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Economic Demand Response Pilot

The IMO is considering the development and implementation of a pilot economic demand response program as part of its Action Plan on Demand Response. An initial discussion of the rationale for and objectives of the pilot program along with prospective target markets and program concepts was presented to the Market Operations Standing Committee (MOSC) in July. Based on the feedback received from stakeholders at the MOSC meeting and on further consideration by IMO staff and its consultant it is evident that the process would benefit from greater clarity surrounding the pilot objectives, possible target markets and barriers to demand response among customers in the target markets. For it is these objectives, target markets and barriers that will be key considerations in the development of any pilot program.

Background

The Ontario wholesale market was designed to provide opportunity for load to participate in the IMO-administered markets on a "similar" basis to that of a supply resource. That is:

- participate as a "price taker" (i.e. non-dispatchable load);
- bid into the market in a similar manner as supply and be dispatched accordingly;
- offer ancillary services (e.g. Operating Reserve) into the market in competition with generating resources; and
- contract for energy directly with suppliers and be settled outside of the market (by submitting Physical Bilateral Contract Data).

Current mechanisms for demand response among wholesale market participants include participating as a dispatchable load, participating in the Hour Ahead Dispatchable Load Program and participating in the Emergency Demand Response Program. Also, where the specific requirements of existing rules present barriers, market participants may endeavour to seek exemptions to such requirements. Further, the planned addition of a formal Day Ahead Market will provide an additional vehicle for demand response in the IMO-administered market.

In a separate initiative, the Ontario Energy Board (OEB) has been directed by the provincial government to review the role of demand side management (DSM) and demand response (DR) in the electricity sector with a mandate to report no later than next April. Changes to regulations and, possibly, legislation and market rules may flow from the OEB's report. The pilot would be focussed on what the IMO can do in the short term within existing regulations and legislation.

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The IMO would be mindful of the deliberations of the OEB and would endeavour to ensure co-ordination to the extent possible.

Objectives

At their June 2003 meeting, the IMO Board of Directors endorsed the development of an economic demand response pilot program intended to build the Ontario market's demand response "capability" and infrastructure (customers, suppliers, LDCs and the IMO) while the provisions of the Electricity Pricing, Conservation and Supply Act, Bill 210, are in effect. The purpose of the pilot would be to "kick start" demand responsiveness in Ontario by working to overcome specific barriers that are currently preventing some Ontario customers from being responsive to wholesale market price signals.

If successful, the pilot would increase the overall demand responsiveness of the Ontario market without the need for ongoing economic incentives beyond wholesale price signals. Although the proposed program is referred to as a pilot, if the pilot is successful, the IMO would not expand or even continue the program as customers would be able to naturally respond solely to wholesale price signals. Consequently, any proposed economic demand response pilot is not to be a market test of a particular technology, product or concept but rather a means to put into service such technologies, products or concepts.

In order to satisfy these objectives, any pilot program must build demand response capabilities, with reasonable market breadth and coverage, and do so on a reasonable scale. To allow the IMO to make any necessary mid-stream adjustments in size and scope to ensure the objectives are met, any pilot program should be readily scalable.

Target Market

Some stakeholders have suggested that the IMO should target wholesale customers to maximize and expedite a level of immediate demand response in Ontario. If the objectives of the pilot were to maximize the quantity of immediately available demand response, targeting wholesale customers might be appropriate. However, the objective of the pilot is to build the Ontario market's overall demand response "capability" and infrastructure while the provisions of Bill 210 remain in effect.

Ontario customers who are not currently responsive to wholesale market signals include both wholesale and retail customers. Hence, to increase the level of demand responsiveness in the Ontario market, the pilot should cover both the wholesale and retail sectors. Within these two sectors, there are three distinct segments and possible target markets for the pilot:

1. Wholesale customers that are not currently participating in the various wholesale market mechanisms for demand response other then as simple "price takers",
2. Large commercial or industrial retail customers, and

3. Small retail (primarily residential) customers.

The first step in developing possible pilot concepts to enhance demand responsiveness among customers in these segments is identifying the barriers preventing customers from responding to wholesale market signals. These barriers are discussed in the next section.

Barriers

To meet its objectives, the pilot program must help to overcome barriers preventing customers from responding to wholesale price signals. Research in other jurisdictions and anecdotal feedback indicates that demand response experience is a key determinant of a given customer's likelihood of being demand responsive. Hence, by overcoming the barriers and helping certain customers and market segments to gain experience in being demand responsive, the pilot program can help to increase the overall level of demand responsiveness in the Ontario market.

Wholesale Customers

Feedback we have received from stakeholders indicates that the primary barriers among wholesale customers who are currently not responding to wholesale price signals (including the various demand response mechanisms available to wholesale customers described previously) are:

- The perceived benefits from demand response are insufficient to outweigh the perceived costs and risks.
- There is a high level of uncertainty both as to price and duration for any potential demand response action, primarily due to the discrepancy between pre-dispatch prices and dispatch prices and the short term volatility of dispatch prices.
- There is a lack of supporting infrastructure and the infrastructure costs are seen as "overly burdensome" relative to the expected benefits.

The barriers are highly inter-related – the high levels of price and duration uncertainty tend to reduce the perceived benefits and increase the perceived risks. Similarly, many customers have not developed the necessary supporting infrastructure because they do not expect a reasonable payoff from their investment.

Large Retail Customers

Given their size many of these same barriers would apply for larger retail customers with interval meters that are exposed to wholesale market prices. These customers are also generally less aware of available demand response technologies and options than wholesale market customers and as non-participants, they do not have access to the various demand response mechanisms

available in the wholesale market. These customers could choose to become wholesale market participants to avail themselves of these mechanisms, but would need to incur certain costs to do so. The cost of becoming a wholesale market participant may be a significant barrier for many retail customers, particularly given the relatively fixed costs and complexity of wholesale market participation.

Small Retail Customers

Feedback we have received from stakeholders indicate that the primary barriers among medium and small retail customers who are currently not responding to wholesale price signals are:

- The existing regulatory framework makes it difficult (and cost-prohibitive) to recognize the demand response impact of individual customers without interval meters[1].
- There is a lack of awareness of demand response technologies and options.
- The benefits available to customers under the existing market rules are insufficient to warrant action by customers, their service providers or other market intermediaries. This is particularly true for low volume and designated customers eligible for the 4.3 cents/kWh retail price freeze.

Given these barriers, it is not surprising there is a lack of supporting infrastructure among small retail customers and their service providers.

[1] Consider for example, a residential customer who reduces their air conditioning load on a hot summer day. While this action will reduce overall system demand, albeit marginally, the customer's load profile is deemed to be the Net System Load Shape (NSLS) for the customer's distributor, the same as any of the distributor's other customers who don't have interval meters. Hence, any benefits from the customer's demand response actions flow to 1) other NSLS customers exposed to wholesale market prices and 2) the provincial government given their role in buying down the cost of power to 4.3 cents/kWh for low volume and designated customers. Under the current regulatory codes, the only way the customer's demand response actions can be recognized is by an interval meter, which costs between $300 - $400.

The various barriers described above are summarised in the following table:

	Target Group		
	Wholesale Customers	Large Retail Customers	Small Retail Customers
% of Ontario Demand:	20% to 25%	75% to 80%	
Barriers:			
• lack of awareness of technologies & options		√	√
• lack of experience with DR		√	√
• existing regulatory framework acts as barrier			√
• benefits under existing market framework (ie, retail rate freeze) are insufficient to warrant DR			√
• unable to access DR mechanisms of wholesale market		√	√
• perceived benefits are insufficient to outweigh the perceived costs and risks.	√	√	√
• high level of uncertainty due to the discrepancy between pre-dispatch prices and dispatch prices and the short term volatility of dispatch prices	√	√	√
• lack of supporting infrastructure	√	√	√

Next Steps

Before proceeding to the next stage of developing possible pilot concepts, the IMO is seeking feedback from stakeholders on the suitability of targeting the markets and barriers proposed above. Specifically, the IMO is seeking feedback on the following questions:

1. Which market segments should be targeted? Is there a priority and if so, why?
2. Of the barriers identified, which are critical? Are there any other critical barriers that we have not identified?

Your comments would be much appreciated by responding by Friday, October 3rd via the following e-mail address: IMO.Consultation@theIMO.com

Any comments received may be posted on the IMO web site. Please advise in your response if you do not want your comments posted.