291	9,920	1,725	124	0	34,946
2012 (MW)	12,998	7,947	3,293	9,987	1,511	122	0	35,858
2011 (MW)	11,446	7,947	4,484	9,549	1,412	122	0	34,960

Source: IESO

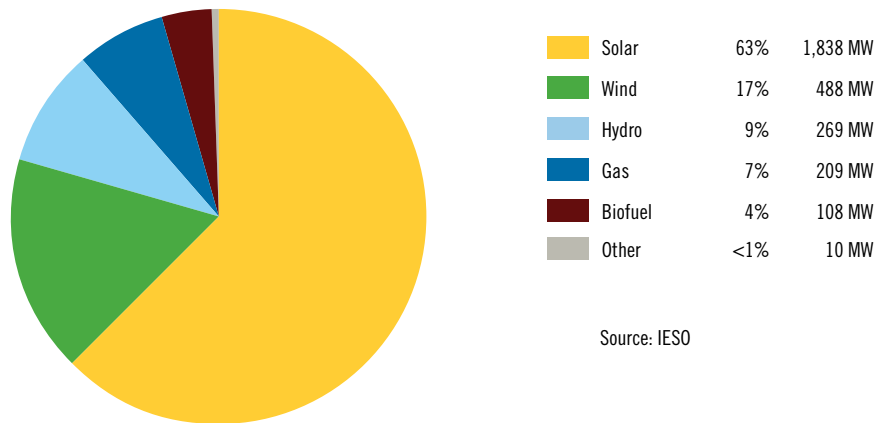
Embedded Generation (IESO-contracted)

Embedded generators supply electricity to local distribution systems, helping to offset demand on the transmission grid by supporting some of the needs of local communities. While wind and solar make up the majority of contracted embedded generation, the IESO has contracted for increasing amounts of hydroelectric, combined heat and power, natural gas and biofuel systems that will also connect to local distribution networks.

By the end of Q4 2015, there was more than 2,900 MW of contracted generation in commercial operation within local distribution systems.

1. Units that use natural gas, oil or are dual fuel, such as Lennox, NP Kirkland and NP Cochrane, are included in the Gas category.

Contracted Embedded Generation Capacity in Commercial Operation (at end of Q4)

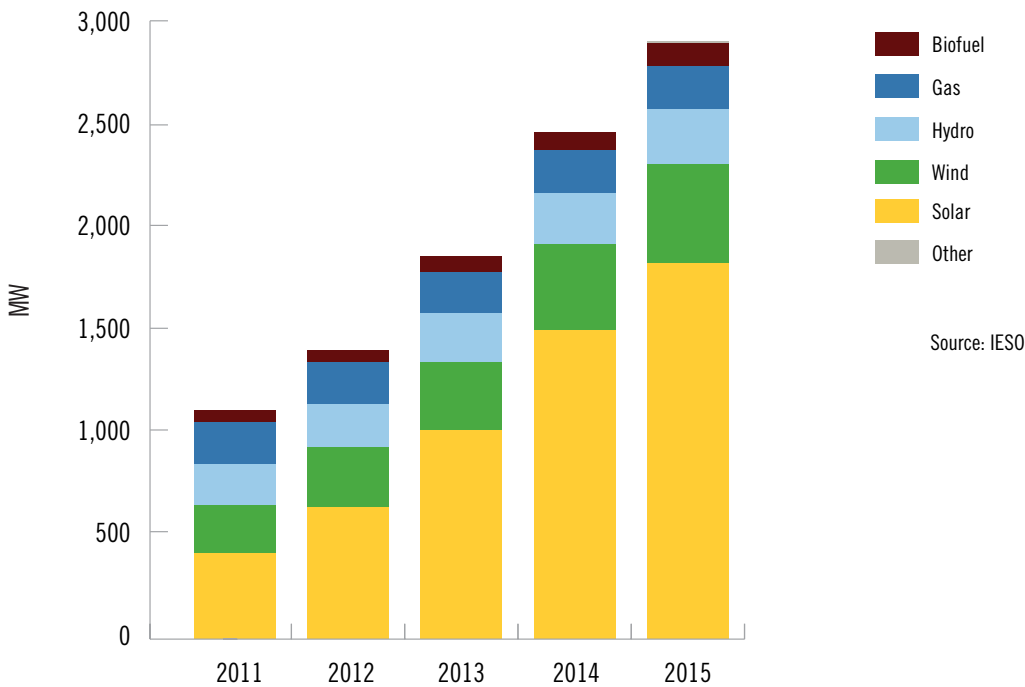


Source: IESO

Note: Numbers may not add up to totals due to rounding.

The table below shows the increased use of embedded generation to supply electricity to local distribution systems in the province.

Contracted Embedded Generation Capacity in Commercial Operation



Source: IESO

Note: Total IESO-contracted embedded generation in commercial operation at end of each period. Numbers may not add up to totals due to rounding.

The data shown above are sourced from the IESO Progress Report on Contracted Supply. The report provides a quarterly update on the status of supply and procurement initiatives that are under development or in commercial operation, by fuel type, and aggregates total capacities as stated in each contract, which differs from values on installed capacity used for operation purposes. The report is available at <http://www.ieso.ca/Documents/Supply/Progress-Report-Contracted-Supply-Q42015.pdf>.

Total Grid-connected and Contracted Embedded Generation Capacity NEW

The figures in this chart show total generation for the quarter: grid-connected capacity in service plus IESO-contracted embedded capacity in commercial operation.

Year	Nuclear	Hydro	Coal	Gas	Wind	Biofuel	Solar	Other	Total
2015 (MW)	12,978	8,701	0	10,151	3,992	603	2,078	10	38,513
2015 (%)	34%	23%	0%	26%	10%	2%	5%	<1%	

Source: IESO

Available Capacity at Peak 26,940 MW (Q4)

Peak Demand	19,239 MW (Q4)	Operating Reserve Requirement	1,600 MW (Q4)
Minimum Demand	10,539 MW (Q4)		

Source: IESO

Available capacity is all installed grid-connected capacity, less allowances made for seasonal derates, planned outages and the capacity of energy-limited resources. Reserves are required to ensure that the forecast Ontario Demand can be supplied with a sufficiently high level of reliability. Operating Reserve is the amount of supply resources required to handle the loss of the largest contingency on the grid, plus the loss of half the amount of the second largest contingency. More information on the criteria, tools and methodology the IESO uses to perform resource adequacy assessments can be found at http://www.ieso.ca/Documents/marketReports/Methodology_RTAA_2015jun.pdf.

Conservation

As part of the new Conservation First Framework for 2015-2020, the province has established a target of 7 terawatt-hours (TWh) in electricity savings to be achieved through conservation programs offered by local distribution companies (LDCs). The province also established a target of 1.7 TWh to be achieved through the Industrial Accelerator Program, which is delivered by the IESO to transmission-connected customers. Overall the province expects to achieve 8.7 TWh in savings by December 31, 2020.

The IESO has conditionally approved 41 CDM Plans, representing 72 of the 73 LDCs – approximately 99.9% of the allocated 7 TWh CDM target. Approved CDM plans are posted at <http://www.ieso.ca/Pages/Conservation/Conservation-First-Framework/Conservation-and-Demand-Management-Plans.aspx>.

Conservation Portfolio Progress – Preliminary Unverified Incremental Results (as of Q4)

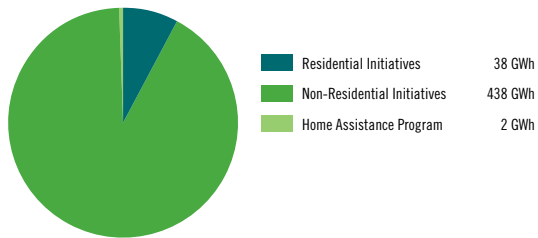
Incremental Progress – Q4 2015		Q4 2015*
LDC Delivered Programs	Net Peak Demand Savings (MW)	68
	Net Energy Savings (GWh)	479
IESO and other Non-LDC Programs	Net Peak Demand Savings (MW)	171
	Net Energy Savings (GWh)	1.2
Total Net Peak Demand Savings (MW)		248
Total Net Energy Savings (GWh)		480

* Results are presented at the generator level; totals may not align due to rounding.

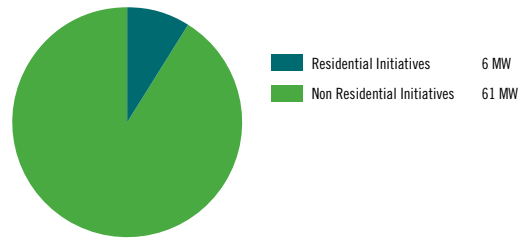
Source: IESO

Energy Savings through LDC-led Conservation Programs (Q4)

Net Energy Savings



Peak Demand Savings



Source: IESO

Note: Preliminary unverified results (as of Q4). Totals may not align due to rounding.

Demand Response

Demand response and peak savings programs benefit the electricity system and lower energy costs for consumers by contributing to overall peak savings for the province.

The Capacity-Based Demand Response (CBDR) program came into effect in the first quarter of 2015, bringing contracted demand response providers from the DR3 program into the wholesale energy market to better reflect system needs. The CBDR program, which represents approximately 500 MW of demand response capacity, was not activated in Q4.

More information on Capacity-Based Demand Response is available at <http://www.ieso.ca/Pages/Participate/Capacity-Based-Demand-Response.aspx>.

The IESO is also focusing on the development of demand-side resources, including market-based mechanisms such as a demand response auction, and will continue to put conservation first in planning the power system.

Peak Savings

The Industrial Conservation Initiative (ICI) encourages large consumers to shift their energy use away from system-wide peaks. Customers who are able to reduce their impact on peaks benefit the system by reducing the need to build new infrastructure. Participating customers are assessed an individual Global Adjustment (GA) rate, based on the percentage that their demand contributes to the top five system coincident peaks measured during a defined base period.

The table below lists the top five daily peaks for the most recent base period, which began on May 1, 2014, and ended on April 30, 2015. Three of the top five Ontario demand peaks occurred in the first quarter of 2015.

Industrial Conservation Initiative Coincident Peak Values (for base period May 1, 2014 to April 30, 2015)

Date	Hour Ending	Net Ontario Load (MW)	Embedded Generation (MW)	Total (MW)
January 7, 2015	19	21,118.570	491.57	21,610.140
February 19, 2015	20	20,976.264	440.031	21,416.295
August 26, 2014	17	20,967.233	682.792	21,650.025
February 23, 2015	20	20,862.399	539.973	21,402.372
September 5, 2014	17	20,830.888	884.74	21,715.628

Source: IESO

Note: The value in the Total (MW) column is the number used to calculate a customer's Peak Demand Factor. The above values are used for the adjustment period July 1, 2015 to June 30, 2016.

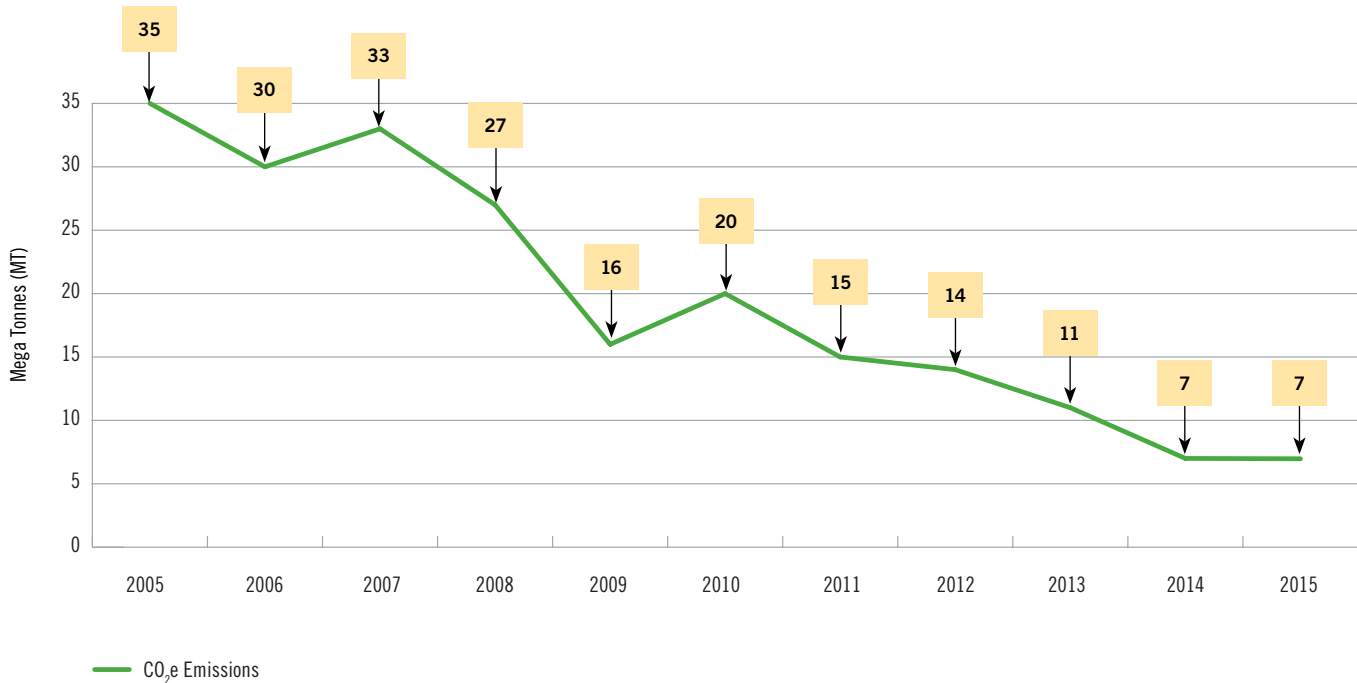
Though final data for the period May 2015 to April 2016 will not be available until later this year, initial estimates would indicate that ICI impacts for the monthly peaks of July, August and September were in the neighbourhood of 1,000 MW. (<http://www.ieso.ca/Pages/Participate/Settlements/Global-Adjustment-for-Class-A.aspx>)

More information on the ICI is available at http://www.ieso.ca/Documents/settlements/April_2015-ICI_Background.pdf.

Emissions – CO₂ Equivalent

The marked decline in CO₂ equivalent emissions is a result of the phase-out of coal-fired electricity generation in the province and uptake of renewable generation and conservation measures. Emissions of oxides of sulphur (SO_x) – which are predominantly a by-product of coal combustion – have also shown a marked decrease with the phase-out of coal-fired electricity.

CO₂ Emissions for the Ontario Electricity Sector



Source: IESO, Environment Canada

Air Contaminants

Air contaminants, including oxides of sulphur (SO_x), oxides of nitrogen (NO_x) and fine particulate matter (PM_{2.5}), are also released during combustion of fossil fuels.

Air Contaminants for the Ontario Electricity Sector (Tonnes)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
SO _x Emissions	114,323	87,932	105,420	76,020	30,768	38,448	11,971	10,342	10,192	847	620
NO _x Emissions	48,143	38,955	43,846	38,314	24,389	28,130	18,988	19,077	17,183	11,520	8,877
PM _{2.5} Emissions	1,787	1,529	1,876	1,314	1,779	2,120	562	478	439	281	249

Source: IESO, Environment Canada