

IMPROVING UTILIZATION OF HDR RESOURCES

Demand Response Working Group

January 30, 2018

Purpose

- To continue discussion on increasing utilization of HDR resources



Introduction

- The IESO has been working with stakeholders to discuss ways to increase utilization of Hourly Demand Response (HDR) resources

Underway

2017 DR Auction:

Add HDR resources to the Emergency Operating State Control Actions (EOSCA) list

In Development

2018 DR Auction and Beyond:

Continue to evolve the HDR resource to better meet system needs and to prepare to compete in the future ICA

2018 DR Auction and Beyond

- The IESO remains committed to increasing utilization of HDR resources and is targeting additional improvements for the 2018 DR Auction

2018 Goals for DR

Develop DR to ensure it can compete with traditional supply

Alignment with Market Renewal

Criteria for Improvements:

1. Must support efficient dispatch and evolve the effectiveness of the DR resource
2. Is likely to increase the number of Hourly DR Activations to demonstrate DR value when economic
3. Balances stakeholder needs
4. Can be implemented for the next DR Auction in December 2018

Alignment with ICA

Alignment with Market Renewal

ICA Considerations

- The ICA stakeholder engagement is currently working on defining the capacity product over the coming months
 - High level design expected to be finalized in Q4 2018
- The capacity product will establish requirements for each resource type
- While the capacity product has not yet been defined, discussions on individual features have been initiated at the ICA SE
 - The IESO will take these design elements into consideration when proposing improvements to the HDR resource

Alignment with Market Renewal

ICA Considerations

- The Incremental Capacity Auction stakeholder engagement has begun work on defining the capacity product that the auction will procure

Resource Adequacy Needs

When and where is outage risk greatest?

Resource Capabilities

What are the limitations of supply resources?

Capacity Product

defined by...

Performance Obligations

Standards that participants must meet when selling the capacity product

Performance Assessments

How compliance with obligations is measured and incentivized

Alignment with Market Renewal

ICA Resource Obligation and Assessment Features

Obligation Type	Feature	Assessment / Incentives
1. Availability Obligations	a. Must-offer Timeframe	Pay-for-Availability
	b. Must-offer Amount	
	c. Must-offer Hours	Updates to UCAP and/or Capacity Obligation
	d. Outage Planning and Reporting	
	e. Capacity Check Test	
2. Emergency Event Obligations	a. Response during emergency events	Pay-for-Performance
3. Visibility & Control Obligations	a. Self-Scheduling vs. Dispatchable	Other Market Rule mechanisms
	b. Dispatch Dead-band	
	c. Minimum Dispatch Duration	
	d. Resource Operational Limitations	

ICA Design Elements Impacting DR Utilization

Availability Obligations: Must-Offer Requirement

ICA SE

- IESO Preliminary Recommendation is for the resource to have a must-offer obligation in both the day-ahead and real-time energy market

DR Auction

- HDR resources currently must offer capacity into the day-ahead but are not required to maintain capacity in real-time market if a standby notice is not issued by 7am of the dispatch day

Hours

ICA SE

- Need to define the availability window for the capacity product

DR Auction

- Availability window for DR capacity is currently:
 - Summer commitment period: business days between HE13-21
 - Winter commitment period: business days between HE17-21

Visibility and Control Obligations: minimum dispatch duration

ICA SE

- Need to establish a minimum duration over which a resource is required to deliver on its Capacity Obligation
- Need to conduct further analysis of system needs to set minimum dispatch duration taking into consideration resource type and capability

DR Auction

- Currently HDR resources must be able to provide a four consecutive hour response when activated

Alignment with ICA

- The ICA stakeholder engagement is currently working on defining the capacity product over the coming months
 - Discussions are currently happening on these design elements
 - Design element tracker is available [here](#)
- To improve utilization of HDR resources in 2018, the IESO will work with the DRWG on proposals that *align* or are at least *not inconsistent* with ICA preliminary recommendations
 - Avoid creating new ‘seams’ issues as part of DR enhancement

Review of Stakeholder Feedback

Review of Stakeholder Feedback

- The IESO thanks all stakeholders who have taken the time and consideration to submit feedback on improving utilization of HDR resources

Review of Stakeholder Feedback

Feedback: Has the IESO evaluated if the standby notice suppressed any HDR activations? Has the IESO evaluated if delaying the standby notice to 8 or 9 AM would support increased activations?

If the IESO has not quantified the number of suppressed activations, would the IESO evaluate the quantity of HDR activations that could have occurred if a standby notice was not required?

Based on the current HDR scheduling protocol, the requirement for a standby notice has not suppressed an in-market HDR activation.

Review of Stakeholder Feedback

Feedback: Would the IESO consider introducing a voluntary activation notification? For example, could the IESO issue a request for HDR resources to lower bid prices?

The IESO could introduce a voluntary activation notification, similar to provisions under the Capacity Based Demand Response program. However, since compliance is voluntary, it does not provide the IESO with the assurance that the capacity will be delivered.

Feedback: Would the IESO consider introducing a maximum DR energy bid price eg \$200/MWh?

Instituting a maximum energy bid price for HDR resources could lead to greater utilization in the energy market at the expense of overall market efficiency. The IESO is not in favour of forcing more expensive resources to be utilized if and when more cost-effective resources are available.

Review of Stakeholder Feedback

Feedback: Faster responding resources could elect to be dispatched sooner for an incentive and still be dispatched alongside existing resources. However, shorter notice periods should not be imposed as a new minimum requirement for all resources. The IESO should consider additional DR products with complimentary attributes.

The IESO is interested in exploring faster responding DR resources through the Expanding Participation in OR initiative. The opportunity for earning incremental revenue through the operating reserve market could incentivize additional resources to provide a defined market product. More information about the initiative can be found here: <http://www.ieso.ca/-/media/files/ieso/document-library/public-info-session/2017/epor-20171110-presentation.pdf?la=en>

Review of Stakeholder Feedback

Feedback: Please clarify the requirement for standby notices within mandatory (capacity-based) DR programs in other jurisdictions.

On slide 11 from the “Improved Utilization of HDR Resources” presentation from the November 16th DRWG session, the IESO noted that NYISO’s capacity-based DR resource, Special Case Resources (SCR), did not require a standby-type notice in order to be utilized. For clarification, SCR resources, do receive a standby-type notice in order to be utilized in the energy market.

In addition, the IESO has clarified that for programs with mandatory participation, some jurisdictions such as NYISO provide a standby notice and while some such as PJM do not.

Review of Stakeholder Feedback

Feedback: The bid price threshold is a barrier to dispatch. If removed, bids would more accurately describe the true intentions of participants and still provide the IESO with the behaviour it seeks on peak days.

The DR Auction's purpose is to procure demand-side capacity that has an incremental impact of system needs. Load reductions for the Industrial Conservation Initiative do not have an incremental capacity impact. The bid price threshold is meant to be a simple filter for the IESO to use to ensure that energy bids reflect true energy price responsiveness to system conditions.

The ICA stakeholder engagement will create a new capacity qualification process. Based on the design, the bid price threshold may no longer be necessary.

The IESO has also observed that historical HDR bid prices have been well above the \$100 bid price threshold so it does not appear the bid price threshold is suppressing economic activations at this time. Stakeholder feedback on this item is appreciated.

Review of Stakeholder Feedback

Feedback: Generally not favour elimination or substantial reduction of the standby notice because some portion of DR contributors have processes and capabilities that require the standby notice.

The IESO has heard from stakeholders that an immediate elimination of the standby notice would cause the loss of a significant portion of existing DR capacity. At the same time, in order to evolve the HDR resource, the IESO needs to find ways to increase the real-time availability of HDR resources so that DR can be better utilized to meet system needs.

While the ICA stakeholder engagement is in the process of defining resource-specific requirements of the capacity product, including how a must-offer requirement impacts specific resource types, the IESO will not eliminate the standby notice in 2018. However, the IESO will look at how best to increase availability in real-time by reviewing the current requirements for a standby notice to be issued.

Historical Price Information

Historical Prices: Standby Analysis

- The IESO has performed some historical price analysis for the DRWG's consideration on standby notices
- Historical data on activations was presented to the DRWG at the Sep 12 DRWG meeting:

<http://www.ieso.ca/-/media/files/ieso/document-library/working-group/demand-response/drwg-20170912-update-improved-utilization-dr.pdf?la=en>

Parameters of analysis:

- Lookback period of May 2014 – October 2017 during the respective commitment period availability window was used
- The Southwest, Toronto and East zones were selected for analysis, which represent ~70% of the virtual DR participation
- For this analysis, HDR resources are assumed to be bid at \$1999/MWh

Historical Prices: Standby Analysis

Current HDR Activation Protocol

1. Standby Notice:

4-hour schedule required for a standby by 7am



2. Activation:

4-hour schedule required for an activation ~2.5hrs prior



3. Duration:

DR activated for 4 hour blocks only



- Over the look-back period, there have been **no standby notices issued** or activations of HDR resources for the Southwest, Toronto and East resources

Historical Prices: Standby Analysis

1. Standby Notice:

At least 1-hour above a trigger price required for a standby by 7am



2. Activation:

Activate when at least 1 hour scheduled for DR ~2.5hrs prior



3. Duration:

DR activated for up to 4 hours based on schedule when 1st hour activated



- IESO analysed market outcomes if standby notice and activation duration requirements were modified per the description above

Historical Prices: Standby Analysis

1. Standby Notice:

At least 1-hour above a trigger price required for a standby by 7am

2. Activation:

Activate when at least 1 hour scheduled for DR ~2.5hrs prior

3. Duration:

DR activated for up to 4 hours based on schedule when 1st hour activated



Commitment Period	Zone	# Days with Standby Notices with \$100 Trigger	# Days with Standby Notices with \$200 Trigger	# Days with Standby Notices with \$500 Trigger
Summer 2017	Southwest	8	5	2
	Toronto	8	5	2
	East	8	5	2
Winter 2016-17	Southwest	2	0	0
	Toronto	2	0	0
	East	3	1	1

Historical Prices: Standby Analysis

1. Standby Notice:

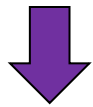
At least 1-hour above a trigger price required for a standby by 7am

2. Activation:

Activate when at least 1 hour scheduled for DR ~2.5hrs prior

3. Duration:

DR activated for up to 4 hours based on schedule when 1st hour activated



Commitment Period	Zone	# Days with Standby Notices with \$100 Trigger	# Days with Standby Notices with \$200 Trigger	# Days with Standby Notices with \$500 Trigger
Summer 2016	Southwest	24	7	1
	Toronto	24	7	1
	East	24	7	1
Winter 2015-16	Southwest	0	0	0
	Toronto	0	0	0
	East	0	0	0

Historical Prices: Standby Analysis

1. Standby Notice:

At least 1-hour above a trigger price required for a standby by 7am



2. Activation:

Activate when at least 1 hour scheduled for DR ~2.5hrs prior



3. Duration:

DR activated for up to 4 hours based on schedule when 1st hour activated



Commitment Period	Zone	# Days with Standby Notices with \$100 Trigger	# Days with Standby Notices with \$200 Trigger	# Days with Standby Notices with \$500 Trigger
Summer 2015	Southwest	15	4	1
	Toronto	16	5	1
	East	16	6	1
Winter 2014-15	Southwest	17	10	1
	Toronto	17	10	1
	East	17	10	1

Standby Notices during Peak Days

1. Standby Notice:

At least 1-hour above a trigger price required for a standby by 7am

2. Activation:

Activate when at least 1 hour scheduled for DR ~2.5hrs prior

3. Duration:

DR activated for up to 4 hours based on schedule when 1st hour activated



- Using a price-based trigger also increases the likelihood that HDR resources will be available to be utilized in real-time during times of system need such as peak days

Standby Notices Issued on ICI Peak Days If Using a Price Trigger

ICI Year	\$100 Trigger	\$200 Trigger
2014/15	3 of 5 peak days	2 of 5 peak days
2015/16	5 of 5 peak days	2 of 5 peak days
2016/17	5 of 5 peak days	3 of 5 peak days
2017/18*	2 of 5 peak days	2 of 5 peak days

*2017/18 ICI year is not finalized Apr 30, 2018

Conclusions

- By modifying the trigger for a standby notice and the duration of activation, greater real-time availability of HDR resources could have been possible
- This would have *enhanced the value* of HDR resources at times of system need
- IESO sees value in further discussion and considerations of these enhancements

Next Steps

- The IESO appreciates stakeholder feedback on improving utilization of HDR resources
- Please provide any additional feedback on potential ways to increase utilization of HDR resources
- Feedback is requested by Feb 13 to engagement@ieso.ca