LEI response to Undertaking J1.1

Response to undertaking prepared for the Ontario Energy Board by London Economics International LLC ("LEI")

December 10th, 2019

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1 J1.1: To provide a clarification or other analysis of Figure 23

1.1 Background and context

In Section 4.4.4 of LEI's report, Figures 23, Figure 24, and the surrounding text provided a breakdown of:

i. total payments to demand response ("DR") resources, and

ii. total system costs/total wholesale electricity costs (which was made up of energy, capacity, and ancillary services).

Breakdowns were provided for ISO-New England ("ISO-NE") for the 2010-2014 timeframe (Figure 23) and PJM for the 2010-2018 timeframe (Figure 24).

'Total payments to DR resources' were meant to illustrate that capacity payments made up the vast majority of compensation for DR resources, while payments for actual DR activation or dispatch were a very small proportion of total DR revenues. As discussed in LEI's report, on average, activation payments over the respective timeframes made up just 5% of total payments to DR resources in ISO-NE and 3% in PJM.

'Total system costs' include those associated with both generating resources and DR resources, but generating resources make up the vast majority. For example, based on information contained in ISO-NE's CELT reports, generating resources (including those in ISO-NE and imports) made up on average around 94% of capacity between 2010 and 2014.[1] On the energy side, as DR resources have much lower economic dispatch rates, generating resources would make up an even larger share of total energy supplied. As generating resources make up the vast majority of both energy and capacity supplied, the implication of these total system cost figures is that, for generating resources *as a whole*, energy market payments make up the bulk of their total revenues, while capacity makes up a much smaller proportion. As discussed in LEI's report, on average, total system costs over the respective timeframes were 84% energy in ISO-NE and 78% in PJM.

1.2 Clarification on Figure 23 of LEI's report

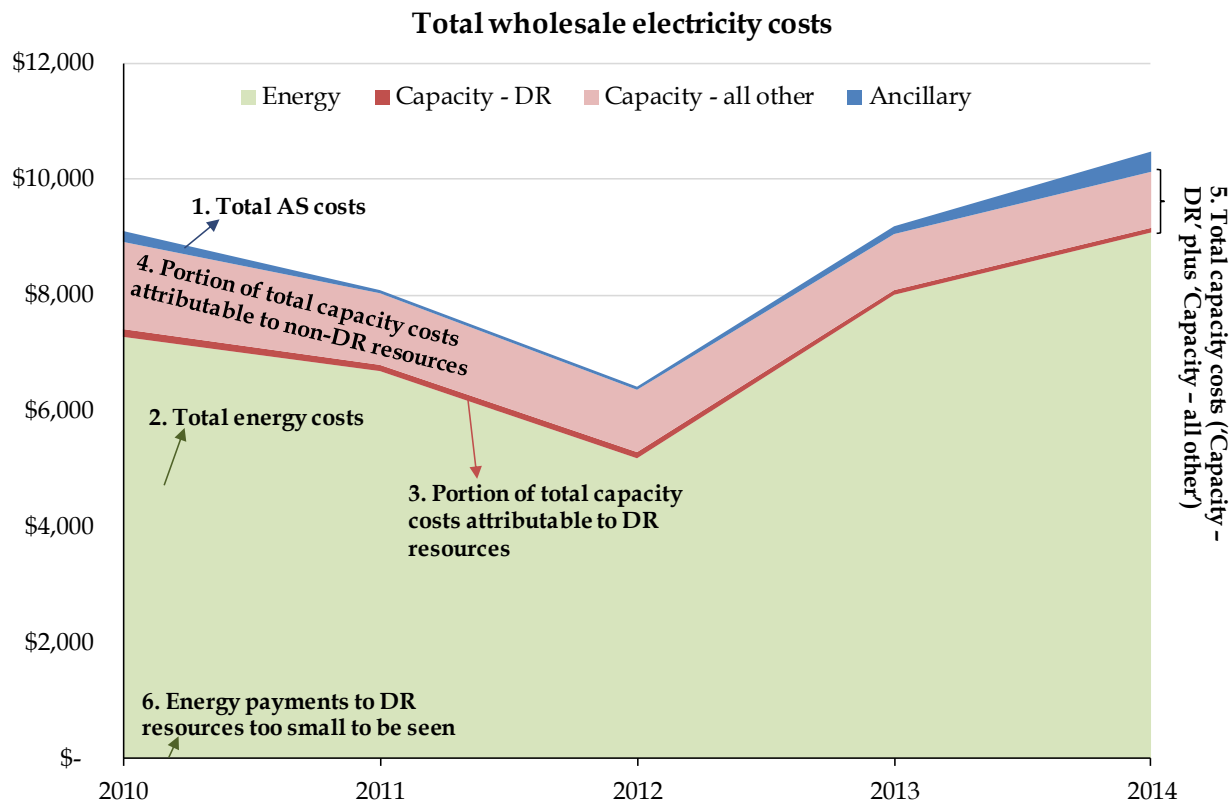
Figure 23 presented side-by-side area charts for (i) total DR revenues, and (ii) total wholesale electricity costs. Using the same data but presented in a slightly different manner, this section provides a more detailed breakdown of the information being presented in Figure 23 of LEI's report.

First, total system costs (or 'total wholesale electricity costs') for ISO-NE are presented in Figure 1. Data shown in this figure includes:

[1] Based on information contained in ISO-NE's 2011 to 2015 CELT reports, for summer peak capability, with capacity based on Forward Capacity Market obligations. Note this number is lower than the percentages shown in Figure 22 of LEI's report as the total includes imports, measures DR resources based on their summer peak capability (rather than total amounts cleared in auction), and uses total capacity as base (rather than installed generating capacity).

1. Total ancillary services ("AS") costs attributable to all resources, presented in the blue shaded area;
2. Total energy costs attributable to all resources, presented in the green shaded area;
3. Total capacity costs attributable to DR resources, presented in the darker red shaded area;
4. Total capacity costs attributable to all other resources (i.e. non-DR), presented in the lighter red shaded area;
5. Total capacity costs for all resources, which is the sum of the two red shaded areas. In Figure 23 of LEI's report, this value was shown as a standalone (i.e. not broken down into 3. and 4. as described above); and
6. Total energy cost attributable to DR resources. This is too small to be seen in Figure 1.

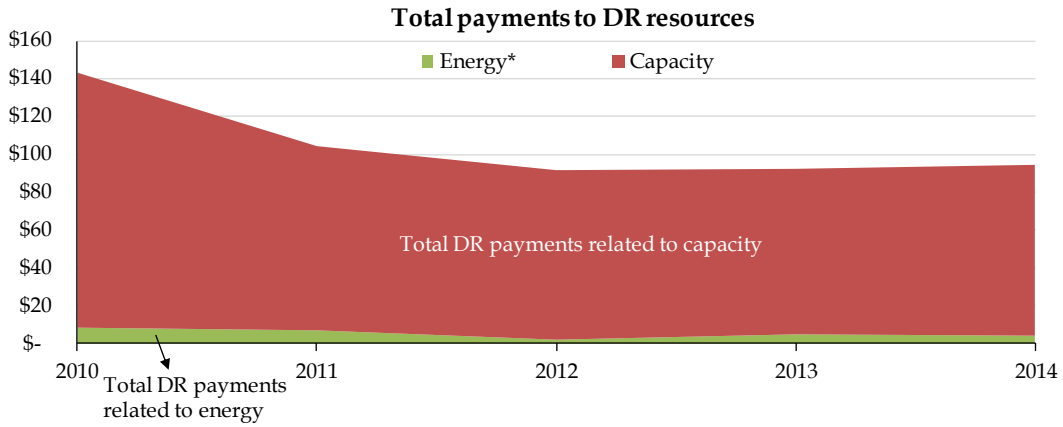
Figure 1. Total wholesale electricity costs in ISO-NE ($ million)



Source: ISO-NE. *2018 Report of the Consumer Liaison Group*. March 12, 2019.

Next, total payments to DR resources only are presented in Figure 2. Total payments to DR resources are also shown in Figure 1, but the scale of the vertical axis makes it difficult to see the DR capacity costs and impossible to see the DR energy costs. Therefore, Figure 2 uses a much smaller vertical axis, and only shows total payments to DR resources related to capacity (red shaded area) and total payments to DR resources related to energy (green shaded area).

Figure 2. Total payments to DR in ISO-NE ($ million)



* Energy values shown consist of the Day-Ahead Load Response Program, Transitional Price-Responsive Demand program, and the Real-Time Price-Response Program.
Sources: ISO-NE Annual Markets Reports for 2010 to 2014.

Figure 1 and Figure 2 are combined below in Figure 3. This shows both the total wholesale costs, and total payments to DR resources (as well as how these payments tie into total wholesale costs). These are the same values that were presented in Figure 23 of LEI's report.

Figure 3. Total payments to DR and total wholesale electricity costs in ISO-NE ($ million)

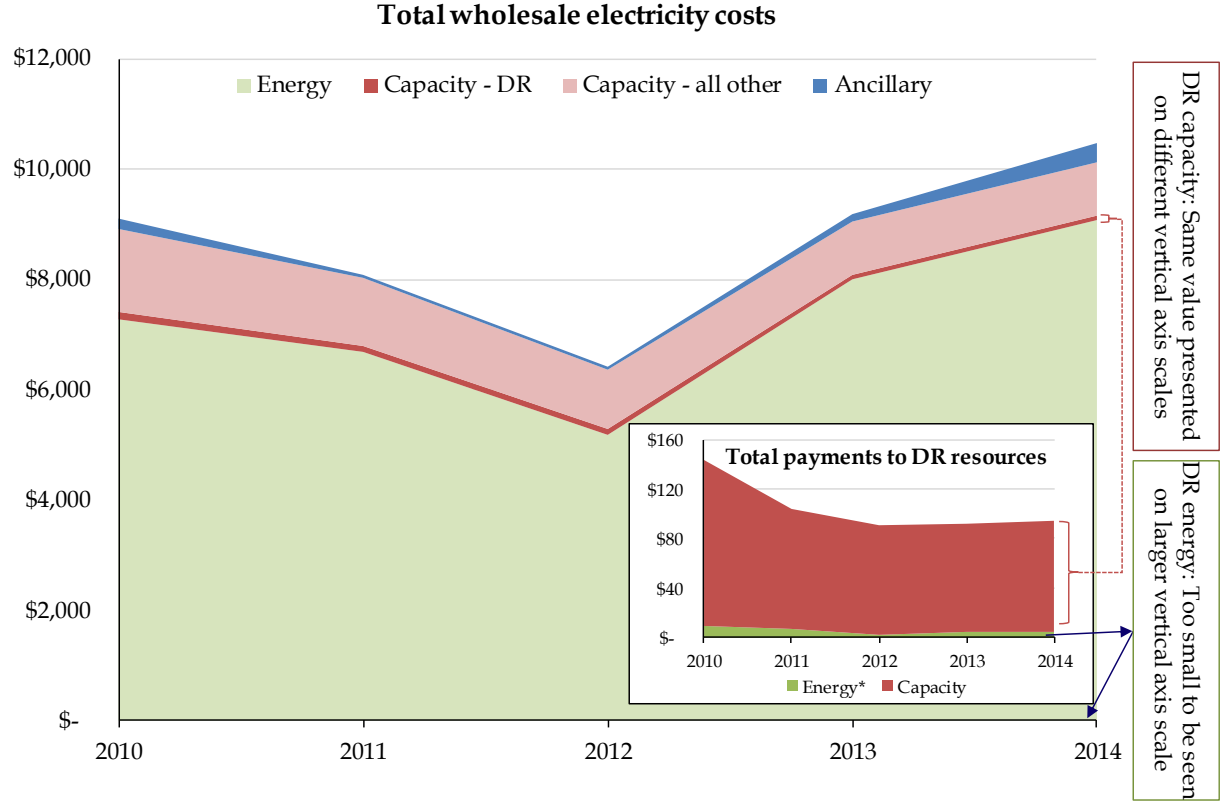


Figure 24 of LEI's report presents similar information using the same approach for PJM.