

February 12, 2003

## **Economic Demand Response Programs**

The attached table describes the demand response programs run by the three ISOs in the US Northeast, NYISO, ISO NE and PJM. Under these programs consumers are paid to curtail their energy consumption during periods of high energy prices or shortage. The programs vary somewhat by ISO and are described according to their market function, what causes them to be initiated, the extent of advance notification prior to curtailment, duration of curtailment, payments made for the service provided, non-compliance payment penalties, if any, and how customer baselines are determined (i.e. how the programs determine the amount of load reduction achieved.) Additional information on these programs can be obtained at web links footnoted in the table.

Programs such as these may be recommended in the Blueprint for Demand Response in Ontario, being developed for the IMO by Navigant Consulting.

The existing demand response programs are characterised under two basic market functions, economic and emergency demand response. Emergency type demand response programs are called upon during periods of system emergency and are implemented to maintain system reliability. The IMO presently has such a program, but there has been no request made for load reduction as yet. The other type of programs, economic demand response programs, are called upon to mitigate high market prices and also help maintain system reliability. Ontario presently has no such programs.

These programs have been implemented within about the last two years and will likely continue to evolve as experience is gained.

The question at hand is: "Should Ontario implement one or more economic demand response programs?" When thinking about the answer to this question, the answers to several other fundamental questions need to be considered.

- How will such programs interact or integrate with other market mechanisms under consideration such as the day-ahead market or the hour-ahead dispatchable load (HADL) market? Would it be premature to implement economic demand response programs without first determining how price responsive consumers are under these programs? Would economic demand response programs affect the viability of these programs?
- The Ontario market is similar but not identical to markets in neighboring US jurisdictions. There is greater opportunity within the Ontario market for consumers to be price responsive than in the US where most loads are under some form of bilateral arrangement or regulated tariff and therefore are not exposed to real-time market prices. While the government's recent initiative fixed energy prices for low volume and designated consumers, will the remaining loads that are exposed to market prices be able to provide sufficient price responsiveness in the market?



- Is it necessary or appropriate to pay someone not to consume in a properly functioning market? Or do the unique features of an essential service like electricity (e.g. it cannot be stored and must be consumed as it is produced) require unique market mechanisms such as economic demand response programs?
- Do economic demand response programs act as a disincentive to new generation entering the market?
- What market conditions need to exist to warrant considering the implementation of such programs and, conversely, if they are to be temporary programs what conditions need to exist before they can be removed?

These questions are not exhaustive but are provided to stimulate thought and provoke conversation on this topic during the associated agenda item at the upcoming February 18<sup>th</sup> MAC meeting.

Yours truly,

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## ISO Demand Response Programs

02/13/03

Market	Market Function	Initiated	Event Notice	Duration	Payments	Non-compliance Penalty	Customer Baseline
<b>New York<sup>1</sup>:</b>							
1. Day-ahead Demand Response Program	Market price mitigation	Ongoing	Day-ahead bid	Depends on bid	<ul style="list-style-type: none"> <li>Greater of bid or day-ahead LBMP</li> <li>Min bid of \$50 to prevent free riders</li> </ul>	Greater of DAM or RTM, plus 10%	
2. Emergency Demand Response Program (EDRP)	Maintain system reliability.	During operating reserve shortages or major system emergencies	2 hour notice	Minimum of 4 hours	<ul style="list-style-type: none"> <li>Greater of \$500 per MWh or RTM LBMP</li> <li>No up front payments</li> </ul>	None	
<b>New England<sup>2</sup>:</b>							
1. Day-ahead Demand Response Program (new)	Market price mitigation	Ongoing	Day-ahead bid	Depends on bid	<ul style="list-style-type: none"> <li>Day-ahead LMP</li> <li>Min bid of \$50 per MWh, max bid of \$500 per MWh</li> </ul>		
2. Real-time Price Response Program (Based on existing Class II program)	Market price mitigation				Greater of RTM LMP or \$100 per MWh		
3. Real-time Demand Response Program (Based on existing Class I program)	Maintain system reliability.		30 minutes or up to 2 hours		<ul style="list-style-type: none"> <li>Greater of RTM LMP or \$150 per MWh for 30 minute response time (\$100 for 2 hour response time.</li> <li>Eligible for ICAP credit</li> </ul>		
4. Real-time Profile Response Program (i.e.	Maintain system	System or zone cannot maintain 30 minute	Must be capable of interruption within 30		<ul style="list-style-type: none"> <li>Greater of RTM</li> </ul>		

<sup>1</sup> New York also makes ICAP payments to SCRs (special case resources) that are initiated ahead of the EDRP. Further information: [http://www.nyiso.com/services/documents/groups/bic\\_price\\_responsive\\_wg/demand\\_response\\_prog.html](http://www.nyiso.com/services/documents/groups/bic_price_responsive_wg/demand_response_prog.html).

<sup>2</sup> Further information: [http://www.iso-ne.com/Load\\_Response/](http://www.iso-ne.com/Load_Response/).

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load with non-interval metering. Response determined by statistical means)	reliability.	operating reserve	minutes		LMP or \$100 per MWh  • Eligible for ICAP credit		
PJM <sup>3</sup>							
1. Economic Demand Response Program	Market price mitigation				<ul style="list-style-type: none"> <li>• Full LMP when market price is above \$75 per MWh</li> <li>• \$75 less gen and trans retail rate when price is below \$75</li> </ul>		
2. Emergency Demand Response Program	Maintain system reliability.	Following the declaration of Maximum Emergency generation and prior to cutting interruptible loads	One hour (?)		Greater of \$500 per MWh or RTM LMP		Reductions measured from the previous hour.

<sup>3</sup> Further information: [http://www.pjm.com/applicationassistant/aa\\_lrp.html](http://www.pjm.com/applicationassistant/aa_lrp.html).