Association of Major Power Consumers of Ontario

OEB Staff Cross-Examination Compendium

Panel 5 – David Short & Candice Trickey

EB-2019-0242

November 29, 2019

OEB Staff Compendium for EB-2019-0242 Oral Hearing

Index

TAB 1

Help

Demand Response Auction: Post-Auction Summary Report

Created at May 03, 2019 13:24:13

DR Auction Results

Zone	Summer Commitment Period (May 01, 2018 - Oct 31, 2018)			Winter Commitment Period (Nov 01, 2018 - Apr 30, 2019)		
	Physical DR Cleared (MW)	Virtual DR Cleared (MW)	Auction Clearing Price ($/MW-day)	Physical DR Cleared (MW)	Virtual DR Cleared (MW)	Auction Clearing Price ($/MW-day)
EAST	-	57.5	318.01	-	71.2	317.46
ESSA	-	13.2	318.01	-	21.4	317.46
NIAGARA	-	20.2	318.01	-	20.2	317.46
NORTHEAST	40	26.2	200	40	26.2	200
NORTHWEST	29	1	318.01	29	0	317.46
OTTAWA	-	23.3	318.01	25	24	317.46
SOUTHWEST	2.4	74.1	318.01	2.4	121.8	317.46
TORONTO	72	151.7	318.01	72	146.9	317.46
WEST	-	39.8	318.01	-	40.3	317.46
Ontario Total	**143.4**	**407**		**168.4**	**472**	

DR Auction Results - Participant Details

ZONE	Demand Response Auction Participant	Summer Commitment Period (May 01, 2018 - Oct 31, 2018)	Winter Commitment Period (Nov 01, 2018 - Apr 30, 2019)
		Cleared DR (MW)	Cleared DR (MW)
EAST	ENEL X CANADA LTD.	26.7	29.2
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	5.4	4.6
	RODAN ENERGY SOLUTIONS INC	25.4	37.4
ESSA	ENEL X CANADA LTD.	5.7	9
	GC PROJECT LP	2.5	2.2
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	2.2	2.1
	RODAN ENERGY SOLUTIONS INC	2.8	8.1
NIAGARA	ENEL X CANADA LTD.	16.7	14.2
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	1	1
	RODAN ENERGY SOLUTIONS INC	2.5	5
NORTHEAST	ENEL X CANADA LTD.	1.7	-
	RODAN ENERGY SOLUTIONS INC	24.5	26.2
	TEMBEC ENTERPRISES INC.	40	40
NORTHWEST	NRG CURTAILMENT SOLUTIONS CANADA, INC.	1	0
	RESOLUTE FP CANADA INC.	29	29
OTTAWA	ENEL X CANADA LTD.	5.4	4.9
	GC PROJECT LP	1.1	1
	IVACO ROLLING MILLS 2004 L.P.	-	25
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	1.8	1
	RODAN ENERGY SOLUTIONS INC	15	17.1
SOUTHWEST	ENEL X CANADA LTD.	35	31.8
	GC PROJECT LP	3.4	3
	GERDAU AMERISTEEL CORPORATION -CAMBRIDGE	2.4	2.4
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	14.3	46.5
	NRSTOR C&I L.P.	-	4.5
	RODAN ENERGY SOLUTIONS INC	21.4	36
TORONTO	ALECTRA UTILITIES CORPORATION	1	-
	AMP SOLAR GROUP INC.	-	0
	EMERA ENERGY LIMITED PARTNERSHIP	-	0
	ENEL X CANADA LTD.	41.7	34.4
	GC PROJECT LP	6	5
	GERDAU AMERISTEEL CORPORATION	72	72
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	27	34
	NRSTOR C&I L.P.	-	2.5
	OHMCONNECT, INC	2	0
	RODAN ENERGY SOLUTIONS INC	64	71
	TORONTO HYDRO-ELECTRIC SYSTEM LIMITED	10	-
WEST	ENEL X CANADA LTD.	17.1	20.2
	GC PROJECT LP	2.5	2.3
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	7.4	2.5
	NRSTOR C&I L.P.	-	1.2
	RODAN ENERGY SOLUTIONS INC	12.8	14.1

DR Qualified Capacity - Participant Details

ZONE	Demand Response Auction Participant	Summer Commitment Period (May 01, 2018 - Oct 31, 2018)			Winter Commitment Period (Nov 01, 2018 - Apr 30, 2019)		

		Total DR Qualified (MW)	Surplus Total DR Qualified (MW)	Surplus Virtual DR Qualified (MW)	Total DR Qualified (MW)	Surplus Total DR Qualified (MW)	Surplus Virtual DR Qualified (MW)
BRUCE	ENEL X CANADA LTD.	5	5	5	5	5	5
EAST	EMERA ENERGY LIMITED PARTNERSHIP	1	1	1	1	1	1
	ENEL X CANADA LTD.	50	23.3	23.3	50	20.8	20.8
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	6.6	1.2	1.2	4.6	0	0
	OHMCONNECT, INC	3	3	3	3	3	3
	RODAN ENERGY SOLUTIONS INC	33.4	8	8	38.4	1	1
ESSA	ALECTRA UTILITIES CORPORATION	1	1	1	0	0	0
	AMP SOLAR GROUP INC.	0	0	0	3.7	3.7	3.7
	EMERA ENERGY LIMITED PARTNERSHIP	1	1	1	1	1	1
	ENEL X CANADA LTD.	15	9.3	9.3	15	6	6
	GC PROJECT LP	2.5	0	0	2.5	0.3	0.3
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	2.7	0.5	0.5	2.7	0.6	0.6
	RODAN ENERGY SOLUTIONS INC	6.7	3.9	3.9	11.1	3	3
NIAGARA	ENEL X CANADA LTD.	20.2	3.5	3.5	20.2	6	6
	GC PROJECT LP	0	0	0	1.2	1.2	1.2
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	1	0	0	1	0	0
	RODAN ENERGY SOLUTIONS INC	12.5	10	10	16.8	11.8	11.8
NORTHEAST	ENEL X CANADA LTD.	10	8.3	8.3	10	10	10
	RODAN ENERGY SOLUTIONS INC	35.6	11.1	11.1	35.6	9.4	9.4
	TEMBEC ENTERPRISES INC.	40	0	0	40	0	0
NORTHWEST	ENEL X CANADA LTD.	2	2	2	2	2	2
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	2.1	1.1	1.1	1	1	1
	RESOLUTE FP CANADA INC.	54	25	0	54	25	0
OTTAWA	ENEL X CANADA LTD.	15	9.6	9.6	15	10.1	10.1
	GC PROJECT LP	2.3	1.2	1.2	2.5	1.5	1.5
	IVACO ROLLING MILLS 2004 L.P.	0	0	0	25	0	0
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	1.8	0	0	1	0	0
	OHMCONNECT, INC	5	5	5	5	5	5
	RODAN ENERGY SOLUTIONS INC	15.1	0.1	0.1	42	24.9	24.9
SOUTHWEST	AMP SOLAR GROUP INC.	0	0	0	1.1	1.1	1.1
	EMERA ENERGY LIMITED PARTNERSHIP	6	6	6	6	6	6
	ENEL X CANADA LTD.	52	17	17	65	33.2	33.2
	GC PROJECT LP	4.9	1.5	1.5	4.6	1.6	1.6
	GERDAU AMERISTEEL CORPORATION -CAMBRIDGE	2.4	0	0	2.4	0	0
	GREAT CIRCLE POWER CORPORATION	4	4	4	3.2	3.2	3.2
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	22.3	8	8	47.4	0.9	0.9
	NRSTOR C&I L.P.	12.2	12.2	12.2	12.2	7.7	7.7
	OHMCONNECT, INC	5	5	5	5	5	5
	RODAN ENERGY SOLUTIONS INC	64.3	42.9	42.9	79.6	43.6	43.6
TORONTO	ALECTRA UTILITIES CORPORATION	9	8	8	0	0	0
	AMP SOLAR GROUP INC.	0	0	0	12	12	12
	EMERA ENERGY LIMITED PARTNERSHIP	6	6	6	6	6	6
	ENEL X CANADA LTD.	85	43.3	43.3	85	50.6	50.6
	GC PROJECT LP	9.3	3.3	3.3	8.3	3.3	3.3
	GERDAU AMERISTEEL CORPORATION	72	0	0	72	0	0
	GREAT CIRCLE POWER CORPORATION	0	0	0	4	4	4
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	31	4	4	38	4	4
	NRSTOR C&I L.P.	5	5	5	5	2.5	2.5
	OHMCONNECT, INC	15	13	13	15	15	15
	RODAN ENERGY SOLUTIONS INC	72.8	8.8	8.8	82	11	11
	TORONTO HYDRO-ELECTRIC SYSTEM LIMITED	15	5	5	0	0	0
WEST	EMERA ENERGY LIMITED PARTNERSHIP	6	6	6	6	6	6
	ENEL X CANADA LTD.	35	17.9	17.9	35	14.8	14.8
	GC PROJECT LP	3.5	1	1	3.5	1.2	1.2
	NRG CURTAILMENT SOLUTIONS CANADA, INC.	7.4	0	0	6.7	4.2	4.2
	NRSTOR C&I L.P.	2.4	2.4	2.4	2.4	1.2	1.2
	OHMCONNECT, INC	3	3	3	3	3	3
	RODAN ENERGY SOLUTIONS INC	15.3	2.5	2.5	18.6	4.5	4.5

TAB 2

OEB STAFF INTERROGATORY 4

INTERROGATORY

Please provide the following data about the participation of various demand response provider categories in the Demand Response Auction and Real Time Energy Market.

HDR Participants	• Number of Participants • Total MW Capacity for this group • Average hourly consumption for both 2018-2019 Commitment Periods* • Average hourly consumption for High 5 Hours in 2018	• Number of Participants • Total MW Capacity for this group • Average hourly consumption for both 2018-2019 Commitment Periods* • Average hourly consumption for High 5 Hours in 2018
Dispatchable Load Participants	Same Information as above	Same Information as above

* Average hourly consumption is to be defined as Total MWh consumed in all availability window hours for the 2018 Summer Commitment period and the 2018-2019 winter commitment period, divided by the total number of hours in those two commitment periods.

RESPONSE

The IESO has made best efforts to present the data in the format requested. Note that HDR participants can be physical or virtual resources; physical resources are wholesale revenue metered by the IESO and virtual resources are not. Virtual HDR resources meet their capacity obligations through a portfolio of contributors. Virtual HDR resources are not classified as Class A or Class B consumers, and thus are excluded from the data table. Therefore, the data table shows only the HDR participants with physical capacity obligations. Please note that this categorization does not apply to dispatchable loads, which are all physical resources.

	Class A	Class B
HDR Participants	Number: 2 Total MW Capacity for this Group: 31.4 MW (summer and winter) Average Hourly Consumption for both 2018-2019 Commitment Periods*: 19.8 MWh Average Hourly Consumption for High 5 Hours in 2018: 63.1 MWh	Number: 0 Total MW Capacity: 0 Average Hourly Consumption for both 2018-2019 Commitment Periods*: n/a Average Hourly Consumption for High 5 Hours in 2018: n/a
Dispatchable Load Participants	Number: 3 Total MW Capacity: 112 MW (summer) 137 MW (winter) Average Hourly Consumption for both 2018-2019 Commitment Periods: 31 MWh Average Hourly Consumption for High 5 Hours in 2018: 72.9 MWh	Number: 0 Total MW Capacity: 0 Average Hourly Consumption for both 2018-2019 Commitment Periods*: n/a Average Hourly Consumption for High 5 Hours in 2018: n/a

1 *Where average hourly consumption is defined as per OEB Staff 4

TAB 3

Market Rules

Chapter 7 System Operations and Physical Markets - Appendices

g. *period of steady operation*; and

h. forecasts of *energy* for the *facilities* of *variable generators* that are *registered market participants* produced by the *forecasting entity*.

2.2.1.16 imports or exports between the *IESO-control area* and other control areas required by the *IESO* to meet its obligations under requirements established by all relevant standards authorities and which are outside the normal market *bids* and *offers* including but not limited to inadvertent *intertie* flows and simultaneous activation of reserve. These shall be represented as an increase or decrease in *non-dispatchable load*.

2.3 Optimisation Objective

2.3.1 The *dispatch* scheduling and pricing process shall be a mathematical optimisation algorithm that will determine optimal schedules for each time period referred to in section 2.1.1, given the *bids* and *offers* submitted and applicable constraints on the use of the *IESO-controlled grid*. Marginal cost-based prices shall also be produced and, for such purpose, *offer* prices shall be assumed to represent the actual costs of suppliers and *bid* prices shall be assumed to represent the actual benefits of consumption by *dispatchable load facilities*.

2.3.2 The *dispatch* scheduling and pricing process shall have as its mathematical objective function maximising the economic gain from trade among *market participants* as described in sections 4.3.2 and 4.3.3 of Chapter 7.

2.3.3 In respect of the *real time* constrained *dispatch schedule* only, the *dispatch* scheduling and optimization process shall have as its objective function maximizing the weighted sum of the economic gain from trade among *market participants*, as described in section 4.3.2 and 4.3.3 of Chapter 7, for the *dispatch interval* and for advisory intervals within the study period. Critical intervals are those selected from the study period to be used as input to the objective function. The first critical interval is always the *dispatch interval*. The remaining critical intervals are advisory intervals.

2.4 The IESO-Controlled Grid

2.4.1 The *dispatch* scheduling and pricing process shall represent power flow relationships between locations on the *IESO-controlled grid* and between the *IESO control area* and adjoining *control areas*.

TAB 4

Now, we can take this total amount of revenue and slice it in various ways. We can do it primarily through an energy market. And so as we know, Alberta historically has been energy only, with some ancillary services. ERCOT in Texas also energy only, but the three markets that are mentioned in our report have a capacity plus energy design.

Now, in theory, if we think about our bid into the capacity mechanism to be the residual and what's left over after we have recovered as much as we can from the energy market, then we can see that if we have a really low-cost resource that expects to be dispatched a substantial amount of time, they would expect to have a substantial margin in the energy markets and consequently could be expected to discount their bid into the capacity mechanism auction.

Conversely, if we had, for example, an older fossil-fired plant with a high heat rate that expected to be dispatched infrequently, then we would anticipate that that particular plant would seek to recover the bulk of its target revenues through the capacity mechanism.

And so that is what we mean when we say that these payments are symbiotic, and of course in an energy-only market then a substantially higher proportion of revenues need to be recovered in the energy market.

MS. DJURDJEVIC: Thank you. I would like to now turn to some of your interrogatory responses. These are found at tab 4 of our compendium, and in particular I'm looking at the interrogatory response to a question from KCLP, 4A. This appears at page 85 of the compendium.

And the -- summing up, just to sum up in the interests of time, the question you are being asked is whether LEI agrees or disagrees with Dr. Rivard's assessment of net benefits and economic efficiency. And you stated that, quote:

> "LEI's concern is with regards to the fidelity of the price signal and the need for a more nuanced approach to the concept of horizontal equity."

You also state that:

> "Dr. Rivard's discussion of horizontal equity is oversimplified."

Can you briefly explain why you -- well, first of all, what the concept of a horizontal equity is and whether you share Dr. Rivard's view and then why you believe his approach is oversimplified and what a more nuanced approach would be, in your opinion.

MR. GOULDING: Thank you.

And I believe that Dr. Rivard's definition is on page 17, paragraph 32 of his affidavit. And I first want to read his definition, and I want to emphasize that we don't disagree with his definition.

The affidavit states:

> "Horizontal equity requires that people who are alike in all relevant respects be treated the same. It corresponds to common notions of fair play and non-discrimination."

So I think that the question that arises is in what way are DR participants and generators alike in all

relevant respects?

And when we look at the product that is being provided, in theory, if the market rules have been written appropriately, the product should be the same.

Now, when we start thinking about this question of whether there are short-run marginal costs that arise from participating in DR markets, I think that we need to bear in mind the diversity of market participants and the fact that being activated for many is not frictionless. It is not as simple as flipping a switch and bearing no cost in doing so.

And so when we talk about a more nuanced approach, we believe that it is important to explore whether there are actually short-run avoidable costs that are incurred by DR providers, and we believe that if we are going to apply the concept of horizontal equity, that those short-run costs should be recovered.

So this is where we distinguish ourselves a bit from Dr. Rivard's evidence.

MS. DJURDJEVIC: One more question on these IRs, and this is your response to KCLP's interrogatory response 4A, where you respond that -- and I am skipping to the second sentence:

> "With regards to economic efficiency, LEI's concern is with regards to the fidelity of the price signal and the need for a more nuanced approach."

Can you explain your reference to price signal, and