

Demand Response Working Group

February 25, 2020

Meeting Participation

- Webinar participation (including audio):
 - <https://www.meetview.com/ieso20200225/>
 - Use the “Ask a Question” function to submit a question during the webinar
- Teleconference participation (audio only):
 - Local (+1) 416 764 8640; Toll Free (+1) 888 239 2037
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- When asking a question, please state your name and who you represent so those participating are aware
- This webinar is conducted according to the IESO [Engagement Principles](#)

Agenda

- 2020 DRWG work plan
- Update on DR potential discussions
- Testing update
- Summary of recent market rule and manual changes

2020 DRWG Work Plan

Beverly Nollert, Supervisor, Market Development

Purpose

- To present and discuss the 2020 DRWG work plan, including:
 - Feedback received on the potential 2020 initiatives discussed at the November DRWG
 - Priority initiatives for 2020
 - Implementation timelines

Re-cap: Draft 2020 DRWG Work Plan Summary

2019 Initiatives Carried Forward

- Registering virtual HDR resources
- Facilitating DR input into Capacity Auction design

New Possible Initiatives

- In-day adjustment methodology
- Baseline methodology
- Explore barriers to residential DR

Other Initiatives?

- Stakeholder feedback requested

Stakeholder Feedback and IESO Response

EDA

- Support for the topics identified by IESO
- Proposed that operations coordination and system plan issues be included
 - Coordination requirements for local and provincial DR
 - Identification and integration of DR potential into regional planning process

IESO Response

- Operations coordination and system planning issues have not been included as part of the DRWG work plan. Interested stakeholders can monitor the following active IESO initiatives which touch on these issues:
 - Grid LDC Interoperability Standing Committee
 - Innovation and Sector Evolution Whitepaper Series
 - Regional Planning Review Process

Stakeholder Feedback and IESO Response

AEMA

- Request for priority items to be expedited to ensure they are incorporated into rules and manuals before the June and December 2020 Capacity Auctions
- In-day Adjustment / Baseline Review work plan initiative:
 - Baselines are fundamental to the value a given resource provides to the IESO from a capacity / resource adequacy standpoint
 - The current method is an inaccurate measurement of what is being provided
- Separating Virtual and Physical HDR Resources work plan initiative:
 - Related to the in-day adjustment / baseline work
 - Aggregators would split contributors into different resources to ensure the right baseline is assigned to each customer type

Stakeholder Feedback and IESO Response

IESO Response

- Proposals discussed at the DRWG in 2019 will be implemented for the May 2020 commitment period including:
 - Out-of-market payments for HDR
 - New HDR testing criteria
 - Measurement data submission, contributor management and DR Audits
- Market rule and manual amendments related to obligation transfers will be implemented as part of the amendments to enable the June 2020 Capacity Auction
- Timing of 2020 work plan initiatives to be discussed in following slides

IESO Areas of Focus in 2020 DRWG Work Plan

2020 Work Plan Initiative	Level of Focus
In-day adjustment methodology	Primary
Baseline methodology	Primary
Registering virtual HDR resources	Primary
Facilitating DR input into Capacity Auction design	Primary (as needed)
Explore barriers to residential DR	Secondary

- Primary – IESO will actively initiate and pursue these initiatives with the DRWG
- Secondary – IESO will monitor and participate in other related initiatives across the organization and the industry

In-Day Adjustment and Baseline Methodology: Objectives

- Determine whether the in-day adjustment methodology, as part of the baseline determination, should be revised to better reflect consumption patterns for non-weather sensitive loads
- Explore the need for different baseline methodologies for different load types, including options for such methodologies

In-Day Adjustment and Baseline Methodology: Timing Target

- The IESO will endeavor to complete and implement (as required) this initiative in time for the March 2021 capacity auction
- This timing includes allowance for market rule / manual amendment processes
- It is possible that tool changes will also be required to implement the solution
 - Capital expenditures need to be approved and prioritized against other capital projects planned in 2020
- In order to meet this timeline, solutions will likely need to be phased or simplified to ensure that they can be implemented before the capacity auction

In-Day Adjustment and Baseline Methodology: Scope

1) Conduct jurisdictional scan to inform option development:

- Focus on approaches used in MISO and PJM, as per AEMA feedback:
 - In MISO, participants have the option of using various evaluation methodologies to determine a baseline
 - PJM has 7 methods that participants can use to calculate the baselines
 - The intent of these approaches is to better reflect baselines for different load types
- Are there any other jurisdictions that we should focus on?

In-Day Adjustment and Baseline Methodology: Scope

2) Develop and evaluate options:

- Develop set of options that are feasible in Ontario for the baseline methodology and in-day adjustment factor, informed by jurisdictional scan and stakeholder feedback
- Will include options that can be implemented in phases

3) Present recommended methodology:

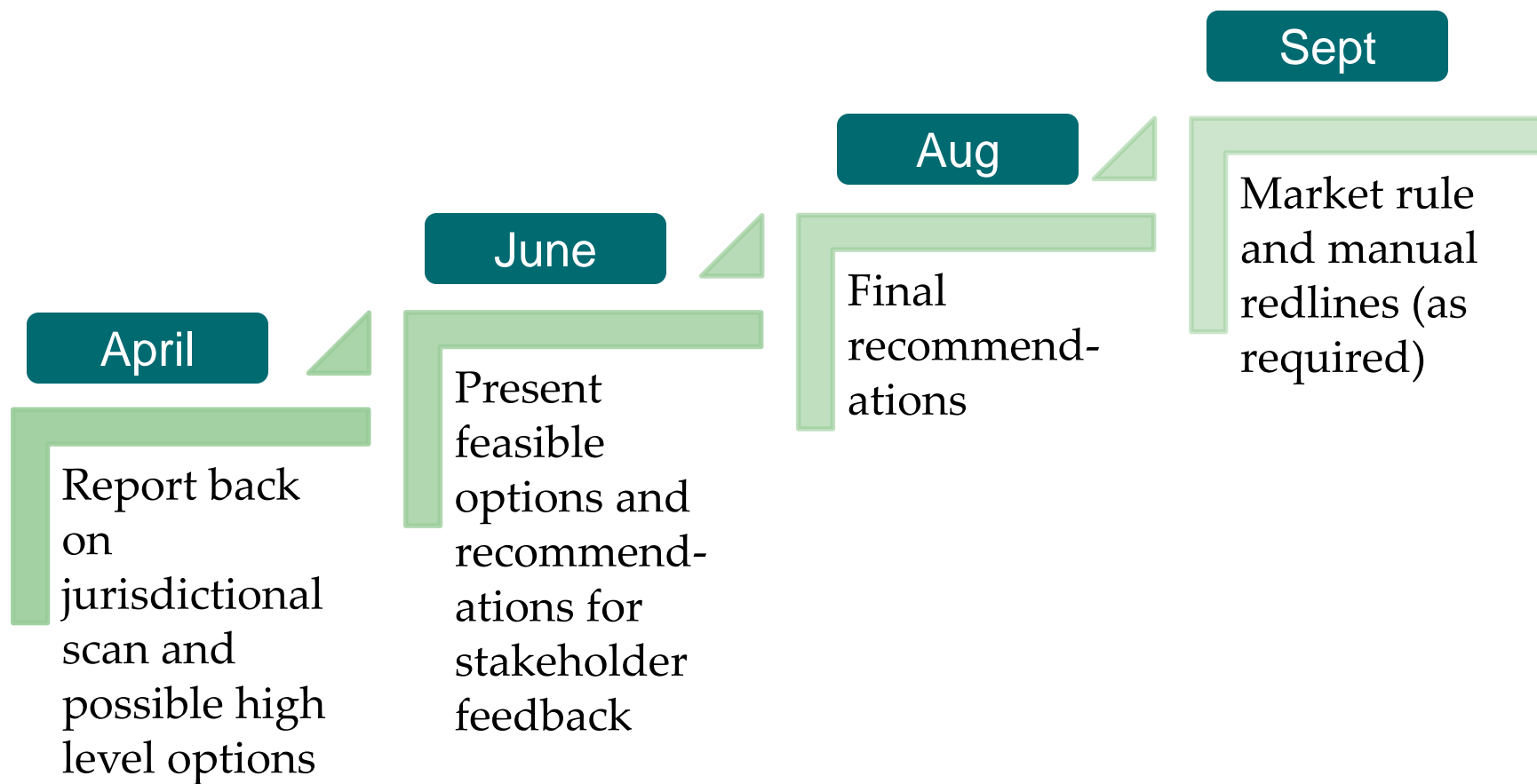
- The recommended methodology must be able to be implemented by the March 2021 capacity auction
- This may result in a recommendation that includes phases

In-Day Adjustment and Baseline Methodology: Scope

- Preliminary* options under investigation:
 - Phase 1: Opt In/Out of In-Day Adjustment Factor
 - Phase 2: Different baselines for different load types i.e. commercial, industrial

**Note these are preliminary and subject to revision with further analysis and investigation*

In-Day Adjustment and Baseline Methodology: Next Steps



Registering Virtual HDR Resources: Objective

- Develop and assess options for allowing a DRMP to register virtual HDR contributors into separate aggregates within a zone

Registering Virtual HDR Resources: Timing Target

- The IESO will endeavor to complete its assessment of options with sufficient time to allow for implementation prior to the March 2021 Capacity Auction, should one of the options be feasible and appropriate from both the IESO and stakeholder perspective
- It is possible that tool changes will be required to implement the solution
 - Capital expenditures need to be approved and prioritized against other capital projects planned in 2020

Registering Virtual HDR Resources: Scope

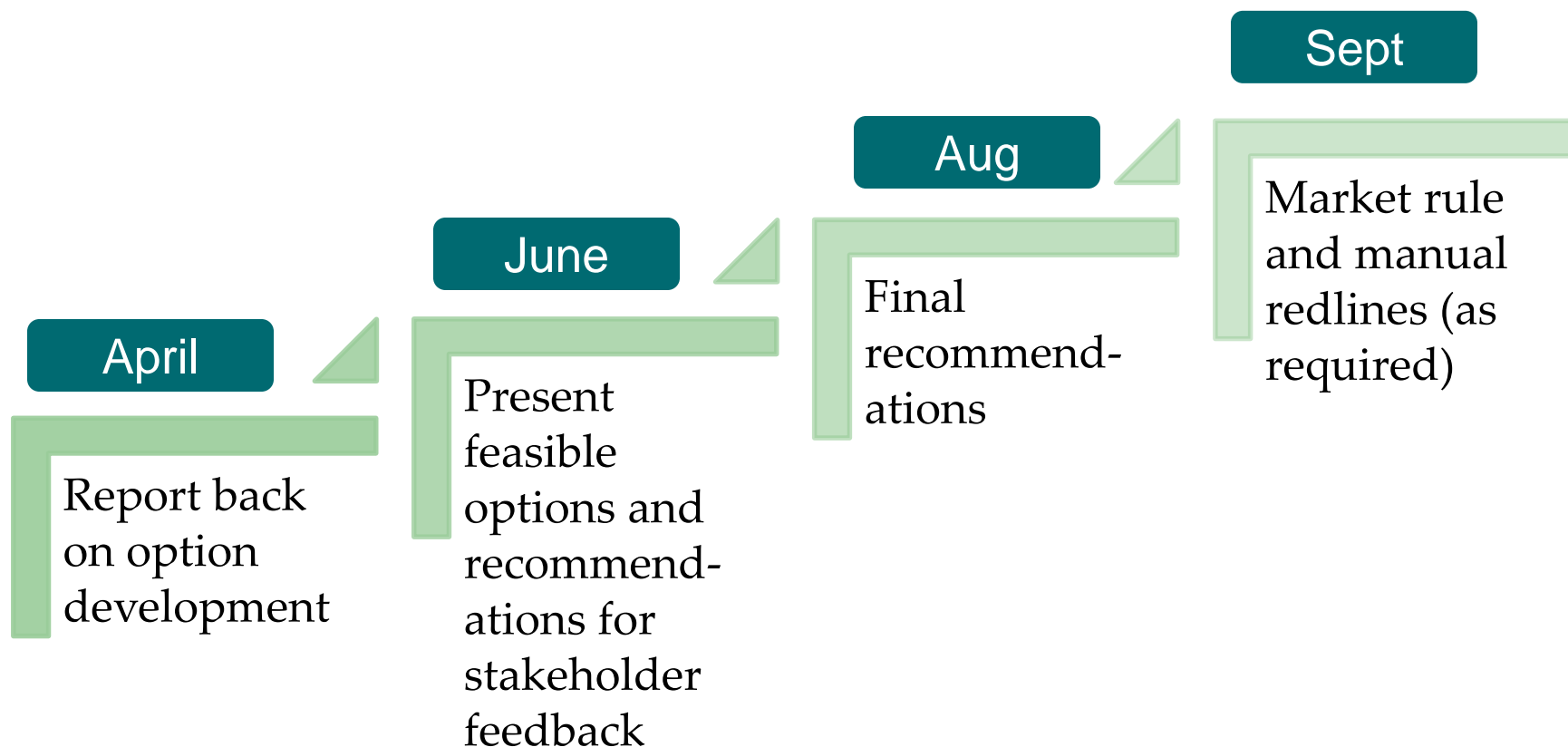
- The following aspects are not part of the scope of work:
 - Methodology to derive zonal limits
 - Minimum size threshold of 1 MW for wholesale participation

Registering Virtual HDR Resources: Scope

- Preliminary* options under investigation:
 - Virtual capacity obligation able to split into two aggregates per zone
 - Virtual capacity obligation over certain threshold able to split into a maximum number of aggregates
 - Virtual capacity obligation able to split into physical and virtual resources after auction
- The options will need to be compatible with the recommendations from the baseline initiative

**Note these are preliminary and subject to revision with further analysis and investigation*

Registering Virtual HDR Resources: Next Steps



Exploring Barriers to Residential DR

- This initiative will be given a secondary focus in 2020:
 - There is general support from the EDA
 - 2020 work plans must be balanced against other IESO priorities and resource constraints
- A significant barrier facing residential DR is accessing meter data for M&V purposes
- We will monitor:
 - Grid Innovation Fund* project uptake in 2020 for projects assessing alternate M&V approaches
 - The work of the Smart Metering Entity (SME) as it works to implement the OEB decision on its rate application
- We will consider alternate M&V approaches

Next Steps

- The IESO will continue work on these initiatives and report back at the April DRWG meeting as noted
- Please provide feedback to engagement@ieso.ca by March 10

Demand Response Potential in Ontario

Kausar Ashraf, Manager, Demand & Conservation Planning

Purpose & Overview

To review the outcomes of discussions with DRWG stakeholders related to Demand Response potential in the province

- Key findings from DR potential discussions
- Input into planning assumptions
- Next steps

Background

- At the DRWG meeting on September 4, 2019, the IESO introduced an initiative to better understand and assess DR potential in Ontario over the next ten years.
- The IESO sought input from the DRWG and invited interested members to participate in one-on-one meetings with the IESO to discuss DR potential.
- Eight energy-related services companies participated and provided valuable insights. The confidential discussions focused on DR but also touched on related topics like the Industrial Conservation Initiative (ICI) and storage.
- This information was used to assess DR potential in addition to the potential of other existing and available resources in Ontario.

Key themes of the feedback

- Majority of current DR commercial and industrial sectors.
- Significant amount of future capacity can come from demand-side resources including HVAC and residential loads, notwithstanding the limitations related to meter data access.
- The ICI program has increased participation in the DR auction, as participants are able to leverage their ICI peak demand modifying tools in the DR market. DR auction revenues, alone, are often insufficient to drive participation.
- Aggregators represent a large majority of DR capacity as DR auction rules are confusing for many end-use customers.
- Availability requirements, as defined by the capacity product, is the biggest challenge for some new participants.
- Storage can enable DR and its use is fast growing, but battery price is still high.

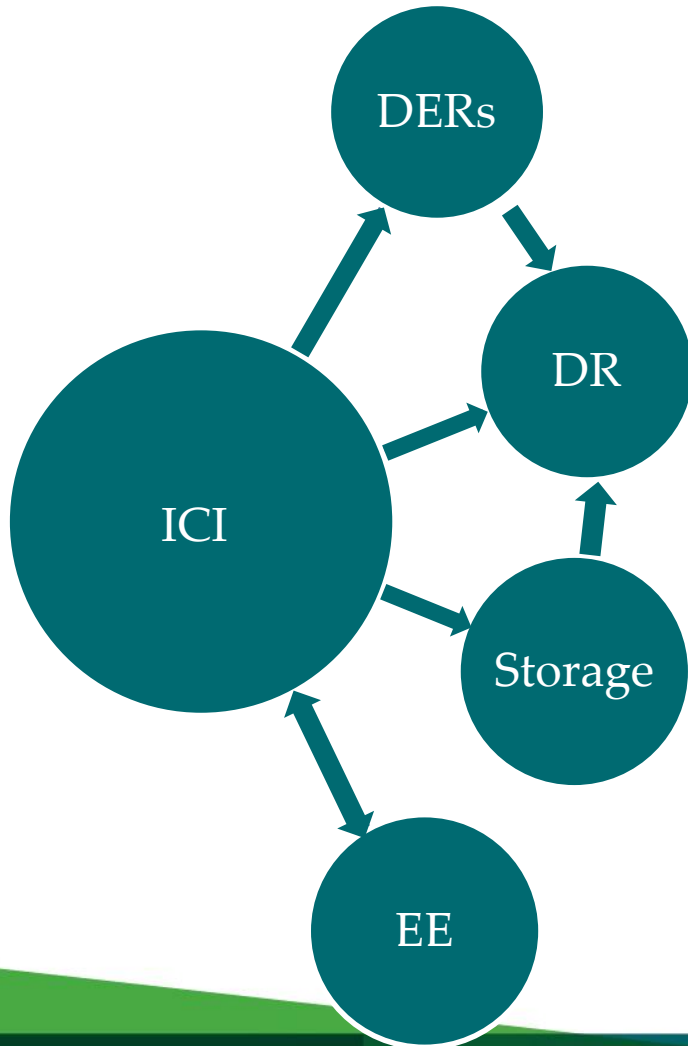
Planning Assumptions and considerations

- Planning assumptions related to the amount of DR available in the future have been based on the surplus capacity of the most recent DR Auction, i.e., the capacity that was qualified but did not clear the auction.
- Potential exists for additional DR interest and uptake in the future – especially from HVAC loads – however this potential must be tempered by the barriers that exist today and declining capacity prices.
- The IESO conducts ongoing planning and will monitor the market and revise these assumptions as required

Stakeholder Feedback on Key Roadblocks/ Opportunities for DR

#	Key Road Blocks	Items to Monitor
1	<p><u>Regulatory</u></p> <p>Regulatory barriers to accessing meter data. Meter data can be used for measurement and verification, especially for small commercial and residential customers whose data is stored in the Meter Data Management & Repository (MDMR).</p>	<p>Need to work with regulators to allow access to de-identified data or consider alternate measurement and verification methodologies (currently under exploration through DRWG).</p>
2	<p><u>Wholesale Market Participation</u></p> <p>Various limitations of current market design and auction parameters: e.g. zonal capacity limits, minimum size thresholds.</p>	<ul style="list-style-type: none"> • Innovation and sector evolution white papers such as: <ul style="list-style-type: none"> ○ Transmission distribution interoperability. ○ Non-wires alternative markets. ○ Models for expanded participation of DERs in wholesale markets. ○ Grid LDC Interoperability Standing Committee
3	<p><u>Revenue Stacking Opportunities</u></p> <p>Some note interest in DR participation is limited by declining prices due to competitive forces. Revenue stacking opportunities would help.</p>	<p>Market Development Advisory Group (MDAG) is currently conducting a research initiative (EPOR-E) which will look at the potential for hourly demand response to participate in OR.</p>

Industrial Conservation Initiative (ICI) and Interplay of resources



- ICI has been the main driver of system peak reduction investment in recent years.
- Technologies and equipment can serve multiple purposes and be categorized to various capacity resources. E.g. storage could be utilized for ICI and DR.
- Changes to ICI will have an impact on resource adequacy and additional capacity resources may need to be secured by alternative means.
- The ICI program has increased participation in the DR auction, as participants are able to leverage their ICI peak demand modifying tools in the DR market.
- Energy efficiency (EE) reduces demand and impacts load during ICI hours and ICI helps drive participation in EE programs due to mutual benefit.

Next steps

- As part of ongoing planning we will monitor the market and continue to update planning assumptions as required.
- Thank you DRWG members for your participation in these discussions

Demand Response Testing Performance

Samvel Karapetyan, Specialist, Operational Assessments

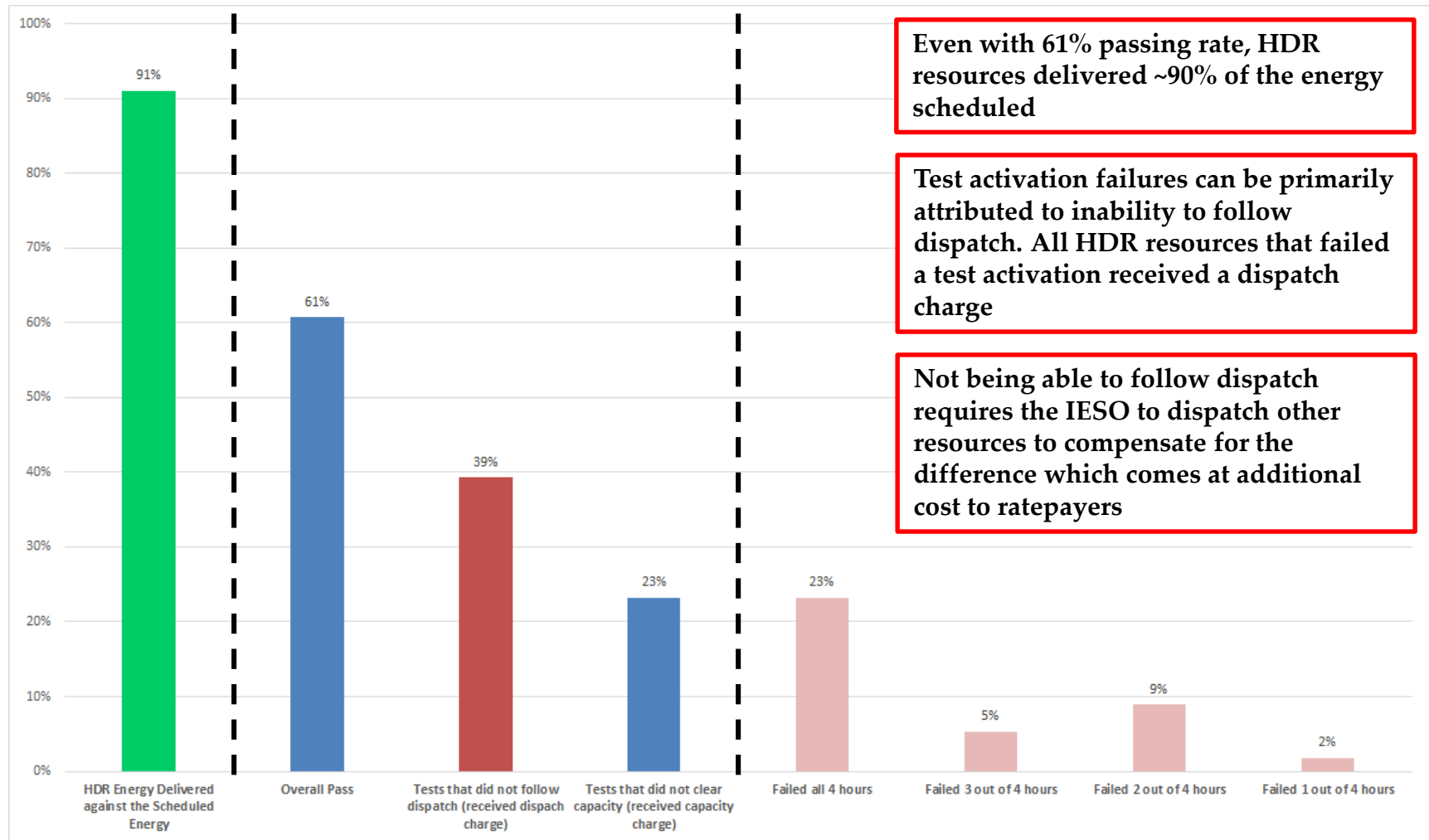
Overview

- DR Testing Results Overview
- Summer 2019 DR Testing Performance
- Summer 2019 vs Historical HDR Testing Performance
- DR Operational Update

DR Testing Results Overview

- At the June 2019 DRWG meeting, the IESO presented the DR test results for the 2016-2019 period
- In today's update, the IESO will provide details on DR test performance in the summer 2019 commitment period
 - Summary of both HDR & Dispatchable Load (DL) test performance
 - In total 59 test activations were conducted by the IESO (includes both HDRs and DLs). Results for the HDR testing are on the following slides.
 - DLs successfully performed during all test activations which is consistent with DLs' historical performance
 - Overall HDR failure rates by charge type and percentage of energy delivered
 - Percentage of HDR failures that were one time versus repeat

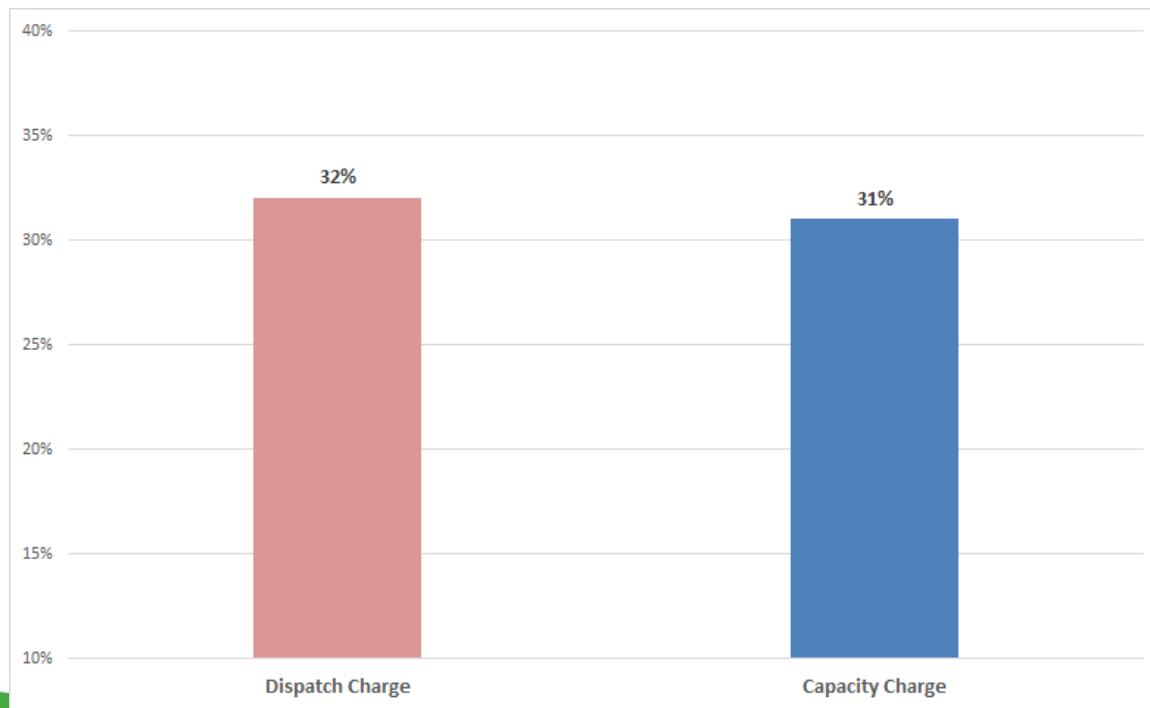
Summer 2019 HDR Testing Performance



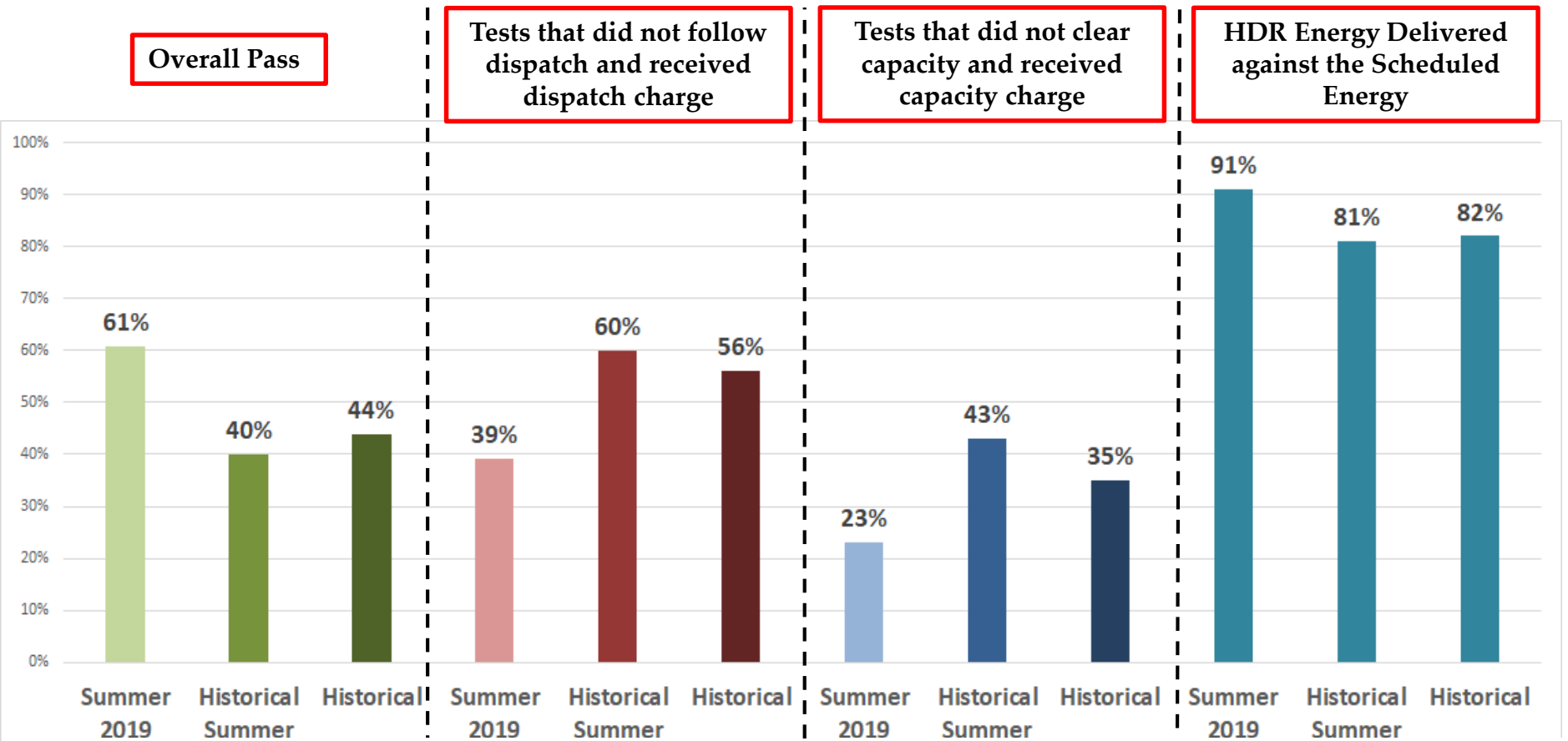
* Overall pass means HDR resource did not receive Dispatch or Capacity charges during the four-hour test

Summer 2019 HDR Testing Performance (cont'd)

- This chart highlights the breakdown of repeat failures (to follow dispatch or deliver capacity)
 - For HDRs that received a dispatch charge, 32% were repeat failures
 - For HDRs that received a capacity charge, 31% were repeat failures

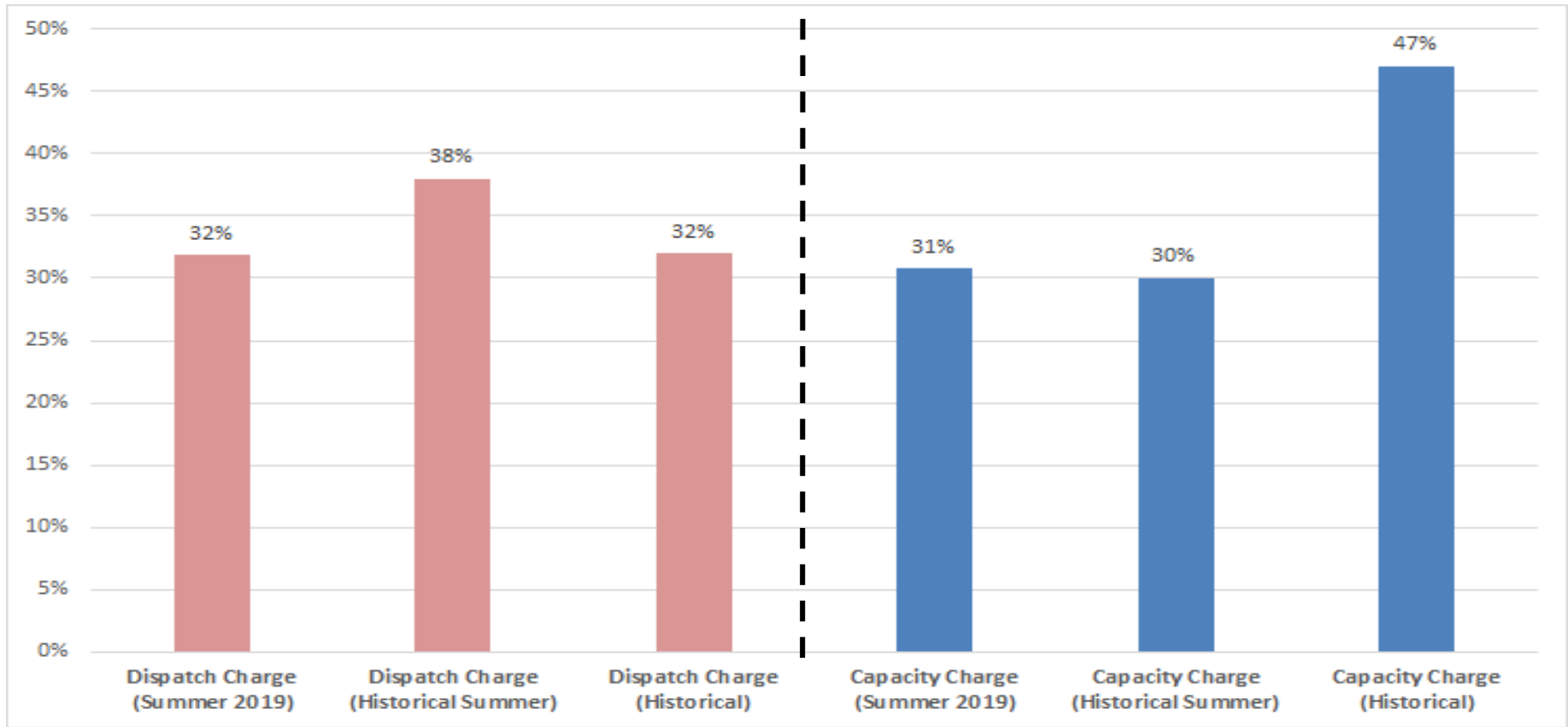


Summer 2019 vs Historical HDR Performance



There was improvement in all monitored categories in summer 2019 compared to historical performance (historical overall and historical summer)

Summer 2019 vs Historical HDR Testing Performance (Repeat Failure)



Repeat failures to follow dispatch and deliver capacity in Summer 2019 were lower compared to historical summer and overall historical performance respectively, indicating repeat failures continue to decline

Note: Analysis only included the commitment periods where two test activations were conducted

DR Operational Update

- In Q3 2019, the IESO undertook a review of DR operational processes including testing, training and end-to-end review
- This review brought forth a number of key recommendations related to:
 - Enhanced DR program oversight including adding additional controls
 - Improving process documentation and training for operators
 - Conducting follow up with DR participants to determine root-cause of failed tests
- To date, the IESO has implemented most of these recommendations and is committed to prioritizing the implementation of any outstanding recommendations

Update on Changes to DR Testing

- In response to stakeholder feedback, at the September 2019 DRWG meeting, the IESO presented proposed changes for DR testing
- Stakeholder feedback and the IESO's [response](#) with testing scenarios and illustrative examples were posted on the DRWG webpage
- Market manual changes will be completed as part of the current baseline plan, with posting of the redlines tentatively on March 24th, 2020 for stakeholder feedback.
- New HDR testing criteria will take effect beginning May 1, 2020
 - The new HDR testing criteria may impact HDR resource's test duration starting in November 2020 based on HDR performance from the summer 2020 test(s)

Appendix A: DR Testing Background

- As per Market Rules *Chapter 7, 19.4.11* and *19.5.7*, IESO may direct Demand Response (DR) resources to perform activation up to a maximum of two test activations per commitment period
- Testing allows the 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 Hourly Demand Response (HDR), a stand-by notice is issued day-ahead

Appendix B: DR Testing Requirements

Hourly Demand Response (HDR)

- Currently, the 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 output 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)

Summary of Recent Market Rule and Manual Changes Related to DR

Dale Fitzgerald, Senior Advisor, Stakeholder Engagement

Context

- In response to stakeholder feedback received at the November DRWG, the IESO has put together a table that cross references the recent proposals with the relevant sections of the market rules and manuals
- Is there any other category that would be helpful for stakeholders?

Recent Market Rule/Manual Changes Related to DR

Summary of Item Changed	Market Rules Chapters Impacted	Market Manuals Impacted	Effective Date	More Information
Out-of-market activation payments	7 and 9	5.5 and Charge Types & Equations	May 1, 2020	Link
Standby Notice Price Trigger - \$100	4.3	9.3	April 30, 2020	Link
DR Testing	n/a	7.3	April 23, 2020	Link
Contributor Management	n/a	12	April 23, 2020	Link
Validation, Estimating and Editing (VEE)	n/a	12	April 23, 2020	Link
DR Audits	n/a	12	April 23, 2020	Link

Closing and Next Steps

Summary of Feedback Requested

- Baseline methodology jurisdictional scan
 - Aside from MISO and PJM, are there any other jurisdictions that we should focus on?
- Recent Market Rule/Manual Changes Related to DR
 - Is there any other category that would be helpful for stakeholders to have included in this table?
- Please provide feedback to engagement@ieso.ca by March 10
 - Note that we will not be using a feedback form for this information. Please submit this information by email.

Next Steps

- Next DRWG meeting tentatively scheduled for April 28, 2020

Questions?