

IMO Action Plan on Demand Response Initiatives

Background:

The commissioning of a Blueprint for Demand Response in Ontario was first announced at the November 26th meeting of the Market Advisory Council (MAC). The scope of this initiative includes consideration of both the IMO-administered wholesale market and the retail market. The objective is to identify the full range of issues impeding load responsiveness in the market today and to promote a broad based discussion from which an action plan on demand response activities for the IMO can be developed.

The Demand Response Advisory Group was established to provide input in drafting the Request for Proposal to engage a consultant who would prepare the Blueprint. With input from this group, an RFP was issued on December 20, 2002 and Navigant Consulting was selected as the successful respondent. A discussion paper was prepared for the February 18, 2003 MAC meeting to initiate debate. While there was much discussion on demand response programs at the meeting, a straw poll of the MAC attendees did not indicate an overwhelming desire for Economic Demand Response Programs wherein load is paid not to consume.

An interim draft of the Blueprint was circulated to the Demand Response Advisory Group on March 12, 2003. Revisions were made and a draft Blueprint was sent to all MAC members on March 20, 2003. MAC members were invited to provide comments and to identify any additional issues that should be considered. Navigant completed the report, and the final report, together with the comments received from MAC members on the draft report and Navigant's response to them, are now posted as a public document. The Navigant report contained a number of key recommendations for the IMO. Attachment A provides an IMO response to each of those recommendations.

The report was presented to the IMO-Board at its May 2, 2003 meeting for their information and discussion. IMO staff thereafter developed and submitted for endorsement an IMO action plan at the June 5, 2003 meeting of the IMO-Board. The IMO-Board generally endorsed the action plan.

The action plan outlined below has four parts. With the exception of the economic demand response pilot program, which is new (part iii.), and the co-ordinating activities of part ii., which would take on a greater emphasis, all of the activities contained in the action plan are largely already underway.

IMO staff are now proceeding to implement the action plan and to develop a specific proposal for an economic demand response pilot program. **To this end, MAC members are invited to comment on the action plan and in particular on the issues raised concerning the prospective pilot program, such as the proposed segment of the market to be targeted and on those areas requiring further development.**

IMO Action Plan:

- i. Continue to encourage the development of additional dispatchable load;
- ii. Integrate demand response activities within the IMO and co-ordinate these activities with the OEB and Government;
- iii. Develop an economic demand response pilot program; and
- iv. Monitor, encourage and help enable other related demand response pilot activities.

i. Continue to encourage the development of additional dispatchable load.

The IMO continues to work with market participants to recruit additional dispatchable loads. Recent initiatives include a dispatchable load workshop on April 24 and ongoing face to face conversations. The results of these efforts are beginning to show promise. There are presently two market participants with about 65MW of dispatchable loads in the market. Current targets are to increase this number to about six market participants with about 200MW by year-end and eight market participants with about 400MW by spring 2004.

Continuation of this effort is a key component of the action plan. It is in this sector – those market participants who continue to be exposed to market prices – that the greatest potential for natural price responsiveness exists. At present they have a number of market instruments available to them in addition to being dispatchable, physical bilateral contract data, opportunity to provide operating reserve and the hour-ahead dispatchable load program, that they can utilize in exercising price responsiveness.

ii. Integrate demand response activities within the IMO and co-ordinate these activities with the OEB and Government:

A number of activities are currently underway within the IMO related to demand responsiveness. The objective will be to ensure others are informed of these activities. This will include incorporating into the IMO's educational material information on how customers, LDCs, retailers and potential aggregators might be able to utilise the various products and services that are currently available to enable demand response and to participate in the various programs available in the IMO-administered markets.

While some discussions have already taken place among the three parties concerning the “blueprint” and Market Evolution Program initiatives, more formal meetings and interactions are intended to enable co-ordination of our respective initiatives where necessary and to seek means to resolve identified barriers. These meetings and interactions will also help to ensure that there is an exchange of information at the staff level to aid in the identification of activities and areas that would benefit from specific coordination.

The discussions would extend beyond the IMO related programs discussed above to include programs that could exist solely at the retail level. As well, through co-ordination discussions with the OEB and Government, the need for and most appropriate accountability and means for providing further education to the marketplace in regards to demand response, particularly in the retail sector, will be identified.

iii. Develop an economic demand response pilot program:

Price responsiveness is judged to be the ideal demand response, but price responsiveness alone might not be enough. For example, price responsiveness might be judged to be inadequate if:

- conditions of shortage persist as a result of inadequate supply and loads that are not sufficiently price responsive to the resultant high market prices due to the 4.3 cent price guarantee,
- the frequency and duration of prices are unreasonably high (i.e. much higher than is thought to be needed to enable new supply),
- market power is being exercised locally or externally through the interties, or
- as is the case in the U.S., simply not enough consumers are exposed to market prices.

Attachment B provides material on an illustrative pilot program. Such a program could be further developed in consultation with market participants to determine:

- who would qualify for participation in the pilot program,
- the registration process,
- whether contracts or some other means are used to subscribe to the program,
- determination of the market price that would initiate operation of the program,
- the notice period prior to interruptions,
- the duration of the interruption,
- the method for determining customer baselines,
- etc.

Current thinking is that to enable the development of the necessary infrastructure, a pilot program should be targeted at those segments of the market that are not currently price responsive; namely, loads that come under the 4.3 cent Government price guarantee.

Perhaps more specifically, aggregators of interruptible load such as hot water heaters and air conditioners. The goal is to enable price responsiveness from this type of load.

To be effective and maximize potential gain, the pilot program needs to be targeted to a subset of consumers who are not otherwise exposed to the fluctuating market price or to address specifically identified barriers. The barriers that may be targeted include:

- lack of experience with specific enabling technologies;
- lack of experience by specific service providers (such as aggregators);
- lack of experience/data to determine actual MW response potential (reliable response rates and/or sensitivity to market prices).

Funding for the ongoing operation (i.e. the actual payments made for load reductions) of the pilot program would be collected through the monthly uplift charge and would be paid for by all consumers. This is appropriate since consumers are the ones who will benefit from any consequential lowering of the market clearing prices arising from reduced consumption during the pilot and future price responsiveness within the targeted sector.

iv. Monitor, encourage and help enable other related demand response pilot activities:

As part of the Market Evolution Program initiatives, the Wholesale/Retail Integration Project has issued a discussion paper inviting market participants to suggest various pilot programs and research activities that the IMO might carry out with regards market integration.

The objectives of these initiatives are to:

- Analyze and quantify the potential benefits of retail-level aggregation
- Identify types of services the IMO might offer to allow retail-level demand response products to be offered into the wholesale market; and
- Identify various technical, regulatory and logistical challenges related to retail-level load aggregation.

The possible role of the IMO would be to:

- Monitor initial pilot programs
- Determine key interfaces between the retail and wholesale market components
- Identify possible future improvements to tools and business processes to help facilitate retail level demand response

In addition to encouraging the development of price responsiveness in the retail sector, the initiatives to develop and implement pilot programs will facilitate further education in demand response.

Attachment A

The Navigant report “Blueprint for Demand Response in Ontario” includes a number of recommendations for consideration by the IMO, the Government and the OEB. The key recommendations for the IMO are noted below along with an IMO response in *Italics*.

1. The IMO should ensure that discrepancies between pre-dispatch and real time pricing and volatility of real-time prices are minimised to facilitate demand response.

To respond to and address a number of pricing issues identified in the IMO-administered markets, the IMO established a Market Pricing Issues team. Based on the contributing factors and the identified issues themselves, one being the disconnect between Pre-dispatch price and Real-time price, the team has introduced a number of initiatives or elements that are designed to reduce the impact of the pricing issues and increase the reliability of the IMO-controlled grid. These initiatives are also designed to improve the overall efficiency of the market. This work continues to be a high priority activity for the IMO.

2. The IMO should co-ordinate activities with the Government and OEB with respect to demand response.

A number of meetings/discussions have taken place between the IMO and OEB staff and the IMO and government staff concerning the commissioning and earlier drafts of the “blueprint” document produced by Navigant and concerning the implications of the Market Evolution Program initiatives for our respective organisations. More formal meetings and interactions are intended under the proposed action plan to enable co-ordination of our respective initiatives where necessary and to seek means to resolve identified barriers.

3. The IMO should participate in generic demand response consultations or proceedings as required.

This recommendation is non-specific. The IMO is already involved with an ISO demand response work group in the U.S. and participates in various consumer conferences as may be appropriate. For example, the IMO participated in a recent dispatchable load workshop held by AMPCO that includes topics such as dispatchable load and demand response. The IMO also has continuing contact with various players in the industry and will continue to follow developments in order to identify appropriate locations and levels of involvement. Through the action plan, a greater degree of focus and prioritisation can and will be applied to this involvement.

4. The IMO should effect the necessary changes to market rules as appropriate.

The process for amending the Market Rules is a well established and ongoing process. While requests for amendments to the Market Rules can be submitted by anyone, IMO staff have in fact been the proponent of many market rule amendment submissions, where necessary. Market rule amendments would be needed to enable the pilot program proposed in the action plan and these would be pursued by the IMO.

5. The IMO should continue the EDRP and consider allowing other customers to bid standby generators (up to a pre-determined maximum capacity) into the program.

The IMO Board approved extending the EDRP for another year in March. While there is no restriction on a market participant offering to provide a (net) load reduction via the use of standby generators, there are no plans to specifically target such arrangements either at this point in time. The actual activation of EDRP load reductions is the next to last action within the control action list and has not been utilised to-date (and hence has not been a cost to the market) despite the extreme conditions experienced over the last year. As such focussing on and devoting significant effort on expanding the amount of such load is not seen as being cost effective. It is considered to be more appropriate to focus effort on enabling such resources to be offered into the hour-ahead dispatchable load program and/or other initiatives.

6. The IMO should continue to aggressively encourage greater dispatchable load and operating reserve market participation by wholesale market participants.

The IMO has and is continuing to recruit additional dispatchable load. Continuation of this effort is a key component of the action plan.

7. The IMO should implement the Hour Ahead Dispatchable Load (HADL) program for the summer of 2003.

The implementation of the Hour Ahead Dispatchable Load (HADL) program is proceeding. The IMO Board at its meeting on May 2, 2003 passed the Market Rule amendments required to enable the implementation of the HADL.

8. The IMO should take a more aggressive role in educating customers, LDCs, retailers and potential demand response aggregators on demand response and load shifting.

The appropriate role and level of involvement by the IMO is being considered. As part of the action plan, the IMO will be incorporating into its educational material information on how customers, LDCs, retailers and potential aggregators might be able to utilize the various products and services necessary for demand response and to participate in any programs available in the IMO-administered markets. As well, the initiatives to develop and implement pilot programs will facilitate further education in demand response. Further, as identified under the action plan, through co-ordination discussions with the OEB and Government, the most appropriate accountability and means for providing such education will be considered.

9. The IMO (working with the OEB) should explore mechanisms to allow embedded LDC loads to participate in the EDRP and other IMO programs.

Embedded loads that are wholesale market participants may participate in the EDRP. Through the use of aggregators, smaller retail loads have participated in ISO administered emergency and economic type demand response programs in the U.S. There are presently no similar retail level programs in Ontario.

While there are no restrictions in the market rules to embedded loads participating in IMO programs such as the EDRP, barriers may exist for LDCs acting as aggregators. The action plan recognises the need to consider ways of addressing these and any other barriers through the pilot program initiatives and discussions with the OEB and Government.

10. The IMO should consider allowing LDCs and other market players, such as retailers, to serve as aggregators.

As noted under recommendation 9, there are no restrictions in the market rules to the participation by such entities. However, the action plan recognises the possibility of the existence of barriers to such participation and the need to consider ways of addressing these and other barriers through the pilot program initiatives and discussions with the OEB and Government.

11. The IMO should explore the costs and benefits of introducing one or more Economic Demand Response programs.

The development of an economic demand response pilot program is included in the action plan.

Attachment B

An Illustrative Economic Demand Response Pilot Program for Ontario

ISOs within the U.S. northeast have implemented two basic types of demand response programs in which consumers are paid to forego consumption. These programs have two basic functions. Emergency demand response programs are called upon to maintain system reliability during periods of system emergency after all market sources have been exhausted. The IMO has an emergency demand response program, but has not yet experienced the system conditions that would require activation of its associated demand reduction. The other type of programs, economic demand response programs, has been implemented to mitigate high market prices and also help to maintain system reliability. Ontario presently has no such program.

The following is a high-level strawman for an economic demand response program, which could be implemented in the near term as a pilot program to gain experience and promote infrastructure development should such a program be necessary in the Ontario market. U.S. experience suggests that to be successful, an economic demand response program should have the following features:

- It should be kept simple to maintain consumer interest; and
- The implementation price (i.e. the price level at which it is invoked) should be fixed ahead of time, not based on a changing market price.

These attributes are fairly straightforward. Experiences in U.S. markets suggest consumers will lose interest in any proposal that is overly complicated. Also, relating compensation to fluctuating and uncertain market prices is not practical, since consumers are unlikely to be able to respond to an uncertain price. Instead, the price could be based on an analysis of actual prices experienced over a suitable period of time. For example, a simple analysis could be conducted to determine the highest 100 hourly prices. The pilot program could be triggered at that price level. This approach would help ensure that implementation is only when needed as determined from past experience and would help limit the incidence of “free riders”¹.

Settlements for the pilot program must necessarily be by manual means, and low tech implementation means could be used such as e-mail, pager or notification by telephone. In terms of structure and process, the pilot program could utilize the same market mechanisms that are being developed to implement the hour-ahead dispatchable load (HADL) market. Under the HADL market load is dispatched and settled as follows:

1. participants submit offers to reduce consumption at a price that they specify up to three hours prior to the dispatch hour;

¹ The issue of free riders arises because in some instances a consumer may have intended to reduce consumption anyway to avoid paying high market prices without the incentive of an additional payment.

2. offers to reduce consumption are evaluated and selected by the IMO in the pre-dispatch timeframe three hours prior to the dispatch hour;
3. the IMO gives at least two hours prior notice to the participant of the required reductions;
4. loads are settled for their actual consumption at HOEP prices;
5. should real-time prices be less than the participant's offer, the IMO makes up the difference;
6. compliance to IMO dispatch instructions would be determined against a baseline profile of energy withdrawals established for the facility.

An economic demand response pilot program could operate in a similar manner, except instead of the participant submitting offers to reduce consumption, they would notify the IMO of their intention to reduce consumption at the IMO pre-selected price at which the pilot program is activated. Also, instead of reducing consumption based on prices that it was willing to pay for energy established an hour-ahead, it would be paid to reduce consumption at the IMO pre-selected price. As a practical matter, to enable loads to prepare better for the event, the IMO might be able to give participants day-ahead notice of impending events.

A similar baseline profiling methodology could be used for the economic demand response pilot program as is proposed for the HADL market. Although, because the potential dollar amounts involved are larger, the method used in any economic demand response pilot program may have to be more rigorous than that used in the hour-ahead market.