



Department: Energy Management
Attention: G. Rains
Telephone: _____

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111 Horton Street
P.O. Box 2700
London, Ont.
N6A 4H6

Independent Electricity System Operator
120 Adelaide Street, Suite 1600
Toronto, Ontario
M5H 1T1

stakeholder.engagement@ieso.ca

Attention: Mr. Ryan King, Account Manager

Re: *peaksaver* PLUS Residential Demand Response Program
Feedback from Stakeholder Engagement Session

This letter is to provide formal and specific feedback to the IESO's stakeholder engagement webinar of January 27th, 2016 entitled: *Options for the Future of peaksaverPLUS[®] Residential DR*. For your convenience of reference, I've organized this letter to respond specifically to slide #13: *Questions for Stakeholder Input*:

- ***What issues to you foresee with transitioning peaksaver to a market-based structure? What barriers would need to be addressed to accomplish this?***

While theoretically the *peaksaver* program could be used to control a variety of consumer end-use loads (e.g. electric storage water heater tanks, circulation pumps for swimming pools, etc.), the predominant application in Ontario is to control central air conditioning units in residential dwellings (during heat-waves when there may be a generation shortfall or to provide short-term load relief on certain transmission system elements when the predicted loading could exceed the seasonal load limits of that circuit or substation) either by temporarily adjusting the set-point on a programmable communicating thermostat (PCT) or by intelligently adjusting the cycling of the air conditioning unit itself (via a load control switch).

If other auction-type demand response programs are used as a model, then there could be three (3) barriers that need to be considered in the re-design of this residential demand response program, namely:

- It is understood that the existing capacity marketplace has a minimum six-month (6 mo.) resource availability requirement (i.e. May – October) whereas realistically residential demand response programs can only be considered a resource during heat waves that (in southwestern Ontario) typically occur only in late June, July, August and perhaps early September.
- It is understood that the capacity market has requirements concerning metering that couldn't be fulfilled with a normal residential Smart-meters (that measure the hourly electricity consumption of an entire home). Given the relatively small demand reduction (i.e. $\approx \frac{1}{2}$ kW) at each participating household, the only cost effective method of determining the impact is to implement advanced analytics software to ascertain, hour by hour, what the participating customer's

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load would have been in the absence of a DR event (generally based on the load profile of previous “*like days*”), compare this to the customer’s actual load profile (as measured by the Smart-meter), and thereby determine the hour-by-hour delta in load during the DR event.

- As I recall, under the former provincial saveONenergy DEMAND RESPONSE program, unless the participating customer was able to provide DR capacity beyond some minimum threshold (maybe 10 MW), it was necessary to enrol with the designated default aggregator. London Hydro has a vision of residential demand response as an integral part of a larger Smart Grid offering to the customers within its franchise service territory and, as such, would want to be an aggregator. However, an artificial minimum 10 MW resource threshold is perceived to be a participation barrier because it would mean having at least 20,000 participating customers at the outset (in contrast to a more likely path whereby the participant base is expanded year after year).
- ***Recognizing the limited value of existing technology, should the IESO fund LDC’s to update the peaksaver offer to customers to allow for new technology options?***

The existing investments in *peaksaver* devices represent a “*sunk cost*” and should certainly be maintained and used to provide ongoing value to the ratepayers that initially and indirectly funded this investment.

However, in transitioning the *peaksaver* program to the capacity marketplace one certainly has to be concerned with both (i) cost-effectiveness, and (ii) perceived equity with other resources that also participate in the capacity marketplace.

On the subject of cost-effectiveness, London Hydro does not have access to sufficient key cost data to carry out this assessment (whereas IESO should certainly have this information readily available).

On the subject of perceived equity, for the purpose of illustration imagine the case of an institutional customer with a 6 MW rated emergency generation system (outfitted with appropriate scrubbers and other environmental controls) that wishes to participate in the demand response marketplace by transferring their facility load to the emergency generators during a DR event. In this particular case, the institutional customer has made the initial capital investment in the emergency generation facilities, incurs the recurring cost of the preventive and corrective maintenance of the emergency generation facilities, but is the financial beneficiary of participation in the capacity marketplace (or has a shared reward arrangement with a DR aggregator).

For the *peaksaver* program, by contrast, the initial investment in *peaksaver* devices and their installation and the recurring maintenance cost of the system have effectively come from the *Global Adjustment* fund. It is not clear to me (i) how a DR aggregator would even establish a fair bid price for the capacity marketplace (when it has not incurred any initial investment costs or recurring asset sustainment costs), and (ii) if such an arrangement is even equitable to other participants (e.g. the institution customer with the emergency generation cited above) in the capacity marketplace.

- ***Do you have existing inventory of devices that have not been installed? How much inventory and how do you believe this should be handled?***

London Hydro has about seventy-five (75) Energate WiFi-enabled thermostats remaining in inventory that were part of a larger 2015 procurement prior to the suspension of the *peaksaver* program.¹ Unlike other *peaksaver* technologies, the Energate thermostat is not obsolete, and London Hydro would like to see funding for thermostat installations continue until the subject inventory is exhausted (as opposed to leaving them on a shelf wherein the sunk cost of the thermostats provides no value to the electricity marketplace).

- ***What related opportunities do you see in the rapidly evolving connected home / home automation space?***

In spite of significant media hype and wishful thinking by electricity and natural gas utilities, the marketplace is littered with the skeletons of companies that ventured into the home automation space and then either withdrew their offerings or went bankrupt in their quest for success.

It is London Hydro’s belief that the three (3) key ingredients to successful connected home / home automation programs are:

- The development of a compelling value proposition that attracts the interest of the average homeowner (in contrast to the so-called “*early adopters*” that will generally invest in any technology positioned as “*leading edge*”);
- The availability of visually-pleasing home automation components that (like the Apple iPhone[®], etc.) will transform the components from being functional devices to highly-sought-after “*status symbols*”;² and
- The adoption of inter-operability standards amongst all home automation component suppliers (to truly provide plug-and-play functionality).

Certainly, aside from being largely based on paging technology that is now obsolete or rapidly approaching obsolescence, the *peaksaver* system is mostly based on proprietary protocols and components.

For a modernized *peaksaver* offering, London Hydro believes that success will certainly rely on the adoption of interoperability standards, and specifically the Smart Grid standard known as *Open Automated Demand Response* (OpenADR).

- ***Other considerations -***

Although not raised as a specific question in the webinar, it must be recognized that the average residential customer doesn’t really understand the difference between *energy efficiency* measures and *emergency / economic demand response* measures. Many just want to believe that they are making a positive contribution

¹ Letter, dated January 28, 2016 to Graham Smith (IESO) from Gary Rains (London Hydro); re: *peaksaver PLUS Residential Demand Response Program - Funding to Exhaust Thermostat Inventory*.

² *Motivating Home Energy Action – A Handbook of What Works*; Michelle Shipworth; a document prepared for the Australian Greenhouse Office; April 2000; page 111, *Make energy actions publicly visible*.

towards the vague societal goal of *leaving the province in a better state for future generations*.

The portfolio of provincial saveONenergy FOR HOME programs (now effectively diminished to the COUPON EVENT and HEATING & COOLING INCENTIVE programs) is admittedly weak and tired, and such is typically the problem with this entire sector.

Even though the LDC sector doesn't have demand response targets under the *2015 – 2020 Conservation First Framework*, it seems to me that there are several reasons why an LDC would want the option of continuing to offer a *peaksaver*-type program within its franchise service territory, namely: it provides another participation option for the customer, it can be used as the basis for a customer engagement strategy, and finally it can be used as a "*foot in the door*" technique for encouraging the customer to undertake energy-efficiency projects (that do indeed contribute to an LDC's assigned energy savings targets).

As a final point, the current *peaksaver* PLUS program requires the installation of a companion in-home display (IHD) device. However, program EM&V studies carried out by independent consultants (contracted by the IESO/OPA) have attributed zero savings to these IHD's, i.e. the IHD's have added cost but provided no measureable benefit. As such, unless the IHD component can be re-designed to truly provide measureable customer engagement, it should be dropped as a required element in the overall customer offering.

London Hydro has ideas for carrying out a limited-scope demonstration project to test a number of the ideas advanced herein. We would be pleased to share these ideas directly with the IESO at a mutually-convenient opportunity.

I trust you will find this feedback useful to the overall quest of developing a *peaksaver* PLUS transition plan pursuant to clause 9.2 of the Ministry's directive.³

Yours truly,

LONDON HYDRO INC.

A handwritten signature in black ink, appearing to read "G. Rains", is written over a light grey grid background.

Gary Rains, P.Eng.
Director of Energy Management Programs

GHR/ghr

cc: Zoran Stojanovic Program Manager (Green Button), London Hydro Inc.

³ Directive, dated March 31, 2014 to Ontario Power Authority from Ministry of Energy; re: *2015 – 2020 Conservation First Framework*.