

IESO Engagement

From: Robert King
Sent: October 24, 2016 6:33 PM
To: IESO Engagement
Cc: Dave Oberholzer
Subject: Comments on Residential Demand Response Proposal

I'm sorry that Earth Networks (WeatherBug Home) was unable to attend the Sept 30 workshop in person, and so are having to respond to what can be discerned of the IESO proposal from reviewing the PowerPoint Presentation online, and reviewing other comments. We hope that our general comments, below, however, provide some value to the IESO as it considers how to incorporate residential load response into its market in 2016, and how it might evolve over time.

First of all, we must state that the appropriate unfolding of the Green Button Connect initiative of the Energy Ministry is critical to participation of third-party service offerings in the IESO market. We have visited with the Ministry and offered our support and collaboration. Until the Ontario meter data portal is completed in such a way that we can authenticate customer commitment, convey their authorization to access their meter data interval history and other needed information, and receive that data, with little effort on their part, residential demand response will only be offered by or through the 72 incumbent utilities in the province. We very much appreciate that the IESO presentation seemed to recognize that a simple, frictionless online customer enrollment experience is critical to enlisting significant numbers of customers; a relatively straight-forward meter data transfer process will be critical to our participation in the market. It is simply not possible to offer a province-wide residential service that requires separately integrating with or achieving agreements with 72 electric utilities. For that reason, we recognize that it will be the auction of 2017 or 2018 before we and others like us could participate province-wide, and some of our comments are made with the interest of achieving a workable market structure in the longer term.

In the meanwhile, we would offer as instructive the report [Improving Access to Smart Meter Data](#), published by the Southcentral Partnership for Energy Efficiency as a Resource, about the ERCOT portal Smart Meter Texas (SMT). Texas and Ontario are the only two jurisdictions that have created a centralized portal for access to meter data from multiple utilities, making this report of potential value to Ontario. As the report notes, there are still improvements that must be made to engage the average consumer, because the online experience with ERCOT's SMT is cumbersome by modern online standards. One point of the report is that if banking, health care, and entertainment and similar industries can protect customer information privacy, and at the same time allow a relatively simple commercial transaction experience online, then utilities can do the same. There is no technical barrier. The report provides the statistics about non-participation currently in ERCOT, and goes so far as to lay out an explicit means to achieve the objective sought: simple enrollment (authentication of the customer, and authorization of the third part to access data) with a limited number of clicks and a confirmation email. We would note that the confirmation email is only required because ERCOT has completely unbundled the retail function from participating utilities, so they no longer know what customer is paired with a given meter; this step would not even be required for Ontario. A California "Click-Through" Working Group is currently working on simplifying the enrollment process there, as are a number of other jurisdictions in the states.

SCALE

Our first comments address the concern we have about barriers that would seem to remain based on scale of participation required by a new entrant. First of all, we appreciate very much the IESO recognition of the dynamics of a residential aggregation, and the monthly registration/update process is very helpful. We also recognize the Randomized Control Test (RCT) as an accurate method to evaluate the hourly contribution of demand response from residential customers. We agree with EnergyHub that 200 or so contributors are sufficient to establish a control group, but that is a tradeoff for a statistician and the IESO to determine. Of course even a control group of 200 requires a relatively large total population to make feasible. And the 200 or so contributors that are removed from the treatment group to serve

as the control group will provide no demand reduction, a loss both to the aggregator and the IESO. The loss is particularly painful for the new entrant.

This scale barrier is reinforced by the IESO requirement of a 1 MW minimum contribution per zone to qualify for participation, especially considering at that scale 20% or more of the customers would be removed as a control group. This would mean that an independent service provider would have to recruit near 10,000 customers province-wide prior to being able to participate meaningfully in the IESO market. Perhaps this requirement is retained in order to assure the RCT baseline methodology would alone be sufficient to measure demand response participation? That would be logical from an engineering or analysis perspective, but perhaps not from a commercial perspective. The number of companies that can invest sufficiently to reach this scale before even being able to participate in an auction maybe quite small.

In most markets where any residential participation takes place, a minimum aggregation of 100 kW is established. Perhaps this is a limitation that could be eased in future auctions, as meter data becomes available to potential new entrants. In addition, there are generally at least two options for baselining: a control group methodology and a simplified approach for populations not yet of a scale required to make the control group approach appropriate. For example, in the California baseline work mentioned in comments by both EnergyHub and Ohm Connect, we have established a “like-day matching” baseline available for smaller aggregations, and an RCT option available for larger aggregations. We would also note that CAISO is proposing to allow a control group from one sub-zone to serve for a larger zone, reducing the cost of the control group method.

With an eye toward the longer-term, however, we would like to suggest another, related approach, that retains the value of the control group methodology, allows for relatively small aggregations to participate economically, and removes any need for requiring very large aggregations per zone. Our suggestion would include the smaller minimum aggregated load reduction capacity of 100 kW and a relative of the RCT called the Propensity Score Matching Control Group (PSM).

The difference with the PSM approach is primarily that non-contributor, or non-participant data is used to build a control group from the larger population of utility customers. We have experience with this from a pilot project with CenterPoint Electric Delivery Company in Houston, Texas, and we are working with utilities and CAISO to make this approach possible in California now. Under this approach, a random set of customer information would be drawn from the Ontario meter data portal, with names, addresses or any potential personally identifiable information removed. Our experience is that you would only need a random account identifier (i.e., not an actual utility customer account number), the meter interval data for a period, and a mail code or portion of a mail code sufficient to differentiate customers from truly different climate areas. From this database, third-party service providers can pull a sample of meters that have a propensity to behave in concert with the providers participating contributors. The same kind of tests as contemplated for the IESO’s evaluation of RCT control groups would serve to validate the group’s make up, and make daily adjustments to assure no inappropriate bias is introduced.

The use of a propensity-score matched control group offers the same accuracy of the RCT approach proposed, could be used by even much smaller new entrants, and removes the need for large minimum aggregations. It also does not reduce the value of (increase the cost of) demand response in the way RCT does by removing customers from the treatment group that could be contributing to the market (and earning compensation). The PSM approach would also allow relatively large control groups to be designated, increasing the accuracy without the same cost as larger RCT groups would require.

THE AUCTION

From the presentation, I take it that the IESO envisions the mechanism for the participation of loads as a monthly capacity market which carries a “must offer obligation” for participating loads. This structure can definitely work, and if the reference to “hourly demand response” resource bids indicates that a weather-sensitive load aggregation could vary its bid by hour in the day-ahead based on weather expectations, this would be a viable means to recognize the variability of the resource. While weather-sensitive load resources can be reliable and predictable, they are

variable. They are generally most available when the IESO is most likely to need their capacity, but will predictably vary in correlation with weather conditions.

The flexibility the proposed approach allows the participating aggregator is bounded, however, by the penalty proposed, which could eliminate the entire availability (capacity) payment for a given month. It would be very important to understand the formula which was offered on slide 26 of the September 30 presentation. We would agree with Ohm Connect that as presented it is unclear or confusing. First of all in the left half of the equation, we would think the IESO means to use the average use of the control group with the appropriate in-day adjustment, and the average of the treatment group load, not the average of the difference in the gross totals. I assume the number sought is the actual load reduction achieved. The right side of the equation, as presented, could yield a zero (if the total bid capacity is scheduled on a hot afternoon), but could also range up to 80% of the total capacity, and it is not clear what the result of this calculation implies for the general performance of the aggregation. Like Ohm Connect, we would suggest the IESO use 80% of the Scheduled Reduction to reflect a general level of accuracy and accountability. Therefore, we would rewrite the proposed equation as shown below:

A capacity Charge would apply if:

$$(\text{Adjusted Control Group Load})_{\text{AVE}} - (\text{Treatment Group Load})_{\text{AVE}} < 80\% \times (\text{Scheduled Capacity})$$

This is generally logical given we can forecast weather and loads 24 or so hours in advance relatively well, however, it would also seem reasonable to have an intermediate penalty that was short of the entire loss of availability payment for the month. Might a proportionate penalty be leveled on the resource between 80 and 60 %? And, what if the resource is struck three times in a month and only falls below the 80% once? Would the IESO use the average performance from all the events? Has the IESO considered adding test events? ERCOT and CAISO use test events in addition to actual events to validate a resource's availability. For example ERCOT uses two tests per month if an event has not occurred to trigger the aggregation, and then uses both tests and actual responses to the market to determine performance.

NOTICE

There is a statement in the presentation that the "participant must communicate with contributors in the treatment group when standby and activation notice is received from the IESO." We are unclear of the purpose of this mandated "notice," which seems out of character with the IESO's other attempts to respond to the nature of the resource a residential aggregation represents. That is, evolving new technologies are generally being designed to minimize the disruption of the customer's life. We particularly hew to a "set it and forget it" approach, in which the customer can set the rules for our engagement up front, allowing us to optimize energy use, energy spend, and/or participation in the market. The customer can override any energy curtailment action, certainly, but our evolving systems strive to intelligently call upon customer loads in such a manner that the customer should never even know a response is underway. Already motion sensors, and in the future "geo-fencing" information will even enable us to know when a customer is likely to be home. We see no value to sending frivolous alerts to a customer that needs to take no action, and from which notice would receive no particular benefit. On a periodic basis we provide customers with feedback on their savings, and contributions to the market, but this should remain a commercial decision, to be made by each service provider. Customers can choose another service if they don't like the service they receive.

As always, we appreciate your openness to feedback and are happy to share our experience in this new and promising market segment. Please let us know if we can be helpful in any way appropriate.

Best regards,

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