

A photograph of a male worker in profile, facing right. He is wearing a yellow hard hat, clear safety glasses, and large red earplugs. He is holding a laptop computer with both hands, looking at the screen. The background is an industrial power plant with large silver pipes, metal structures, and a pressure gauge. A teal semi-transparent banner is overlaid on the top right of the image.

# POWER SHIFT

## TOP STRATEGIES

for making Ontario's Global Adjustment work **FOR** you

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## WELCOME TO POWER SHIFT

*Top strategies for saving energy costs through Ontario's Global Adjustment.*

In September, the Ontario government announced it would open up eligibility for its Industrial Conservation Initiative (ICI) program to more mid-sized businesses, presenting an opportunity for manufacturers to opt in and save on Global Adjustment charges. Inside, you'll find more information on this important change, an overview of the Global Adjustment, and strategies for predicting energy peaks.



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# Ontario redefining 'Class A' to give business a break

Province offering mid-sized manufacturers industrial-sized savings

BY DAVID KENNEDY

It's not often governments offer businesses an opportunity to save a few hundred thousand dollars on operating costs. But in September's speech from the throne, that's exactly what the Ontario government did for mid-sized manufacturers across the province.

Along with laying out plans to rein in electricity costs for homeowners, Queen's Park committed to significantly expanding the [Industrial Conservation Initiative \(ICI\)](#), a program designed to help businesses slash the [Global Adjustment \(GA\)](#) line on their electricity bill by as much as 34 per cent.

"This is a huge savings opportunity—to the tune of more than \$200,000 per megawatt," said Chris Loughren, Manager of Commercial Energy Solutions at Bruce Power Direct, a division of Bruce Power that serves commercial energy customers in Ontario exclusively.

The program allows eligible companies to trim their GA charge, and overall electricity bill along with it, by rewarding them for decreasing their electricity demand at times when Ontario's grid is the most strained—a system known as 5 Coincidence Peak (5CP).

Under 5CP, large power users, or [Class A electricity customers](#), are charged the GA based on the percentage of their peak demand relative to the overall system demand during the five peak hours of the year.

[Class B customers](#), meanwhile, are charged the market GA price, based on their kilowatt hours of electricity. If you're



not already a Class A customer, this is the way the GA is charged on your bill.

When the ICI was first introduced in 2011, only the province's largest companies—those whose monthly peak power demand was greater than five megawatts—were eligible for Class A status. That threshold was then lowered to 3 MW in 2014 [with some restrictions](#).

Once the latest regulation changes take effect, however, any business with an average peak demand greater than a single megawatt will be eligible for Class A status.

This opens the ICI program up to hundreds of mid-sized manufacturers throughout Ontario. Loughren estimates the number of Class A customers will expand from around 500 under the old regime to as many as 2,000.

Businesses with more than 100,000 sq.ft. of floor space are now likely to qualify. With electricity costs typically among the top two operating

expenses for Ontario manufacturers, the program is a great a chance for companies to reduce costs and boost their competitiveness.

"The Global Adjustment portion of your costs that you're now being put in control of is anywhere from 60 to 80 per cent of your total energy costs," Loughren said.

Roughly speaking, 1 MW of demand translates to a \$1.2 million yearly electricity bill—meaning even the smallest companies to qualify for Class A could save \$220,000 each year on electricity.

And though it's a complicated process—requiring businesses to anticipate the five hours each year when the province's power demand will peak—there are tools to help.

## Opting in or out

The province is still working to finalize the latest changes, but like previous iterations of the Industrial Conservation



## ELECTRICITY RATES >

Initiative, companies will likely be free to opt in or out of the program.

The first thing newly-eligible businesses should do is determine if they're better off joining the program as a Class A customer, or if they should stay put and pay the standard Class B rate. With the potential cost savings, the choice may appear obvious, but there are a number of important factors to consider when opting in. Foremost among them, Loughren said, is the risk joining the program may end up costing you money.

"If a customer's demand naturally peaks at the same time as the province's, they will pay more as a Class A customer (if they've opted in to the program), unless they're able to shift their consumption so it doesn't peak at the same time as the 5 CP's."

Any company that relies heavily on cooling, for instance, should take particular precaution when deciding to join the ICI.

"If your electricity consumption is driven by cooling load—whether that's air conditioning, freezer, cold storage, or food production—the chances are you're not going to realize any savings unless you can adjust your consumption so that your demand is not peaking during the 5 CP's," Loughren said.

That's not to say it's impossible. Loughren has helped large-scale food manufacturers save money after they've opted into the ICI, but because the five yearly peaks often occur on hot, muggy days, reliance on cooling often makes taking advantage difficult.

For manufacturers with flatter load profiles, minor operational changes—such as bringing some equipment out of service at opportune times—can lead to somewhere in the range of 30 per cent savings on GA fees.

To perform a basic assessment, companies should start by calculating their peak demand factor, or PDF, for the past few years. Combining



*“That global adjustment portion that you’re now being put in control of, that’s anywhere from 60 to 80 per cent of your total energy costs”*

*–Chris Loughren, Bruce Power Direct*

your PDF with the historical Global Adjustment total will show what your company's GA charge would have been had you been enrolled in the ICI program. You can find a step-by-step breakdown of the [calculation here](#).

If your hypothetical GA charge is lower than what your company actually paid in GA fees over the same time period, it's worth opting into the program—assuming your power consumption will remain consistent in subsequent years.

Meanwhile, calculating a higher charge does not necessarily mean it's game-over.

“Even if you determine it doesn't make sense for you to opt in now, based upon your performance the previous year, you're going to want to get yourself ready for when the new year for the GA starts,” Loughren said. He points out the GA doesn't follow a standard calendar year, but a “peak year.”

For 2016, the peak year starts May 1, 2016 and ends on April 30, 2017. A customer's peak demand in the summer of 2016 will affect their GA costs starting in the spring of 2017.

Manufacturers on the fence about opting in or out can work toward reducing their power demand during peaks throughout the rest of the 2016 and then make the all-important opt-in or –out decision before the new peak year starts.

If your power-saving initiatives are successful, you can opt into the program next year.

If not, you can simply remain a Class B customer, pay the market GA rate and redouble your efforts to shift your power consumption during the five peaks the following year.

In addition to saving on the GA, the program also incentivizes companies to become more energy efficient, reducing bottom-line electricity costs. Between Hourly Ontario Energy Price (HOEP) and GA savings, the average company reduces its overall bill by about 20 per cent through the ICI program.

In exchange, the province is able to reduce its spend on costly peaking plants used to top up Ontario's power supply on days of extremely high demand—resulting in savings all around.

# What is the Global Adjustment?

Manage your energy costs by understanding this consumption-based rate

BY CHRIS LOUGHREN

**T**he Global Adjustment (GA) is a consumption-based rate that closes the gap between hourly electricity rates and contracted rates with electricity generators. The GA pays for contracted and regulated generation and IESO conservation programs.

Manufacturers who reduce their electricity consumption (kWh) can curb their GA costs, so it's important to understand how the rate is calculated and charged. The GA pays for contracted and regulated generations and IESO conservation programs.

Consider this example. If the Hourly Ontario Energy Price (HOEP) is 2 cents/kWh, and an electricity generator has a contract with the government for 8 cents/kWh, the Global Adjustment will be 6 cents/kWh. It closes the gap between the HOEP and the rate contracted with the generator. As a consumer of this electricity, you are charged a total of 8 cents/kWh.

The Global Adjustment varies from month to month, responding to changes in both the HOEP and contract terms. "Class A" customers are charged GA based on their percentage contribution to the top five peak demand hours each year, whereas "Class B" customers are charged the market GA price, based on the total amount of electricity used.

Until very recently, eligibility for Class A was restricted to the largest consumers, those with an average monthly peak demand greater than five megawatts (MW). However, the number of Ontario businesses that can benefit from this initiative has just expanded considerably.

The 5 megawatt threshold was reduced to 3 megawatts (with some restrictions) in 2014, and the new regulations coming into effect will lower the threshold even further, to one megawatt—opening up GA potential savings to thousands of additional consumers who opt to enroll in the Industrial Conservation Initiative (ICI).

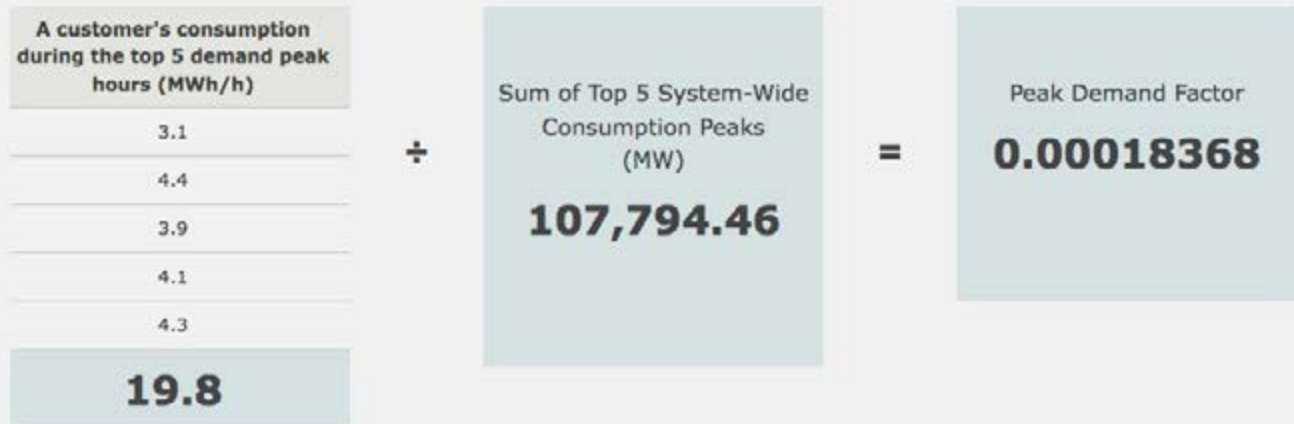
## The Global Adjustment in action



To better understand the Global Adjustment, take wind energy as an example. In January 2016, the average market rate or the HOEP (Hourly Ontario Energy Price) was 1.3 c/kWh and the wind farm had a contract with the government for 11 c/kWh. To close the gap between the HOEP and the contractual commitment, 9.7 c/kWh is paid to the generator through the Global Adjustment.

## The impact of your peak demand factor

After the IESO establishes the final top five Ontario demand peaks, Class A customers are assessed for their power demand during those five hours (coincident peaks) to calculate their share of the peak demand, according to the IESO. This portion is called a peak demand factor (PDF) and is used to determine the customer's GA costs for the billing cycle.



### Class B consumers

Class B customers are those with a peak demand over 50 kilowatts and under one megawatt. These consumers are billed by their local distribution company (LDC) or their retail contract provider and there are three variations of the Global Adjustment rate—the 1st estimate, 2nd estimate, and actual, posted at different times of the month, according to the Industrial Electricity System Operator (IESO).

The 1st estimate is based on an estimate of GA costs based on the previous month, an estimate of Ontario demand for the given month, and a ‘true-up’ accounting for the difference between the previous month’s 1st estimate and the actual rate.

The 2nd estimate is a separate calculation based on actual GA costs and demand data at the time it’s published, an estimate for GA and demand for the remaining days of the month. It also includes a true up accounting for the difference between the previous month’s 2nd estimate and the actual rate, according to the IESO.

The actual rate is based on actual electricity demand and GA costs, and is published on the 10th business day of each month. Manufacturers shouldn’t worry if they’re billed on the first estimate, second estimate or the actual, because they all work out to the same result in the end.

If you’re unsure if your GA charges are correct, as part of our energy management services, Bruce Power offers bill verification.

The GA pays for much needed electricity infrastructure renewal in Ontario. The lower rates of the past just covered the maintenance of generators we already had, but weren’t sufficient to add or upgrade capacity, or to cover the costs of moving Ontario away from coal-fired energy. It also helps cover the cost of the use of expensive ‘peaking’ plants needed during spikes in demand.

A big part of lowering your GA costs is reducing energy consumption overall, looking across your operations to identify how and when energy is used, and might be saved.

### Class B example of GA charges

YTD = YEAR-TO-DATE SOURCE: IESO



<b>Hourly Price (Weighted Average) ¢/kWh</b>	1.60	1.24
<b>Global Adjustment ¢/kWh</b>	9.62	11.23
<b>Your Bottom Line ¢/kWh</b>	<b>11.23</b>	<b>12.46</b>

### CLASS A POTENTIAL SAVINGS by enrolling in the ICI program

In this hypothetical example, a manufacturer is assessed on its percentage contribution to the top five hours of peak demand in Ontario over the base period (May 1 to April 30). The percentage contribution is also known as the customer’s peak demand factor. As determined by calculating the GA based on “a” and “b” the manufacturer stands to significantly save energy costs by opting into the ICI.

System Peak Occurrence	System Load (MW)	Manufacturing Customer’s CP (MW)
Peak 1: JULY 17 Hour ending 4:00 pm	24,689	3.20
Peak 2: JULY 19 Hour ending 1:00 pm	24,207	3.59
Peak 3: JULY 18 Hour ending 4:00 pm	24,070	2.89
Peak 4: JULY 16 Hour ending 4:00 pm	24,009	3.33
Peak 5: JULY 15 Hour ending 4:00 pm	23,596	3.40
<b>AVERAGE</b>	<b>24,114 (“A”)</b>	<b>1.36 (“B”)</b>

The Peak Demand Factor (PDF) is defined as “b” divided by “a” so the manufacturer’s PDF is 0.000136113. The PDF is used to calculate the customer’s global adjustment (GA) charge over the adjustment period (July 1 to June 30). This is calculated by multiplying the PDF by the total GA.

Based on historical HOEP and GA, the manufacturer stands to realize approximate savings from enrolling into the program of \$280,000 or 14 per cent.

If the customer is able to shift their demand during the top five peak hours, they will be able to make additional savings by lowering their PDF, resulting in additional savings of \$20,000

# Chasing the peaks

Class A consumers stand to save Global Adjustment costs if they can shift energy consumption away from the top five demand spikes

BY CHRIS LOUGHREN

**G**lobal Adjustment (GA) charges and savings directly correspond to the amount of power a company uses during the province's five yearly demand peaks.

The underlying challenge for companies in the Industrial Conservation Initiative (ICI) program—which charges businesses based on their contribution to demand during these five peaks through the GA—is how to maximize power consumption cuts while minimizing productivity losses.

Ontario's Independent Electricity System Operator provides a free [data stream](#) designed to help companies plan their consumption, but there are few guarantees.

“It's important to know that these peaks are incredibly difficult to forecast,” Loughren said. “If you want to reduce your consumption for all five peaks, you generally need to reduce your consumption for 100 hours throughout the summer.”

For the past two years, the five peaks have occurred during the hot, humid days of summer, so this is a season manufacturers will want to focus on in their efforts to shift or reduce demand.

Even when the trend for Ontario peaks to land in the summer months, forecasting these peaks is only getting more complex. Unsurprisingly, as more companies opt into the program and begin watching for the peaks and curtailing

*Continued on page 8*

*About 1,500 mid-sized manufacturers will soon be able to opt into the ICI, but more eligible companies mean new challenges*

## Summer peaks

### MAY 1, 2015 TO APRIL 30, 2016

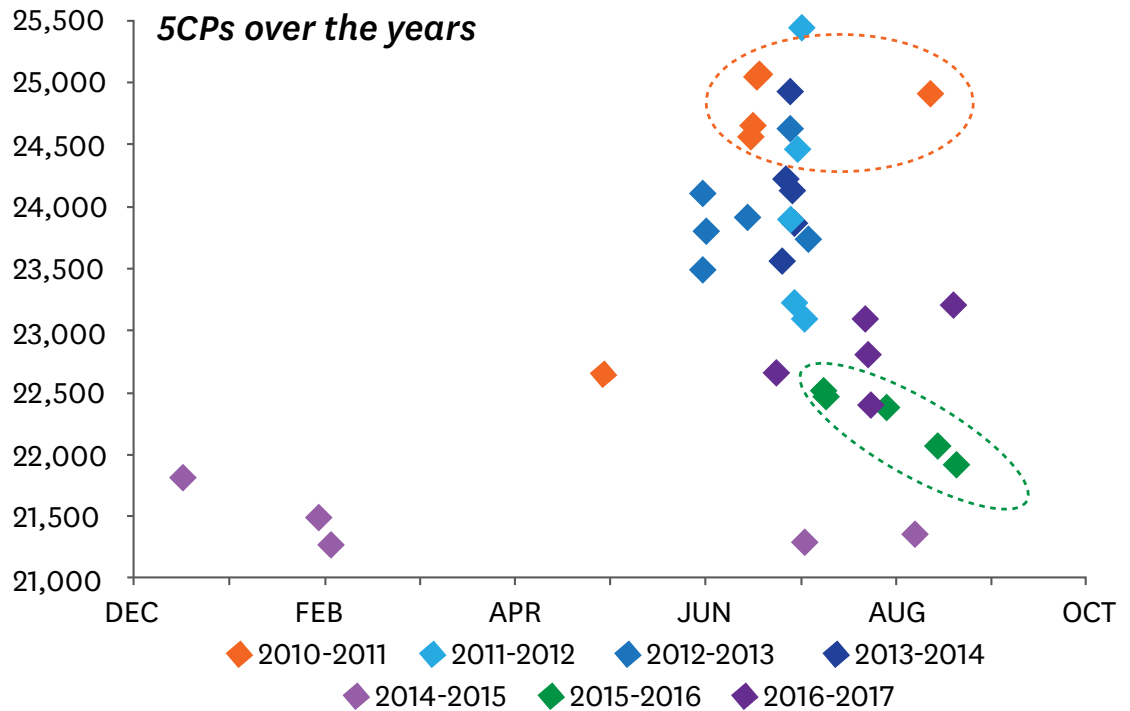
### CURRENT PEAK YTD (FROM MAY 1, 2016)

Rank	Date	Hour ending	Ontario Demand (MW)	Rank	Date	Hour ending	Ontario Demand (MW)
1	July 28, 2015	5:00 PM	22,516	1	August 10, 2016	6:00 PM	22,516
2	July 29, 2015	5:00 PM	22,472	2	September 7, 2016	5:00 PM	22,472
3	August 17, 2015	5:00 PM	22,383	3	August 11, 2016	5:00 PM	22,383
4	September 2, 2015	5:00 PM	22,063	4	July 13, 2016	6:00 PM	22,063
5	September 8, 2015	6:00 PM	21,293	5	August 12, 2016	5:00 PM	21,293



◆ In the first year of ICI (summer 2010) 4 of the 5 peaks happened in the same week and were all relatively close in magnitude

◆ In 2016 the peaks were spread over 6 weeks and had much greater difference between the highest and the lowest peak



*“It’s important to know that these peaks are incredibly difficult to forecast. If you want to reduce your consumption for all five peaks, you generally need to reduce your consumption for 100 hours throughout the summer.”* –Chris Loughren, Bruce Power Direct



their electricity usage accordingly—taking advantage of the government’s recent expansion of Class A eligibility—it will be more difficult to predict when the province’s electricity demand will spike.

Even when the program was first instituted in 2011, the peaks were a moving target—now they’re moving around even more.

Under the previous 3 MW eligibility threshold, Class A customers made up approximately five to seven per cent of Ontario total electricity demand. With the ICI opening up to about 1,500 new companies though, Class A customers are expected to soon make up 10 to 12 per cent of the province’s overall demand.

“You get into this game of whack-a-mole,” Loughren said. “That’s making it more challenging for customers to reap the benefits realized by people that were in the program previously.”

While some companies—particularly extremely large electricity users—choose to forecast the five peaks in-house, many look for help from outside service providers, which can provide them with detailed forecasting tools to ensure they aren’t running at full power when a peak hits.

Bruce Power Direct, for instance, offers detailed forecasts, as well as real-time updates notifying companies of what week, day and hour they should expect a peak. Visit Bruce Power Direct to learn more.



# Saving energy costs on the Global Adjustment

Understand your consumption patterns to avoid the peaks

**W**ith the latest changes to the Industrial Conservation Initiative announced by the Ontario government in September, many more mid-sized manufacturers will be eligible to opt in to the program.

Those who opt in [stand to save on Global Adjustment charges](#) by shifting energy demand away from the province’s top five peaks per year. According to the government of Ontario, Class A consumers will save on average 15 to 20 per cent on their energy costs.

As manufacturers know, however, predicting those peaks is anything but easy. They do, however, tend to bunch up in the hot months of summer as temperatures soar.

## Potential savings from opting in

Sector/NAICS	Average Monthly Peak Demand	Annual Estimated Savings	Reduction to Total Bill
Manufacturing (31-33)	4.1 MW	~ \$400,000	12%
Data Processing (518)	3.2 MW	~ \$900,000	23%

Source: Ontario Ministry of Finance

Knowing that, it’s up to manufacturers to determine when they use the most energy, and how they might implement production changes to reduce their energy demand when the peaks often hit—between 5:00 pm and 6:00 pm in the hot summer months.

## THE PATH TO SAVINGS

With timely data, manufacturers can better understand their energy usage patterns, and in many cases, shift operations or production to less expensive days and times. Energy management and visibility systems—many of them cloud-based—fill an important need for industrial businesses aiming to curb energy costs.

These systems help manufacturers make key decisions about shop floor production by providing several important benefits:

**Automation:** Data collection, reporting, budgeting processes and consumption targets are automated, providing improved accuracy, and saving time and the frustration of managing complex energy budgets manually.

**Aggregation:** Energy information from various locations can be pulled together, so you can access and analyze your data from within a single, cloud-based management system.

**Normalization:** Energy consumption across facilities can be normalized to establish metrics that make sense for your business, enabling you to pinpoint waste, troubleshoot problems and set better energy conservation goals.



**Multi-location management:** Create as many groups as you need to compare and cross reference your data across facilities, regions, or whatever makes sense to your business. Then use those groups in your analysis, including realizing the full power of benchmarking, to make meaningful comparisons and identify opportunities to reduce energy consumption.



**Benchmarking:** Identify outliers and take action to eliminate the anomalies that are costing you money.



**Creating baselines:** Set baselines to mark your current state and measure your performance over time, so that you can observe and track how your business decisions influence your energy consumption and spend.



**Key performance indicators:** Report and trace KPI’s automatically without time consuming manual effort.



**Bill verification and analysis:** Verify and validate your bills to ensure your costs are correct, giving you the certainty that your energy decisions are based upon 100% accurate data.

# Energy management is like shooting the rapids for Class A customers

Do you know where to steer?

How do nature's highs and lows affect my energy costs and what can I do about it?



BY CHRIS LOUGHREN

Statistically, Ontario's hottest days occur in July, which also means the highest electricity demands of the year happen in this month. We've already seen two of 2016's highest demand hours occur on July 13 and July 22.

For Class A customers, anticipating these peak hours is like whitewater rafters anticipating rocks in a river. You know they're in there, but if you haven't mapped your route in the past you're approaching them blindly.

## Before getting in the water

Class A customers that have opted to participate in the IESO's Industrial Conservation Initiative pay Global Adjustment (GA) fees according to a percentage of their contribution to the top five Ontario peak demand hours over a 12-month base period. Sounds pretty straightforward, right? If you reduce your usage during those

peak demand hours, your GA will go down. And that can translate to huge savings.

But the challenge lies in knowing when those top five hours—also known as the 5CP, or Five Coincident Peak hours—will hit, and reducing your energy consumption during those times. Learn more about how the 5CP hours affect the GA [here](#).

For Class A customers who want to save on energy costs, it's a bit like whitewater rafting: the rest of the summer could be a gentle downward drift of the mercury or a series of dramatic temperature spikes like shooting a Class V rapid.

It can become a gamble. You need to consume energy to make your end product, but do you cut production on suspected peak demand days or wait to see if even higher demand spikes will come up in the future?

*“For Class A customers who want to save on energy costs, it's a bit like whitewater rafting: the rest of the summer could be a gentle downward drift of the mercury or a series of dramatic temperature spikes like shooting a Class V rapid”*

*—Chris Loughren,  
Bruce Power Direct*

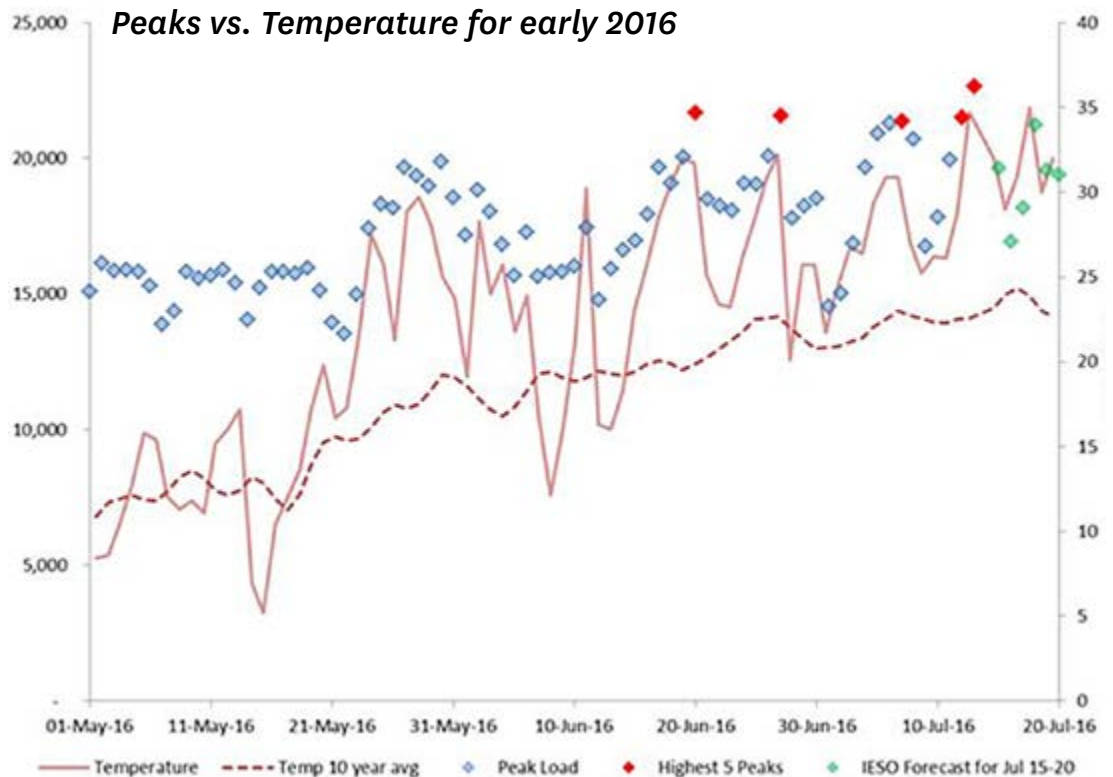




*“The challenge lies in knowing when those top five hours... will hit, and reducing your energy consumption during those times”*

*—Chris Loughren,  
Bruce Power Direct*

*Temperature has a major impact on electricity use. Since 2010, 32 of 35 peaks have occurred on hot, muggy days*



We’ve already had five Coincident Peak (5CP) hours this energy year, and the Ontario peak demand this summer is higher than the same period last year. However, this unpredictable weather makes it impossible to tell whether additional peak hours will be in the summer, or if some will fall in the winter months as they did two years ago. All of this impacts your energy consumption and GA charges, so you have some tough decisions to make.

### Making it pay

Electricity consumers have a [great opportunity](#) to reduce their costs by cutting their demand at the right times.

In addition to the basic energy savings you get from curtailing your overall power consumption, you can save between \$100 and \$300 per kilowatt in GA charges by reducing your demand during a peak.

You can read more about quantifying Class A customer savings by exploring a couple of examples [here](#). Timing is everything. To

achieve those benefits, you need to reduce your demand at the right time. And that right time can be tricky to hit. For example, the graph above is a track record of the Ontario demand and temperatures for the period between May 2016 and July 2016. The red dots are the 5CP hours recorded for that period.

The 5CP hours are key for determining your GA savings. And as we’ve shown, you can save considerably. For Class A customers, anticipating these hours is truly like whitewater rafters anticipating rocks in a river—if you haven’t made the effort to map your route, you’re approaching them blindly.

### We can help

By analyzing your hourly energy consumption across your entire operation, The Bruce Power Saver can help you understand your usage patterns, so that you can make timely alterations to reduce your peak and save money. At Bruce Power Direct we have the expertise to help you navigate this rocky river of information.