

# Q&A: Demand Response



Demand Response 3 (DR3) was established in 2008 as a contract-based program administered by the OPA and dispatched and settled by the IESO. DR3 compensates industrial and commercial enterprises for reducing their electricity demand during times of Ontario system need. Participants enrolled in DR3 must be available for 1600 hours annually in order to receive standby and subsequent activation notices. The activations require participants to reduce their electricity consumption given a standby notification, either day-ahead or day-at-hand, and an activation notice received at least 2.5 hours in advance. The program compensates participants for being available and for their demand reduction during an activation event.

To encourage development of DR in Ontario the Long-Term Energy Plan 2013 indicated that responsibility for DR initiatives was transferred from the OPA to the IESO with the goal of integrating existing contracts to a market-based program. In recognition of past performance of the DR3 program noted by IESO, OPA, the Market Surveillance Panel, DR3 participants, and other stakeholders, enhancements have been made to the dispatch process and the trigger mechanism to better align activation with specific system needs in a more cost-effective and transparent manner.

The following Q&A document represents a summary of some general and specific questions and comments from various stakeholders concerning this initiative.

## **1. What level of consultation was undertaken to assess whether market rule amendments would be required to support this change in DR3 triggering?**

The IESO carries out the notification and activation of DR3 resources on behalf of, and using triggers established by, the Ontario Power Authority (OPA). Prior to June 1<sup>st</sup>, all of these actions were taken outside of the market and without consideration of the scheduling of other, potentially less economic, resources. The notification and activation of DR3 resources was signaled through System Status Reports (SSRs), with an activation being further indicated through a reduction of the demand forecast, within pre-dispatch timeframe, for the activation hours.

The IESO has an obligation to determine pre-dispatch schedules “in order to provide itself and *market participants* with advance information and projections necessary to plan the physical operation of the *electricity system*.” (Market Rules Ch. 7 s5.1.1). Given the OPA and IESO’s view that the pre-dispatch process is the best indicator of system need for the use of

DR3 resources, it is important that this process is aware of the DR3 resources and their ability to contribute to the balancing of supply and demand when they represent a cost-effective resource to do so. Under the Market Rules, specifically Chapter 7 section 5.2.1.6, the IESO shall use “such other available information as the IESO determines appropriate” as an input to the pre-dispatch process.

Given the IESO and market participants’ shared desire to have as accurate a pre-dispatch result as possible, the availability of DR3 resources and the cost associated with activating these resources was deemed to be appropriate information for use in pre-dispatch. Further, since DR3 resources will not be considered in real-time by the IESO dispatch process, meaning that their impact to real-time scheduling and price-setting is no different than it was prior to June 1<sup>st</sup>, the market rules governing pre-dispatch give sufficient authority to implement the new trigger process established by the OPA.

**2. What assessments were made, whether respect to system impact, scheduling, or activation frequency regarding the addition of these resources?**

Analysis was performed from January 2012 to February 2014. The analysis mimicked the business rules described in the DRWG action item response: shadow prices averaged at representative resources exceeding \$200/MWh in either the standby notification or activation timeframes. If these representative resource shadow price averages met the threshold in both the standby notification and activation timeframes, an activation event was assumed. In 2012 and 2013, there would have only been two activation days under the new trigger mechanism. In early 2014, the DR resources would have been called upon more frequently during the extreme conditions when market prices far exceeded the historical averages over the same period. Over the two month period of January-February 2014, DR3 would have been activated 6 times for province-wide needs and four times for region-specific needs. In all instances, all of Ontario’s online generation fleet was running to meet demand.

This analysis did not, however, consider changes to the scheduling of other resources given the scheduling of DR3 resources. Nor did it model impacts to either market clearing prices or shadow prices at other locations as a result of DR3 resource scheduling in either the pre-dispatch or real-time timeframes.

The capability of each proposed connection point to handle the current aggregated DR3 resources was assessed by the System Performance & Models group. A transmission assessment was performed to ensure that the tools could continue to perform their assessments given the aggregation of the sets of loads at their specified connection points.

Since no actual generation will flow in real-time at these locations, and there will be no incremental change to the way in which our security analysis and dispatch tools work in real-time as a result of the integration of DR3 resources.

**3. Has the IESO posted a procedural document that explains the process for bringing the DR3 program into the market?**

The IESO published a high-level explanation of how the DR3 program will be scheduled through IESO market tools as requested by stakeholders. That document is available on the DR Working Group page: [http://www.ieso.ca/documents/consult/drwg/drwg-20140403-IESO\\_Action\\_Item\\_Response.pdf](http://www.ieso.ca/documents/consult/drwg/drwg-20140403-IESO_Action_Item_Response.pdf)

The IESO will be acting as the market participant to manage the offers for the DR3 resources. The IESO will be following a detailed process outlined in an Internal Manual which mirrors the process outlined in the public document (linked above). The details around this process are currently being incorporated into the Market Manuals 4.2 and 4.3. The changes will be made to these market manuals via an Interim Market Documentation Change (IMDC) to be published this summer, with the opportunity for comment from stakeholders.

**4. What reports will be available to indicate the availability and expected notification and activation of DR3 resources?**

Currently the DR3 resource shadow prices are being published in the Predispatch Shadow Price Report. With respect to resource availability, the amount of available capacity from DR3 resources is presented in the pre-dispatch adequacy reports and SSRs within the 'other' fuel type.

A new report will include the DR3 resource pre-dispatch MW schedules. The report will be presented at a public meeting in order to gather feedback from all participants. The goal is to make this report available later in 2014 or early 2015, but the actual in-service date for the report will depend on vendor availability. As these reports are developed, sample files will be made available for those with automated tools to extract data from the IESO reports site.

**5. Does the IESO expect the price trigger to be a better indicator than supply cushion?**

It was observed, by the IESO, OPA and stakeholders, that the supply cushion trigger methodology was a poor indicator of the system need for which DR3 was created. The pre-dispatch process, informed by its knowledge of expected demand, resource availability and transmission system conditions, should indeed better target those times of tight supply and demand conditions.

Even in the day-ahead time frame, pre-dispatch scheduling of DR3 resources is a good indicator of an expected DR3 activation event.

**6. How many base MW will be in each zone?**

The MW quantities associated with each resource, and their electrical location, is shown below.

Resource Name	Region(s)	Station	Current Load (MW) <sup>1</sup>
DR3_OTTAWA_LATE	Ottawa	Merivale 230kV	29
DR3_TORONTO_LATE	East/Toronto/Essa	Cherrywood 230kV	172
DR3_SOUTHWEST_LATE	Bruce/S. Central/S. West/Georgian Bay	Middleport 230kV	116
DR3_WEST_LATE	West/Long Point	Longwood 230kV	31
DR3_NIAGARA_LATE	Niagara	Allanburg 115kV	21
DR3_NORTHEAST_LATE	N. East/N. West	Porcupine 115kV	13
DR3_TORONTO_EARLY	East/Toronto/Essa	Cherrywood 230kV	23

**7. Do these resources have Loss Penalty Factors applied?**

Yes – they are the same as all generation in the surrounding region.

**8. Why is there only one “Early” resource (DR3\_TORONTO\_EARLY) and why is the designated settlement area “ALL”?**

The quantity of MW in the “early window” portfolio is quite small (approximately 20 MW). There was a trade-off between the administrative effort required to manage many small

---

<sup>1</sup> Represents the current maximum contracted capacity which is subject to change based on various conditions such as contract expiration, outages and derates.

resources and the dispatch/security impact to representing these disparate resources in an aggregated way. Assessment of that trade-off favoured aggregation of all the early settlement accounts into one resource: "DR3\_Toronto\_Early".

**9. Was there consideration given to multi-hour optimization, perhaps using the average shadow price for each 4-hour block?**

The use of four consecutive hours above \$200/MWh as a trigger is a simple business rule which is sufficient to broadly indicate a sustained need for, and cost-effectiveness of, these resources within the hours of DR3 availability.

**10. Will these resources participate in the operating reserve market?**

No – these resources will only be bid into the energy market.

**11. The day-ahead notification is based on the pre-dispatch run in HE16 or HE17, while the day-at-hand standby notifications are based on the pre-dispatch in HE1 – HE7. Why was the most recent valid pre-dispatch available in the final hour not used as a rule? If an earlier pre-dispatch is used, would you give an earlier notification?**

The HE16/HE17 day-ahead timeframe coincides with the DR3 Program Rules in place today, as does the HE1-HE7 notification timeframe. On days of capacity need, there may be a multitude of events taking place that require operator attention and thus a wider notification window gives the control room the opportunity to notify earlier than the last possible pre-dispatch where those conditions are expected to persist in order to ensure that the resource is available.

**12. Will resources selected through the auction be expected to participate in the market under the market design put in place for the DR3 Integration or will there be new market opportunities for these resources?**

A demand response auction, the first of which will be held in 2015, will provide the availability revenue stream that exists today for DR resources but the way in which energy is subsequently delivered into the market may be different. As the design of the auction and the energy services that will be delivered by successful participants proceeds, there is an opportunity to evolve the program and allow for new types of participation, such as the types of services being explored through pilot projects.

**13. How long will the transitional capacity-based demand response market rules be in effect and who will be able to participate in this program?**

The program will be limited to those currently with DR3 contracts. The terms will continue to be respected for those under contract until these contracts are expire, at which point all such resources will compete within a formal demand response auction. The quantity of MW within the program will decline with the annual expiry of contracts until the final contracts expire in 2018.