

Avoiding the System Coincident Peak

Background

Many Ontario large industrial electricity consumers actively monitor market prices and demand, and choose to reduce their consumption for certain hours in a month to ensure their own peak consumption does not occur at a time when Ontario system demand is at a peak. To some companies, avoiding this coincident peak hour can save tens or hundreds of thousands of dollars on their monthly electricity bills.

The OEB Transmission Rate Schedule¹ establishes the monthly network service charge based on the greater of the customer's monthly demand peak which is coincident with the system peak, or 85% of their monthly demand peak during peak hours (Monday – Friday, between 7am – 7pm EPT). The demand values are based on a customer's Actual Quantity of Energy Withdrawn (AQEW measured from their revenue meter), and the sum of all load AQEW in the province.

Having an indicator of when a potential monthly system peak may occur can be valuable to customers that are able to shed load for those hours and thereby reduce their monthly network charges.

Example of Savings from Avoiding the Coincident Peak:

A large industrial customer that can reduce load by 50MW and has a flat demand profile can reduce their monthly transmission network service demand charge by 15% by avoiding the coincident peak. This can result in a saving of \$22,275 in the month.

If that same customer has a demand profile such that they shift their consumption to off-peak hours, then it will also generally avoid paying any network service charge unless the monthly peak occurs outside of the regular peak hours when it may be at full load. In this case, the company can avoid a charge of \$148,500 by shedding its load during the hour of coincident peak.

Dashboard Ontario Load Peak Alerts

The Sygration Dashboard includes both forecast and historical calculations for Ontario Load. This parameter can be used as an approximation for the system-wide AQEW as it is available in near real-time, while the actual AQEW is not finalized and published by the IESO until approximately 8 weeks after the month end.

¹ OEB Ontario Transmission Rate Schedule for 2010, Network Service Rate (PTS-N): 2.97 \$/kW

The Network Service Billing Demand is defined as the higher of
(a) customer coincident peak demand (MW) in the hour of the month when the total hourly demand of all PTS customers is highest for the month, and

(b) 85 % of the customer peak demand in any hour during the peak period 7 AM to 7 PM (local time) on weekdays, excluding the holidays as defined by IESO. The peak period hours will be between 0700 hours to 1900 hours Eastern Standard Time during winter (i.e. during standard time) and 0600 hours to 1800 hours Eastern Standard Time during summer (i.e. during daylight savings time), in conformance with the meter time standard used by the IMO settlement systems.



The Ontario Load parameter can be added to your Dashboard's Hourly System Forecast and you can receive Dashboard audible and visual alerts when it is within range of the current month's peak value. The value is derived by Sygration using a combination of Market Demand, System Losses, Intertie Schedules, and Off-Market Transactions (emergency imports/exports, Shared Activation of Reserve, etc). It also factors in exports from generators that are not considered in-market as they have segregated from the Ontario grid.

While it is useful for energy managers to be alerted that a potential monthly peak is forecast to occur, it is important to understand the many reasons why the alerted hour may not actually become the final peak for a month:

1. Alerts are based on the forecast only, which always has some degree of uncertainty and error,
2. Each forecast value is hourly but is actually based on the expected 5-minute peak within the hour, and not the forecast average for the hour,
3. Large consumers (including yourself) that are alerted of a Peak forecast may reduce consumption in order to avoid it, resulting in a lower final system-wide value.
4. A larger peak demand may still come at a later day in the month.
5. Forecasts and real-time data are based on load estimates and telemetry, which are less accurate than the revenue meter data that the final system-wide AQEW is based on.

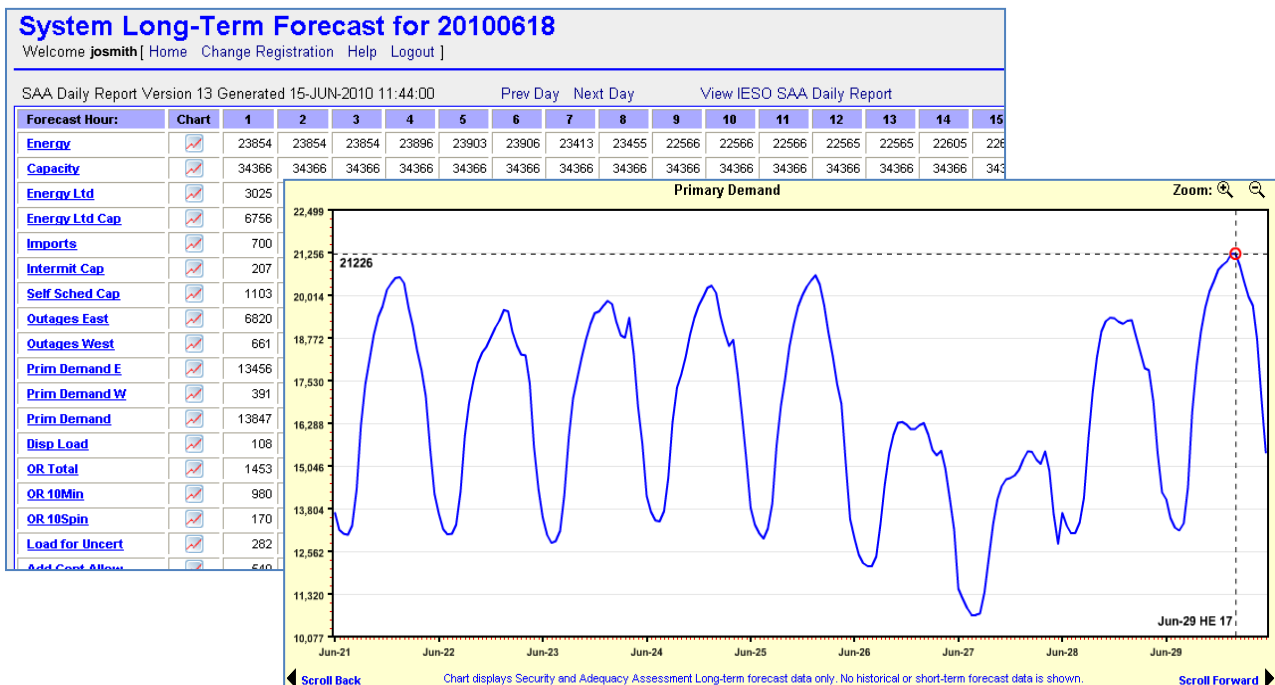
For these reasons it is very important to always consider the validity of the peak alert, and to recognize that the alert itself is only one piece of a much larger puzzle.

Will the Peak Demand Stick ?

Regardless of whether an identified peak hour is forecast to occur or has already occurred, the next question will be whether that hour will remain as the highest peak for the duration of the month. To address that question, two new tools have been added to the Sygration Dashboard to provide a long-term forecast as well as an historical analysis.

New Long-Term Forecast

A Long-Term Forecast page has been recently added to the Dashboard. Its data is sourced from the IESO Security Adequacy and Assessment Daily report, which provides a 14-day outlook on key system parameters including Ontario Demand. While the value for Ontario Demand includes system losses that are excluded from the final AQEW calculation, these losses are generally proportional to the demand and this parameter can still be used to identify relative differences or a trend in Ontario Load.





The report provides a view to a single day at a time, showing all parameters for the 24 hours in that day. By clicking on any parameter (or its chart icon) you can display up to 14 days of forward data in a chart. The chart uses Adobe Flash, and it allows you to move your mouse over the chart to see the value it is floating over. It will also snap to the value of the line if you bring your mouse close enough to the line. Finally, you can also zoom in and zoom out, or scroll backwards or forwards.

New TTDC Historical Peaks Report

Within the Sygration data warehouse, a new table has been created to track the historical Ontario Load parameter, as calculated by Sygration, and identify how each hourly value ranks within the Day, Month and Year. A new report has been added to the Dashboard Private Reports area that includes several queries against this table, allowing you view historical data from past peaks in order to determine past trends. The reports include:

- Top 4 Ranked Peaks in Month from Past Years
- Top Daily Peak Values for Month - Historical and Current
- Average Daily Peak from Past Years +/- 20 days from Today
- Top 30 Annual Peaks for a Year

Additional queries will be added to this report based on feedback from customers.

Proposed 5-Coincident Peak Global Adjustment Allocation:

Daily, monthly and annual ranking values for Ontario Load are maintained for each hour. While some of these are not applicable to the Monthly TTDC calculation, a proposal to have Global Adjustment allocated to industrial customers (greater than 5 MW) based on their top 5 coincident system demands within a year is the reason for this addition. The new calculation uses much of the same data, except that the province-wide demand will be further grossed up to include any generation that is embedded within LDCs and not directly visible by the IESO. Embedded generation is currently not available in the Sygration calculation.

Comparison of IESO Published AQEW with Sygration's Ontario Load

Since the actual system-wide AQEW is not available for several weeks after the month-end, the Sygration estimate for Ontario Load is used for forecasting and historical comparison within the month. This section compares the final AQEW values with the Sygration Ontario Load parameter to provide a sense of that parameter's validity.

The table below shows the top three ranked demand hours in each month from the IESO TTDC Peak System Demand Final Report. These hours are compared to the ranking by the Sygration Ontario Load historical data. *IESO Source: <http://reports.ieso.ca/public/TTDC-PeakSystemDemand-Final/>*

Month	Date	Hour	Quantity (kWh)	IESO Rank	Sygration Rank
May 2009	21 May 2009	13	16,589,125.00	1	1
	21 May 2009	14	16,544,815.00	2	2
	21 May 2009	16	16,521,683.00	3	6
June 2009	24 Jun 2009	16	21,418,631.00	1	1
	24 Jun 2009	17	21,371,558.00	2	2
	24 Jun 2009	15	21,164,888.00	3	3
July 2009	28 Jul 2009	17	19,166,386.00	1	1
	28 Jul 2009	16	19,151,006.00	2	2
	28 Jul 2009	15	18,885,202.00	3	5



August 2009	17 Aug 2009	13	23,139,476.00	1	1
	17 Aug 2009	14	23,096,774.00	2	2
	17 Aug 2009	16	23,032,493.00	3	4
September	08 Sep 2009	16	18,907,113.00	1	1
	08 Sep 2009	17	18,849,680.00	2	2
	08 Sep 2009	15	18,733,896.00	3	3
October 2009	15 Oct 2009	19	17,616,140.00	1	1
	14 Oct 2009	19	17,426,790.00	2	3
	26 Oct 2009	18	17,349,505.00	3	6
November	30 Nov 2009	18	18,960,033.00	1	1
	30 Nov 2009	19	18,745,684.00	2	2
	30 Nov 2009	20	18,434,239.00	3	6
December	16 Dec 2009	18	20,877,925.00	1	2
	17 Dec 2009	18	20,871,460.00	2	1
	17 Dec 2009	19	20,819,197.00	3	5
January 2010	04 Jan 2010	18	21,140,564.00	1	1
	28 Jan 2010	19	21,025,112.00	2	2
	04 Jan 2010	19	21,016,675.00	3	3
February 2010	01 Feb 2010	19	20,494,370.00	1	1
	09 Feb 2010	19	20,256,592.00	2	2
	02 Feb 2010	19	20,243,116.00	3	3
March 2010	01 Mar 2010	20	18,529,402.00	1	1
	04 Mar 2010	20	18,485,762.00	2	3
	02 Mar 2010	20	18,438,150.00	3	2
April 2010	09 Apr 2010	11	16,726,675.00	1	2
	09 Apr 2010	10	16,710,336.00	2	3
	08 Apr 2010	20	16,659,930.00	3	1

Contact Sygration if you have comments, questions or for more information on the Market Dashboard.

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