Q. **LAB-NLH-69: Re: LAB-NLH-049**

Citation:

Response provided by CA Energy Consulting.

a) Page 4.15 of Hydro's evidence in its 2013 GRA Amended Application states: "From a system planning perspective, Hydro no longer assumes that wind generation will be available to supply system capacity requirements. Therefore, Hydro is proposing that the purchased power costs related to wind be classified as 100% energy related. This proposal is reflected in the 2015 Test Year Cost of Service Study." The basis for the planners' views is their experience with wind generation in past peak hours. This experience is illustrated in a table showing the record of wind generation availability in peak hours in the years 2008-13. This table appears in Hydro's response to NP-NLH-043 Rev. 1 in the Amended 2013 GRA proceeding.

Preamble:

The referenced table Hydro's response to NP-NLH-043 Rev. 1 in the Amended 2013 GRA proceeding is reproduced below:

Wind Farm Production Data				
	Island Coincident Peak[1] (MW)		Annual Delivered Energy (GWh)	
Year	St. Lawrence	Fermeuse	St. Lawrence	Fermeuse
2008[2]	N/A	N/A	7.82	0.00
2009[3]	23.3	11.3	100.64	53.74
2010	26.0	3.6	100.46	82.80
2011	25.8	3.6	110.00	87.96
2012	0.0	26.0	103.84	91.20
2013	1.9	3.1	96.38	95.52
2014F[4][5][6]	0	0	99.54	81.72
2015F	0	0	104.80	84.41
2016F	0	0	104.80	84.41
2017F	0	0	104.80	84.41
2018F	0	0	104.80	84.41
2019F	0	0	104.80	84.41
2020F	0	0	104.80	84.41
2021F	0	0	104.80	84.41
2022F	0	0	104.80	84.41

Notes:
1. 2009 Peak refers to the winter 2009-10 peak; 2010 Peak refers to winter 2010-11 peak, and so on.
2. A partial operating year for St. Lawrence.
3. A partial operating year for Fermeuse.
4. Energy production includes actuels to May 31.
5. Energy forecasts for the remainder of 2014 and for 2015-2022 based on engineering estimates for the projects.
6. At the time of the coincident peak for forecast years, the wind farms are assumed to be not producing.

Please:

a) Confirm that, for each of the five years for which actual wind farm production data is presented (2009 through 2013), capacity was produced by at least one of the two wind farms during the Island Coincident Peak in each year;

b) Confirm that the zeros found in the table for years 2014 through 2022 represent forecasts, and not actual data;

c) Confirm that, as per note 6, for forecast years, the wind farms are assumed not to be producing during the coincident peak;

d) Provide any analyses carried out with regard by or for Hydro with regard to the actual wind farm production during the coincident peak.

A. a) It is confirmed; however, Hydro notes the low production from both farms presented for 2013 (total of 5 MW) and the zero output at St. Lawrence in 2012.

b) It is confirmed.

c) It is confirmed; however, Hydro notes that this assumption derives from system planners' view, based on the experience presented above, that the wind farms cannot be relied upon to contribute to capacity. Thus, the zeroes reflect contribution to capacity rather than anticipated levels of operation that might fortuitously arise at the single hour of system peak.

d) Hydro performed analysis on the wind production at Island Interconnected System peak during the fall of 2015. The analysis considered the five peak days in each winter from 2010-2011 to 2014-2015, for a total of 25 peak days. That analysis showed that during the peak hour in each day at least one of the wind farms was operational. However, in four of the analyzed days, one of the wind farms was offline at some point during the day. On the peak day in 2013, both wind farms were offline for an extended period commencing approximately two hours after the peak during which system demand remained high. During the study period, the two wind farms were operating at less than 5% of their capacity factor 9.6% of the time during the winter months.

Typically, wind turbines are not designed to operate in very low or very high wind speeds. Low wind speeds may not reach the cut in speed required for the turbines to produce energy. Conversely, if wind speeds are too high, turbines may reach cut out speed, at which the turbines will shut down to prevent damage to the machines themselves. Similarly, wind farm owners may decide to proactively shut turbines in anticipation of high wind speeds, to allow shut down to occur in a controlled manner. For the majority of peak days considered in Hydro's analysis, periods of low or no wind farm production were likely attributable to high wind speeds.

Hydro continues to monitor wind production at time of system peak. Hydro observed low wind farm production at the time of system peak in winter 2016-2017. At the time of peak, the combined total output of the wind farms was less than 3 MW. In the two hours prior to peak, the combined total output of the wind farms was less than 1 MW. Wind production on this day was due to low wind speed conditions. A graph of the island generation and the wind farm generation for winter 2016-2017 peak is shown in Figure 1.

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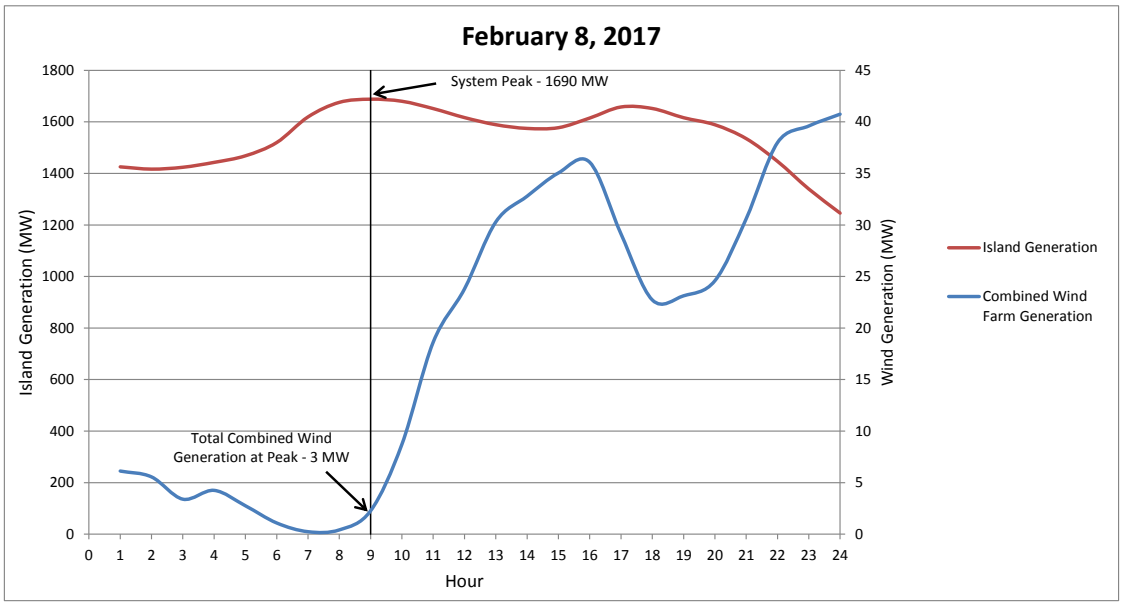

Figure 1 Wind Farm Production and Island Interconnected System Requirement at Winter 2016-2017 Peak