

# Demand Response Working Group Meeting Materials

Demand Response Working Group

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June 19, 2019

# Meeting Agenda

Time	Agenda Item
9:00am	Welcome
9:05am	DRWG Update
9:10am	Presentation - Revised DRWG 2019 Work Plan
9:40am	Presentation & Discussion - Capacity Obligation Transfer in the TCA
10:00am	Presentation – HDR Resource Testing Results
10:15am	Presentation & Discussion – HDR Resource Testing Proposal
10:35am	Break
10:50am	Presentation & Discussion – Cost Recovery for Out-of-Market Activation Payments - HDR Resources Proposal
11:40am	Presentation & Discussion - Energy Payments for Economic Activation of Demand Response Resources Research Plan
12:10pm	Wrap-Up & Next Steps
12:20pm	Adjourn

# Revised Demand Response Working Group 2019 Work Plan - Proposal

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# Revised DRWG 2019 Work Plan

- The following slides identify the items the IESO proposes to include in an update of the 2019 DRWG work plan:
  - Includes items from existing DRWG work plan, more recent items raised by stakeholders and/or identified by the IESO
  - Each item is presented as an objective and includes the immediate next step(s) proposed by the IESO
  - This list is not intended to be in order of priority, rather each item is to be progressed to meet the timelines proposed in the objective

# Items Proposed for Revised Work Plan

## Items

- Cost Recovery for Out-of-Market Activation of HDR Resources
- Energy Payments for Economic Activation of DR Resources
- Testing of HDR Resources
- Transfer of DR Auction Obligations
- Contributor Management, Measurement Data Submission and DR Audit
- Separating Virtual and Physical HDR Resources

# Cost Recovery for Out-of-Market Activation of HDR Resources

## Objective:

- Develop and implement a solution to provide HDR resources cost recovery for out-of-market activations (e.g. testing or emergency activations) before the May 2020 commitment period

## Next Steps:

- Stakeholders to provide feedback on concept and input to questions provided by the IESO
- The IESO to develop a detailed proposal for review by DRWG before the September meeting

# Energy Payments for Economic Activation of DR Resources

## Objective:

- Determine whether there is a net benefit to electricity ratepayers if DR resources are compensated with energy payments for economic activations before end of 2020

## Next Step:

- Obtain input from stakeholders, including DRWG and the Market Development Advisory Group, on approach to conducting the analysis required to make this determination

# Testing of HDR Resources

## Objective:

- By end of 2019, identify opportunities to simplify the testing process and criteria for HDR resources while ensuring testing achieves goal of confirming that resources are capable of meeting their dispatch obligations

## Next Steps:

- Stakeholders to provide feedback on the IESO testing protocol which provides the discretion for IESO to allow testing duration to be reduced from 4 hours for HDR resources that passed the previous test in all 4 hours
- The IESO to review proposals from stakeholders related to DR Auction testing and develop response/proposal for review by DRWG before the September meeting



# Transfer of DR Auction Obligations

## Objective:

- Enable transfer of DR Auction obligations between uncongested zones in the design of the Transitional Capacity Auction (TCA)

## Next Step:

- Stakeholders can provide feedback on this proposal through the Technical Panel and Market Manual change process

# Contributor Management, Measurement Data Submission and DR Audit Processes

## Objective:

- Identify opportunities to introduce efficiencies and enhancements to the Contributor Management, Measurement Data Submission and DR Audit processes by end of 2019

## Next Steps:

- Review of the Contributor Management process will include but is not limited to:
  - Record of installation requirements
  - Submission of Single Line Diagram (SLD)
  - Contributor interdependencies
  - On line IESO enhancements
  - IESO to provide recommendations at September DRWG meeting

# Contributor Management, Measurement Data Submission and DR Audit Processes

## Next steps continued:

- Identify opportunities to enhance the Measurement Data Submission to ensure that measurement data submitted is on time, accurate and complete. Review to include:
  - Measurement Data Submission requirements
  - Introduce provision to accommodate contributor meter data issues which are outside of the DRMP's control
  - IESO to provide recommendations at September DRWG
- Update Market Manual 12.0 to include proposed changes to Contributor Management, Measurement Data Submissions and DR audit process including audit protocols
  - IESO target by end of 2019
- The IESO will also review the comments put forth by DR participants from the April DRWG meeting and will provide a response at the September DRWG meeting

# Separating Virtual and Physical HDR Resources

## Objective:

- By end of 2019, assess feasibility of allowing DRMP to register virtual and physical HDR contributors into separate aggregates within a zone

## Next Step:

- The IESO to discuss with stakeholders to clarify goal of this stakeholder request before September DRWG meeting

# Transitional Capacity Auction & Incremental Capacity Auction

- Both TCA and ICA have separate stakeholder engagement streams to discuss project design
- TCA issues that are specific only to DR participants may be brought to the DRWG
- ICA will also bring design elements to DRWG, this may include but is not limited to:
  - Qualified capacity process for ICA
  - Dispatch charge
  - Evolution of performance obligations

# Questions for DRWG

Stakeholders are asked to review the revised DRWG work plan and identify:

- Items missing from the revised work plan; either specific issues to be addressed within the more general work plan items (e.g. simplify testing process) or areas to address that are missing altogether
- Concerns with proposed next steps and alternatives for consideration
- Concerns with timelines proposed and preferred timeline including rationale for why alternate timeline is needed

# Capacity Obligation Transfers in the Transitional Capacity Auction – Recap of TCA Proposal

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# What we heard

“Participants should be allowed to transfer capacity both within a given market participant or between market participants across equally priced zones. The IESO should also examine the ability for the transfer of MWs between different-priced zones as long as you pay for the difference in price.” - AEMA

“Transferring like-for-like should be allowed as long as it does not impact auction supply limitations.” - Enel X

“Allowing like-for-like transfers will increase efficiency in the auction clearing process and maximize the ability for customers to access the market.” - Enel X



# Phase I Design: Unchanged Transfer Eligibility Rules

1. **The capacity must already be qualified:** the quantity to be transferred does not exceed the difference between the *capacity transferee's qualified capacity*, and its existing *capacity obligation* for the applicable *obligation period*;
2. **There must be consent:** the *capacity transferor* provides written confirmation to the *IESO* from the *capacity transferee* of its willingness to accept the transfer of a *capacity obligation* from the *capacity transferor*;
3. **Like for Like Requirement:** the *capacity obligation* transfer shall consist of the same attributes (e.g. physical or virtual) and be of the same resource type, as detailed in the applicable *market manual*, as the *capacity transferor's capacity obligation*;
4. **Increment Size Requirement:** the quantity to be transferred is in increments of 0.1MW, and the resulting *demand response capacity obligations* for both the *capacity transferor* and *capacity transferee* following the transfer shall be 0 MW, or greater than or equal to 1 MW;

# Phase I Design: Changes to Allow Inter-Zonal Transfers

## **1. Must be either in the same zone or between zones only if both zones cleared at the Ontario-wide clearing price:**

the *capacity obligation* to be transferred is within the same zone; or if the *capacity obligation* was acquired through a *transitional capacity auction*, the *capacity obligation* may be transferred between zones where the *transitional capacity auction clearing prices* in the two respective zones are equal to the Ontario-wide *transitional capacity auction clearing price*;

## **2. Cannot exceed zonal constraints:** *capacity obligation* transfers must not result in the receiving zone reaching a *capacity auction zonal constraint*.

**Note that transfers within an organization are permitted as long as all aforementioned requirements are met.**

# Next Steps

- Applicable Market Rules and Market Manuals were posted for TCA stakeholder comment on May 18, 2019
- Comments were due on June 5, 2019
- Stakeholders were supportive of the proposal
- On June 14<sup>th</sup>, the IESO hosted a stakeholder webinar to respond to feedback and consider any subsequent changes to the posted rules and manuals
- IESO will submit draft Market Rules to the Technical Panel on June 25<sup>th</sup>
- Additional input opportunity through the Technical Panel process

# DR Testing Results

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June 19, 2019

# Purpose

- DR Testing Overview
- DR Testing Requirements for HDR and DL
- DR Testing Results
- Sample Advisory Notification
- Recent HDR Dispatch Issues

# DR Testing Overview

- As per Market Rules *Chapter 7, 19.4.11* and *19.5.7*, IESO may activate DR resources up to a maximum of two test activations per commitment period
- Testing allows IESO to verify that a capacity obligation is deliverable by the DR resource
- All DR resources are tested in each commitment period
- DR resources receive non-performance charges for failing a test activation (Capacity and/or Dispatch Charge)
- IESO may choose to not test a DR resource twice within a commitment period based on its successful historical performance in test and in market activations
- DR resources are notified about testing one day in advance via advisory notice. Additionally, for HDR, stand-by notice is issued day-ahead

# DR Testing Requirements

## Hourly Demand Response (HDR)

- Test activation lasts for 4 hours
- A test is deemed a success if the HDR is able to:
  - deliver capacity, measured as the average load reduction over a 4-hour test period, within a 20% dead-band compared to its registered demand response capacity. Failure to deliver capacity results in **Capacity Charge**; and
  - follow dispatch, measured as HDR resource's consumption against its dispatch signals in each interval, within a 15% dead-band. Failure to follow dispatch results in **Dispatch Charge**

## Dispatchable Loads (DL)

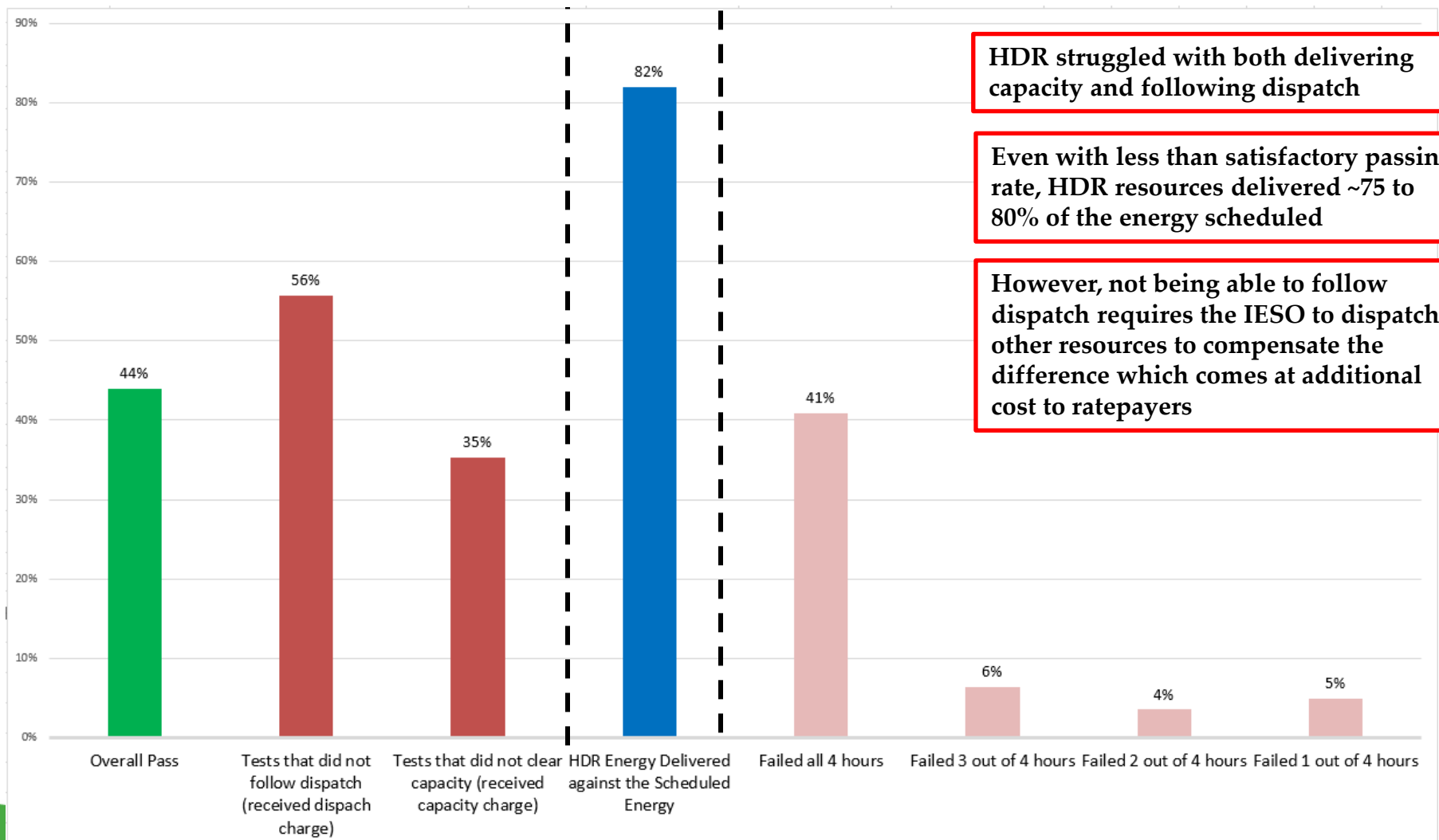
- Test activation lasts for **three** 5 – minute intervals
- A test is deemed a success if the resource demonstrates a reduction in energy withdrawal (as measured by operational meters) that is equal to the registered demand response capacity (i.e. no deadband)
- Failure to deliver capacity during testing results in **Capacity Charge**

# DR Testing Results Follow Up

- At the last DRWG, stakeholders requested further details on HDR testing performance
- In this update, the IESO will cover the following:
  - Summary of both HDR & DL test performance for the period between Winter 2016 and Winter 2019
    - In total 147 test activations, across 26 different days, were conducted by IESO during this period (includes both HDRs and DLs)
    - Pass rate for DLs was 100% whereas for HDR it was 44%
  - Overall HDR failure rates by charge type and percentage of energy delivered
  - Percentage of HDR failures that were (i) one time versus (ii) repeat



# HDR Testing Results (Winter 16/17 – Winter 18/19)



**HDR struggled with both delivering capacity and following dispatch**

**Even with less than satisfactory passing rate, HDR resources delivered ~75 to 80% of the energy scheduled**

**However, not being able to follow dispatch requires the IESO to dispatch other resources to compensate the difference which comes at additional cost to ratepayers**

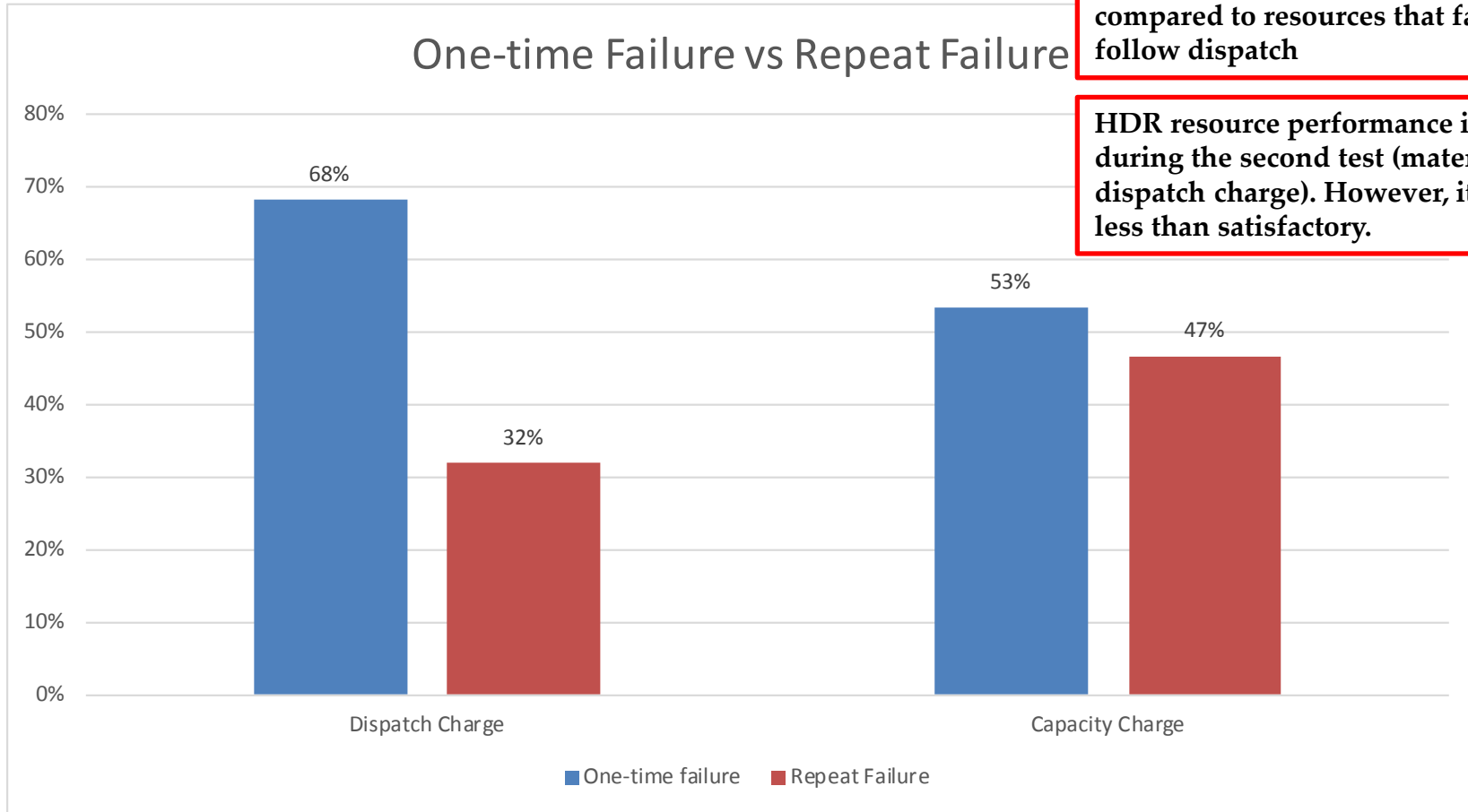
# HDR Testing Results (Winter 17/18 – Summer 18)

This chart highlights the percentage of time the same HDR participant received a dispatch or capacity charge for testing (repeat failure on dispatch or capacity)

HDR resources that fail to deliver capacity in the first test tend to fail more often during second test compared to resources that fail to follow dispatch

HDR resource performance improves during the second test (materially for dispatch charge). However, it is still less than satisfactory.

## One-time Failure vs Repeat Failure



Data set only includes the commitment periods where two test activation were conducted.

# Advisory Notification Sample

- From May 1<sup>st</sup>, 2019 onwards, IESO has removed day-ahead notification regarding test activation via phone call
- The IESO now issues an Advisory Notice in advance of the standby notification to confirm test activation
- Any DR related advisory notice will be posted on the IESO's "[Day 0 Advisory Notices Summary](#)" public webpage
- The following sample advisory notice was shared with DRMPs on May 17, 2019 via email

*"The IESO will be conducting test activations for demand response auction (DRA) participants on [Month Day, Year] from HH:MM to HH:MM EST (four hour window). Hourly demand response participants impacted by this testing will be provided appropriate stand-by (day-ahead) and activation notices. Dispatchable loads will receive their dispatch instructions between HH:MM to HH:MM (one hour window) EST. Please contact IESO Customer Relations if there are any questions"*

# HDR Dispatch Issues

- In last few months, IESO has experienced some issues with HDR dispatch:
  - **April 24<sup>th</sup>** : DR testing was cancelled as IESO was unable to release activation notifications in time
  - **May 7<sup>th</sup> & May 15<sup>th</sup>**: DR participants received false standby notifications
- IESO recognizes that false notification and failed test activation cause significant inconvenience and cost to impacted participants
- In response, the IESO will be implementing additional controls to mitigate a re-occurrence/impact of such events in the future:
  - Improving awareness within the IESO of triggers that can result in the release of false standby and activation notices
  - Issuance of advisory notices in the event test activation is cancelled or false notification has been released
- Over longer term, IESO will also explore the feasibility of developing an alternate mechanism to dispatch HDR for testing
  - This would only impact internal IESO process for testing and should not impact DRMPs

# Appendix A

**Dispatch Charge** is applied only to HDR resource when it fails to meet its dispatch instruction within the specified dead-band (15%) for any 5-minute interval within the DR dispatch hour.

This is calculated as:

$$\text{Baseline}_i - \text{Actual Consumption}_i < 85\% \times (\text{Total Bid Qty}_i - \text{Schedule}_i)$$

**Capacity Charge** is applied when HDR Resources that fail to deliver capacity in the energy market. HDR's ability to deliver capacity is measured as the average load reduction over a 4-hour test period, within the specified dead-band (20%).

This is calculated as:

$$\text{Average (Baseline}_i - \text{Actual Consumption}_i) < 80\% \times \text{Average (Total Bid Qty}_i - \text{Schedule}_i)$$

*Where*

“Baseline” is the average of the highest fifteen (15) measurement data values for the same hour that was activated in the last twenty (20) suitable business days prior to the activation.

“Actual Consumption” is measured data for each interval

“Total Bid Qty” is the maximum quantity of the DR energy bid converted to an interval equivalent.

“Schedule” is the real-time dispatch determined by our dispatch algorithm.

“i” is an interval of the DR dispatch hour within the DR activation event.

# Testing of HDR Resources - Proposal

Demand Response Working Group

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June 19, 2019

# HDR Testing

- Currently all HDR resources are tested at least once during each commitment period and each test lasts for four hours
- Stakeholders have asked IESO to review the need for this duration given changes to activation criteria
- IESO may choose to reduce test duration for HDR resources from 4 hours for HDR resources that have passed the previous test in all 4 hours

# HDR Testing

## Stakeholder Feedback:

- Stakeholders have suggested that the IESO reduce test activation duration in light of recently implemented DR enhancements (under which HDR can be activated for up to 4 hours as opposed to firm 4 hour block). Stakeholders expressed the following positions as rational for this change:
  - No added value to the IESO for having a test to the maximum dispatch length (4 hours) but the cost to customers who have to shut down for 4 hours is substantial
  - IESO uses testing to determine the ability to follow dispatch instructions and demonstrate ability to curtail/meet commitment. This can be done through a 1 hour test
  - IESO may still choose to test a HDR resource even if it has demonstrated its capacity through in market or test activation



# HDR Testing

- **IESO Response:**

- Current requirement to qualify as a HDR resource is to be able to provide a 4 hour response
- Even with the recent DR enhancements in place, HDR resources can still be activated for up to 4 hours
- Certain resources may have technical limitations in providing demand response beyond one hour
- With infrequent in market activation of HDR resources, test activations are the most effective way to build confidence and provide assurance of HDR resource capability
- Past HDR test activation performance (56% failure rate) does not give the IESO sufficient confidence to definitively reduce the duration of test period
- Future capacity qualification may be based on testing results

# HDR Testing

- Considering stakeholder feedback and balancing that with IESO's objective for conducting test activations, the following changes to HDR activation are being proposed:
  - If HDR resources successfully demonstrates performance through a four-hour test or in market activation, it can be subsequently tested for less than a four hour duration; this could be as little as one-hour
  - HDR resources can be tested for a reduced duration until failing a test or activation upon which another re-qualifying four-hour test would be required
  - IESO will maintain discretion to increase the test duration for an HDR resource to up to 4 hours to assess HDR's response at any time (i.e. a spot check)

# Next Steps/Timelines

- Stakeholders to provide feedback on proposal by July 5
- Timeline
  - Implement changes for next commitment period (November 2019 to April 2020)
  - Subject to future change depending on design of Phase II of TCA and/or ICA

# Cost Recovery for Out-of-Market Activation of Hourly DR Resources - Proposal

Demand Response Working Group

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June 19, 2019

# Purpose

- Discuss a proposal to provide HDR resources cost recovery for out-of-market activations (i.e. testing or emergency activations) consistent with treatment of other resource types

# HDR Activations

- There are two ways an HDR resource can be activated

## In-Market

- Based on market economics
- HDR energy bids intended to reflect the maximum they are willing to consume at given price
- HDR will be “activated” when the price for electricity is greater than their willingness to consume

## Out of Market

- HDR resources can be activated outside of market economics to respond to a:
  1. Capacity test, or
  2. Emergency Control Action
- HDR will be activated even if the electricity price is lower than their bid price

- Observed bid prices and stakeholder feedback indicate that activation costs (explicit and opportunity) can be significant for HDR resources

# Out Of Market Costs

- When other resource types (dispatchable load, generator, import) are dispatched out-of-market they are eligible for some form of “make-whole-payment”
  - A make-whole payment may apply when a participant faces a shortfall between their resource bid/offer price and the revenue earned through market clearing prices
  - The payment restores the participant to the financial situation they would have been in as implied by their bids/offers
- HDR resources do not receive a make-whole payment for out of market activations
- These costs may be reflected in their capacity offers potentially increasing the cost of the capacity

# Implications for ICA and TCA Participation

- In the Demand Response Auction, HDR participants could reflect the expected cost of out-of-market activations in DR Auction offer prices
  - Since the DR Auction was for DR only, all HDR resources were impacted equally
- In the context of the proposed capacity auctions, where HDR will be competing against other resource types, how these costs are recovered will potentially impact market efficiency



# Proposal

- IESO's initial assessment concludes that providing HDR resources cost recovery for out-of-market activations is:
  - appropriate as testing or emergency activations can occur at a price below bid price of an HDR
  - consistent with energy market and existing design treatment of other resources (including dispatchable load)

# Potential Design Considerations/Issues

IESO requests feedback from stakeholders on potential design considerations, including:

- Most appropriate method for determining compensation; for example:
  - Using energy bids as representative costs
  - Historical precedents, such as CBDR activation payments
  - Identify costs on individual or type of resource basis
- Undue administrative burden of potential options
- Operational impacts on market participants, for example measurement data requirements
- Other considerations that should be assessed

# Next Steps/Timelines

- Stakeholders to provide feedback on concept and design considerations by July 5
- Work with stakeholders on design details of this concept and initiate market rule amendment process during Q3, 2019
- Timeline
  - Implement changes for May 2020 TCA obligation period to enable DR participants to incorporate change to offers in December TCA

# Energy Payments for Economic Activation of DR Resources - Proposal

Demand Response Working Group

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June 19, 2019

# Purpose

- Obtain input from stakeholders on approach to conducting the analysis required to determine whether there is a net benefit to electricity ratepayers if DR resources are compensated with energy payments for economic activations

# Questions

- What is the appropriate analysis to complete?
  - Is a net benefit to ratepayers test appropriate?
- Who is best to complete the analysis?
  - IESO? Consultant?
- Who else should be consulted?
  - Market Development Advisory Group? OEB?
- When is a decision required by?

# Next Steps

- IESO would like to receive proposals from stakeholders on how best to proceed by July 19

# Recap

Action Items	Timeline
<ul style="list-style-type: none"> <li>Revised DRWG 2019 Work Plan - General Feedback from Stakeholders</li> </ul>	July 5, 2019
<ul style="list-style-type: none"> <li>Cost Recovery for Out-of-Market Activation of HDR Resources – Stakeholder feedback to IESO concept and input to questions</li> </ul>	July 5, 2019
<ul style="list-style-type: none"> <li>Energy Payments for Economic Activation of DR Resources Research Plan – Stakeholder feedback to IESO</li> </ul>	July 19, 2019
<ul style="list-style-type: none"> <li>Testing of Hourly DR Resources               <ul style="list-style-type: none"> <li>Stakeholder feedback</li> <li>IESO response to stakeholder proposals</li> </ul> </li> </ul>	July 5, 2019 September DRWG meeting
<ul style="list-style-type: none"> <li>Transfer of DR Auction Obligations</li> </ul>	June 25, 2019 Technical Panel



# Recap - continued

Action Items	Timeline
<ul style="list-style-type: none"><li>Contributor Management, Measurement Data Submission and DR Audit<ul style="list-style-type: none"><li>IESO to provide recommendations on Contributor Management process</li><li>IESO to provide recommendations on Measurement Data Submission</li><li>IESO to provide response to DR participant comments from April DRWG</li><li>Update Market Manual 12.0</li></ul></li></ul>	<p>September DRWG meeting September DRWG meeting September DRWG Meeting By end of 2019</p>
<ul style="list-style-type: none"><li>Separating Virtual and Physical HDR Resources<ul style="list-style-type: none"><li>IESO to discuss with stakeholders</li></ul></li></ul>	<p>Before September DRWG meeting</p>

# QUESTIONS & COMMENTS

