

DEMAND DR RESPONSE

A SMART APPROACH
TO ENERGY
MANAGEMENT

THERE MAY BE MORE
OPPORTUNITIES
TO MANAGE YOUR
ENERGY COSTS THAN
YOU THINK.



Consumers are joining the ranks of traditional generators to help maintain reliability on Ontario's power grid. They are quickly moving from passive power users to engaged consumers, equipped with the knowledge and technology to make consumption decisions based on supply conditions and price.

Matching Demand with Supply

Traditionally, the amount of power generated at any one time was adjusted to meet changes in demand. There is however, growing interest from consumers to turn this conventional thinking on its head, by also adjusting their electricity use to match real-time system needs. This is known as demand response (DR). This broader approach is a smart way to manage Ontario's power grid and helps businesses better manage their electricity costs.

How Do I Participate?

Demand response is not a completely new idea. In fact, it has played a part in the operation of the power system for many years. Existing demand response initiatives have successfully encouraged large consumers to reduce or shift their electricity use from periods of high demand to lower demand. Instead of simply generating more electricity, businesses are reducing or shifting their electricity use and being rewarded for their actions. As a result, these businesses can help the IESO more efficiently manage the power system.

AT HOME, YOU MAY BE FAMILIAR WITH TIME-OF-USE ELECTRICITY RATES THAT ENCOURAGE YOU TO SHIFT ELECTRICITY USE FROM ON-PEAK TO OFF-PEAK PERIODS.

BUSINESSES AND INSTITUTIONS CAN ALSO TAKE ADVANTAGE OF ONTARIO'S ELECTRICITY MARKET AND RELATED INITIATIVES TO BETTER MANAGE THEIR COSTS.

ONTARIO'S INDEPENDENT ELECTRICITY SYSTEM OPERATOR (IESO) IS EXPANDING THE POSSIBILITIES FOR DEMAND RESPONSE IN ONTARIO.

For most participants, DR involves reducing the amount of energy they draw from the grid during peak demand periods – either through management of operational equipment and processes, shifting production to non-peak hours, or using other energy sources. Examples of DR strategies include:

- Facilities with refrigeration can adjust temperatures to draw less electricity during peak periods (typically in food processing, grocery stores, or cold storage facilities).
- Industrial loads can turn off production lines and processes completely during peak demand periods (for example, furnaces at steel mills or line production at a manufacturing company).
- Facilities can install and utilize on-site generation (such as combined heat and power) or energy storage (such as battery technology).
- Companies can 'aggregate' multiple facilities with smaller loads to maximize their DR capacity. Third-party companies can also represent a group of commercial or residential energy consumers.

In Ontario, there are a number of ways in which consumers can provide demand response. Consumers can respond to the changing hourly price, reducing their energy use when market prices are higher. As well, large businesses which pay market prices may participate in the:

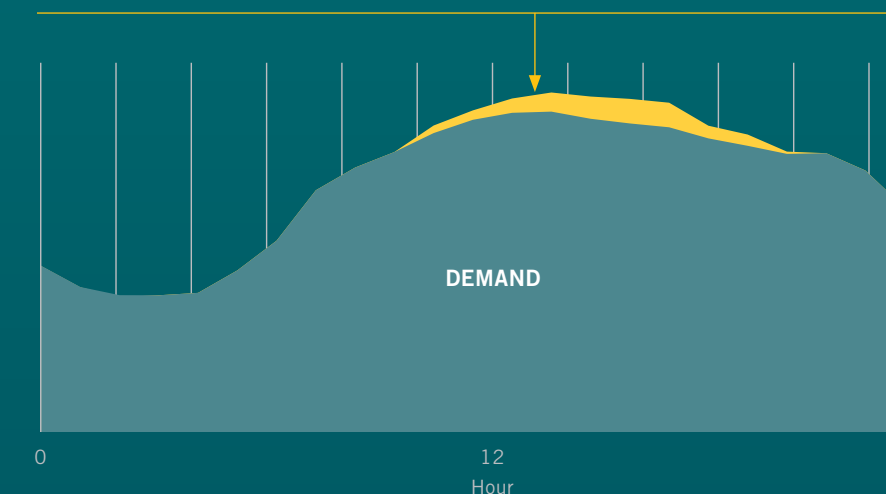
- IESO market as a dispatchable load and by providing operating reserve.
- Industrial Conservation Initiative: Eligible large users of electricity, whose peak demand is over one megawatt (MW), are charged Global Adjustment (GA) costs based on how much energy they use during high demand days. The more these companies reduce electricity demand on these days, the lower their overall GA charge.
- Demand Response Auction: The auction is a market-based approach that replaces the previous DR contracts. This new market for demand response services enables businesses to move from energy price takers to price makers – and be compensated for their efforts.



DEMAND RESPONSE IN ACTION

DEMAND REDUCTION

Demand response can significantly reduce peak demand, particularly on hot summer days. This graph shows what happened several years ago, when peak demand decreased by 1,200 MW on one specific summer day – more than enough to power the cities of Hamilton and St. Catharines.



DEMAND RESPONSE: A GROWING RESOURCE

Efforts are underway to expand opportunities for demand response in Ontario.

Over hot summer days, the combination of all demand response measures can help reduce peak demand by an average of 1,200 MW. This is just the first step. Large businesses and consumers have the potential to contribute much more. Demand response allows the system to tap into flexibility within existing infrastructure.

Demand Response Auction

To encourage more businesses to not only invest in energy-efficient technologies but also to benefit financially from their investment, the IESO has developed a demand response auction. This opportunity can create an unexpected new revenue stream for businesses, simply by reducing electricity usage during periods of peak demand.

The auction provides a transparent and cost-effective way to select the most competitive providers of demand response. It takes offers from large companies and aggregators (representing a group of commercial energy consumers) that commit to reducing their energy use in response to an instruction from the province's grid control centre (the IESO). The auction is repeated each year, creating a sustainable market for demand response service providers, while ensuring that DR is secured at the best available price.

For businesses, DR is an excellent method to reduce costs, as well as generate a new income stream through the auction by using existing facility infrastructure. For the power system, DR represents a clean and cost-effective resource that reduces or defers the need to build new power plants and increases participation in the wholesale electricity market.

For more information on upcoming auctions, including how to participate, visit ieso.ca/DR-Auction

Class A Customers and the Industrial Conservation Initiative

Some large energy users, known as Class A customers, are eligible to participate in a demand response initiative that can reduce their energy costs and benefits the power system as a whole.

Through the Industrial Conservation Initiative (ICI), Class A customers reduce their energy use during the top five hours of peak demand in a year-long "base" period, which in turn reduces the need to build additional infrastructure to support growing electricity demand. In turn, participants are charged the Global Adjustment based on their percentage contribution to these peaks.

Effective January 1, 2017, any organization with a peak demand of more than 1 MW is eligible to participate in the ICI.

A customer's peak demand threshold for Class A eligibility is measured by taking their facility's highest hour of demand for each month of the base period and averaging it out over that year.

Customers that have peak demand greater than 1 MW and less than or equal to 5 MW need to opt in every June 15, signalling their intention to participate in the program. Customers over 5 MW are automatically enrolled and must opt out if they do not want to participate.

For more information about Class A eligibility and the Global Adjustment, visit ieso.ca/global.adjustment

Your local hydro company is also working with eligible customers to determine how they can take advantage of the initiative. For details on your eligibility as a Class A customer, or how to opt in or out, contact your local hydro company (ieso.ca/findyourutility) or IESO Customer Relations.

Possibilities of Demand Response

The IESO is expanding the role of DR within the electricity market by evolving current demand programs, and working with stakeholders to investigate and develop new opportunities.

Demand Response Working Group:

The IESO is seeking the feedback and participation of stakeholders for a renewed Demand Response Working Group (DRWG). The working group discusses technical and market design issues related to DR and investigate opportunities to expand the role of demand side resources. Updates on working group meetings are posted on ieso.ca/drwg

Demand Response Pilot Projects:

The IESO has selected a variety of consumers to participate in pilot projects to test new technologies and capabilities. For more information, ieso.ca/DR-Pilot

TOOLS TO TRACK THE PEAKS



By shifting energy use away from peaks, consumers can lower their energy costs. The IESO provides tools to help large consumers and organizations predict periods of high demand and monitor hourly prices.

1. TIME OF YEAR

Ontario is generally a summer-peaking province, meaning the times of highest peak demand are usually during hot, humid days.

2. TIME OF DAY

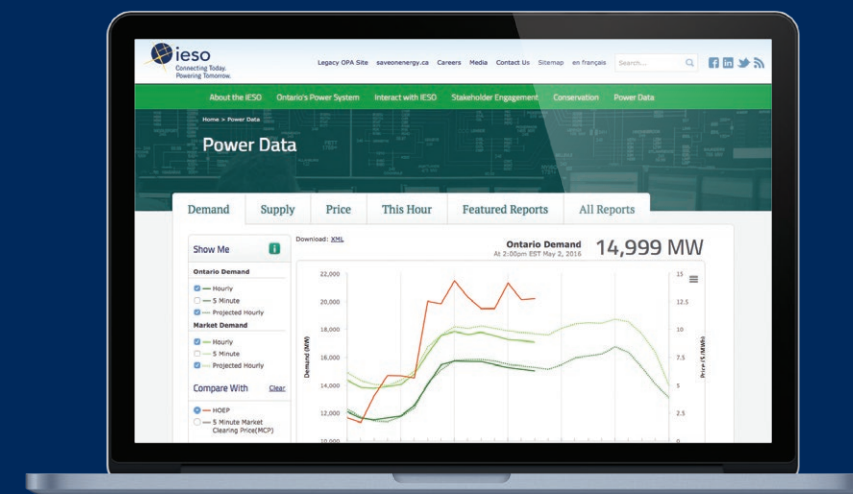
The times of the highest demand in a day vary by season. For example, peaks in the winter tend to be in the early evening when electricity consumers across the province are turning their lights on and making dinner. In the summer, demand tends to be higher in the early to mid-afternoon when air conditioners are turned up.

3. PEAK TRACKER

The Peak Tracker tool, available at ieso.ca/peaktracker, shows the top 10 peaks for the current base period updated in real time. This tool is for Class A customers participating in the Industrial Conservation Initiative.

4. IESO WEBSITE

The IESO provides demand and price tracking in real time as well as an archive of historical data. Use the IESO's Power Data page to help anticipate future peaks at ieso.ca/powerdata and monitor the Hourly Ontario Energy Price.



Ontario's Independent Electricity System Operator

The IESO's primary responsibility is to manage the reliability of the provincial power grid.

The Independent Electricity System Operator (IESO) manages Ontario's power system so that customers receive the power they need when and where they need it. It also operates the province's wholesale electricity market, where the hourly price of electricity is set, plans for Ontario's future electricity needs and guides the province's energy efficiency efforts through the Save on Energy conservation programs.

Demand response is a valuable and cost-effective resource to the system. The IESO is working with consumers and others in the sector to explore and evaluate opportunities to increase their participation in the market.

IESO Customer Relations representatives are available to respond to your questions.

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DID YOU KNOW?

Save on Energy programs offer financial support and technical expertise to help businesses across Ontario reach their energy management goals. Powered by the IESO and offered by local hydro companies, Save on Energy helps businesses to realize the many benefits from using energy wisely. For more information, please visit saveonenergy.ca or contact your local hydro company.

