Ontario Electricity Market Intelligence -

What You Need to Know to Minimize Peak Demand and Global Adjustment Charges

Presented by:

Willie Grove - Managing Director of Business Development

Rodan Energy Solutions

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About Rodan Energy Solutions

Rodan is a provider of smart grid and energy management solutions for power producers, consumers and distributors throughout North America

Our full suite of services includes:

- Power Systems/ Engineering, Metering & Smart Grid Services.
- Distributed Energy Resources - Demand Response, Distributed Generation and Storage.
- Asset Optimization Strategies
- Rodan (Sygration) Real Time Ontario Market Intelligence Dashboard.
- Critical Peak Demand (CPD) Advisory Services (Alberta)
- Facility Intelligence Suite– leading provider of real time EMIS solutions across all commodities.

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What is the Global Adjustment (GA)

- Nuclear, hydro, wind, solar, biomass and a small amount of legacy natural gas generation and are paid a fixed price in dollars per megawatt-hour ("$/MWh") of output.

- Individual generators earn part of their revenue from the hourly spot market administered by the IESO.

- The market price in any given hour (also in $/MWh) is referred to as the Hourly Ontario Energy Price ("HOEP")

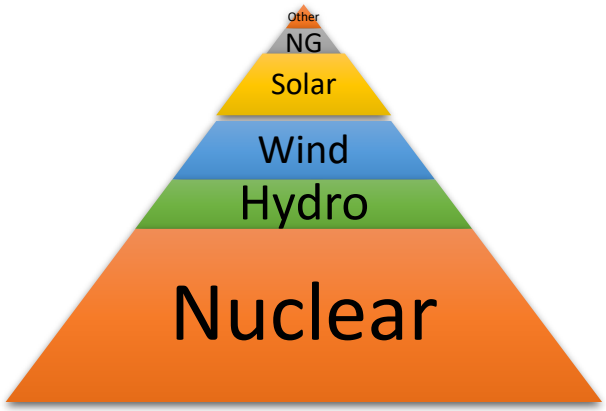
- To keep the contracted generators whole, the difference between HOEP and the fixed price contracts is made up through the Global Adjustment.

What is the Global Adjustment?

- Hourly price is set by the market (Efficient Dispatch) at a Market Clearing Price (MCP)
- Contracted generators need to be kept “whole”

All Consumers <500 kW
Pay for GA as part of
their hourly rate

$13B



Class A - Customer Options

- Consumers Greater than 5 MW Demand are by default Class A Consumers.
- Consumers between 1MW and 5MW are Class B consumers but can opt into Class A by **June 15** each year for the adjustment period starting July 1.
- Consumers between 500 kW and 1 MW with certain NAICs codes can opt into Class A as above (manufacturing and greenhouses).
- Peak Demand Factor (PDF) vs Previous Year (a fraction with your load/provincial load)

Global Adjustment Forecast Costs 2017 - 2026

		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
contracted energy	TWh	153	154	154	149	145	142	127	139	122	126	131
weighted contract price	$/MWh	$ 80	$ 87	$ 87	$ 89	$ 91	$ 93	$ 94	$ 97	$ 97	$ 99	$ 102
HOEP	$/MWh	$ 13.76	$ 14.00	$ 13.50	$ 14.50	$ 17.50	$ 20.00	$ 41.50	$ 24.50	$ 53.50	$ 47.50	$ 42.00
GA total cost	$ million	$ 11,600	$ 13,090	$ 13,610	$ 13,430	$ 12,980	$ 12,650	$ 9,000	$ 12,180	$ 7,530	$ 8,700	$ 9,910
Class A value *	$/MW/year	**$540,000**	**$609,000**	**$633,000**	**$625,000**	**$604,000**	**$588,000**	**$419,000**	**$567,000**	**$350,000**	**$405,000**	**$461,000**
GA total cost, sensitivity	$ million per $/MWh of HOEP	(154)	(156)	(154)	(150)	(146)	(142)	(130)	(142)	(124)	(128)	(132)

$ 527,364

* based on average High 5 AQEW + embedded generation of 21,500 MW

Source : Bruce Sharp Energy

Global Adjustment 2019 - 2020

2018

Ontario Demand Peaks

Rank	Value	Date	HE
1	23240	05-Sep-2018	18
2	23045.7	05-Jul-2018	16
3	22517.7	04-Jul-2018	19
4	21989.6	28-Aug-2018	17
5	21885.2	04-Sep-2018	17
6	21760.8	03-Jul-2018	19
7	21536	16-Jul-2018	12
8	21525.1	21-Jan-2019	18
9	21508.2	15-Jul-2018	18
10	21450.9	24-Jul-2018	17

AQEW Peaks

Rank	Value	Date	HE
1	22551	05-Sep-2018	17
2	22415	05-Jul-2018	15
3	22123	04-Jul-2018	18
4	21644	28-Aug-2018	17
5	21379	04-Sep-2018	17
6	21291	03-Jul-2018	19
7	20980	15-Aug-2018	17
8	20954	16-Jul-2018	12
9	20943	24-Jul-2018	17
10	20939	14-Aug-2018	17

2017

Ontario Demand Peaks

Rank	Value	Date	HE
1	21786.4	25-Sep-2017	17
2	21541.7	26-Sep-2017	17
3	21167.8	12-Jun-2017	17
4	20905.9	05-Jan-2018	18
5	20768.2	06-Jan-2018	18
6	20627	19-Jul-2017	19
7	20457.3	24-Sep-2017	18
8	20428.6	07-Jan-2018	18
9	20379.9	03-Jan-2018	18
10	20366.1	06-Jul-2017	18

AQEW Peaks

Rank	Value	Date	HE
1	21171	25-Sep-2017	17
2	21039	26-Sep-2017	17
3	20702	12-Jun-2017	17
4	20237	05-Jan-2018	18
5	20123	19-Jul-2017	18
6	20045	06-Jan-2018	18
7	19898	24-Sep-2017	17
8	19886	03-Jan-2018	18
9	19869	06-Jul-2017	18
10	19860	13-Dec-2017	18

2016

Ontario Demand Peaks

Rank	Value	Date	HE
1	23213.2	07-Sep-2016	17
2	23100.4	10-Aug-2016	18
3	22812.3	11-Aug-2016	17
4	22659	13-Jul-2016	18
5	22401.5	12-Aug-2016	17
6	22311.5	04-Aug-2016	17
7	22150.4	06-Sep-2016	17
8	22024.4	22-Jul-2016	17
9	21963	08-Sep-2016	18
10	21925.8	05-Aug-2016	13

AQEW Peaks

Rank	Value	Date	HE
1	22636.69	10-Aug-2016	18
2	22526.88	07-Sep-2016	17
3	22317.77	11-Aug-2016	17
4	2188.46	13-Jul-2016	18
5	21904.37	12-Aug-2016	17
6	21868.26	04-Aug-2016	17
7	21664.94	22-Jul-2016	17
8	21641.01	06-Sep-2016	17
9	21427.32	05-Aug-2016	12
10	21323.73	08-Sep-2016	17

2015

Ontario Demand Peaks

Rank	Value	Date	HE
1	22516.1	28-Jul-2015	17
2	22471.5	29-Jul-2015	17
3	22383.3	17-Aug-2015	17
4	22063.1	02-Sep-2015	17
5	21922.6	08-Sep-2015	18
6	21919.9	27-Jul-2015	18
7	21889.1	03-Sep-2015	13
8	21883.3	07-Sep-2015	17
9	21628.8	19-Aug-2015	17
10	21366	01-Sep-2015	20

AQEW Peaks

Rank	Value	Date	HE
1	22015.634	28-Jul-2015	17
2	21899.846	29-Jul-2015	17
3	21882.182	17-Aug-2015	17
4	21561.628	27-Jul-2015	18
5	21428.697	03-Sep-2015	14
6	21393.937	02-Sep-2015	17
7	21369.243	08-Sep-2015	17
8	21206.267	07-Sep-2015	17
9	21158.363	19-Aug-2015	17
10	20872.523	01-Sep-2015	17

2014

AQEW Peaks

Rank	Value	Date	HE
1	21118.57	07-Jan-2015	19
2	20976.264	19-Feb-2015	20
3	20967.233	26-Aug-2014	17
4	20862.399	23-Feb-2015	20
5	20830.888	05-Sep-2014	17
6	20744.354	22-Jul-2014	17
7	20663.704	26-Feb-2015	20
8	20634.804	24-Feb-2015	20
9	20589.256	13-Jan-2015	19
10	20573.923	25-Feb-2015	20

Top Peaks Current Base Period

AQEW Peaks

Rank	Value	Date	HE
1	21275	05-Jul-2019	17
2	21147	20-Jul-2019	17
3	21068	29-Jul-2019	17
4	21006	19-Jul-2019	12
5	20956	04-Jul-2019	18

Global Adjustment Changes
Various "Provincial Government" Proposals

- Prevent more customers from becoming Class A
- Put CDM cost into the tax base – ~ $400MM/year.
- Put a portion of renewable energy contracts - up to $4BB onto the tax base.
- Reduce electricity rates by a further 12%.
- Fixing the Hydro Mess Act - Replace Fair Hydro Plan.
- Introduce some Industrial Rate options for some customers.
- Address Behind the Meter Assets – OEB Market Surveillance initiative.

What does it mean for me?

- Try curtailment if you have not tested it previously
- If you are curtailing for more than 30 - 40 hours per year or more than 3 hours at a time, you need a better advisor
- If you are curtailing , are you are already a Demand Response Participant?
- Are you capturing these revenue streams and looking for others – Operating Reserve or Arbitrage
- Do you have behind the meter assets you could optimize now

What does it mean for me?

- Investigate a behind the meter solution.
- Diesel/ Natural Gas and Battery can all work.
- Upgrading a existing back up generator can be an economically valuable option
- Various revenue/ Savings options including :
  - GA
  - DR
  - Arbitrage
  - Operating Reserve (OR)

In Conclusion

Doing the same thing over and over and expecting different results…..

There are many resources out there to drive different results.

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