
OCTOBER 8, 2020

Demand Response Working Group

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Purpose

- Present results of the July 9th and 10th Hourly Demand Response (HDR) resource activations and discuss lessons learned
- Advance broader discussion on demand response introduced at the August Demand Response Working Group (DRWG) meeting:
 - Review stakeholder feedback on materials presented
 - Share draft HDR objective statement
 - Discuss format and topics of discussion
- ADDENDUM: Notice of Market Manual Amendment



Results of July 2020 HDR Resource Activations

Dina Shoukri, Supervisor, Market & Technology Integration

Overview

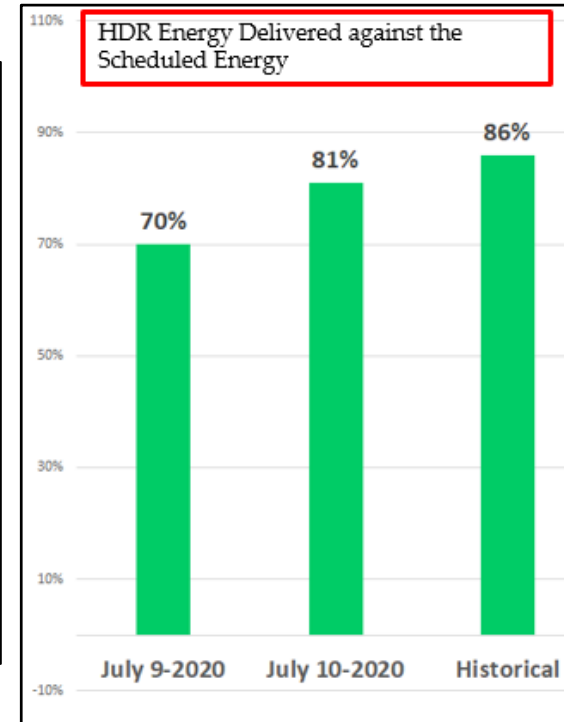
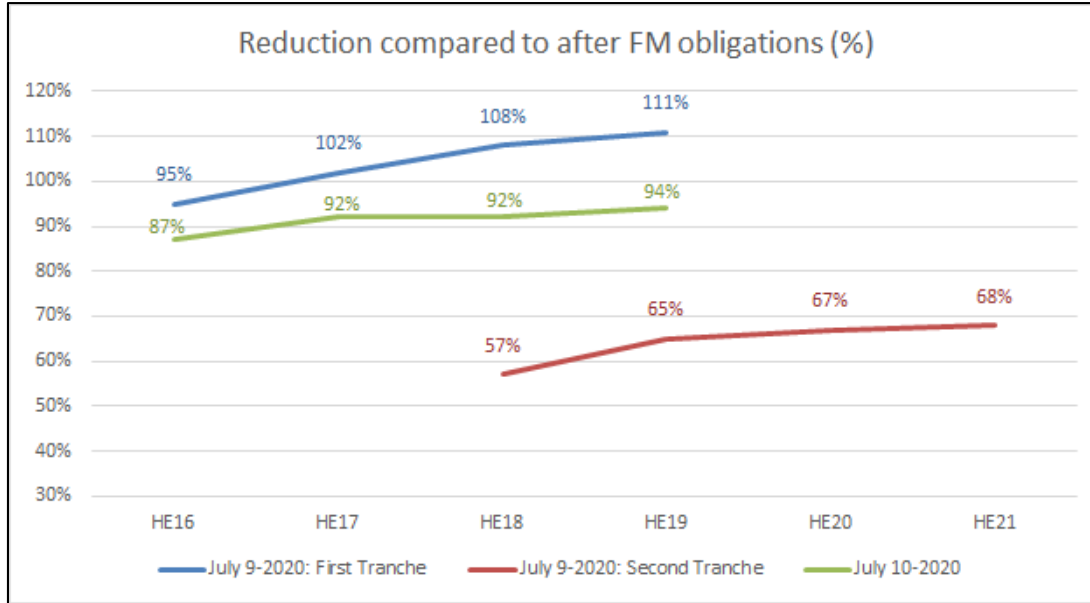
- HDR Activations on July 9 and July 10
- July 9 and July 10 HDR Activation Results
- Performance Assessment
- Challenges Faced During HDR Activations and Next Steps
- Appendix

HDR Activations on July 9 and 10

- On July 9th and 10th, all available HDR resources were put on standby as a result of shadow prices exceeding the \$100/MWh threshold
- On both days, following an Emergency Energy Alert (EEA-1) declaration, IESO activated HDR resources that were put on standby to alleviate potential adequacy concerns
 - These were out-of-market activations*
- The following slides present the HDR performance results from those activation days and compare performance against historical test results

*More information on EEA's and the Emergency Operating State Control Actions (EOSCA) list can be found [here](#).

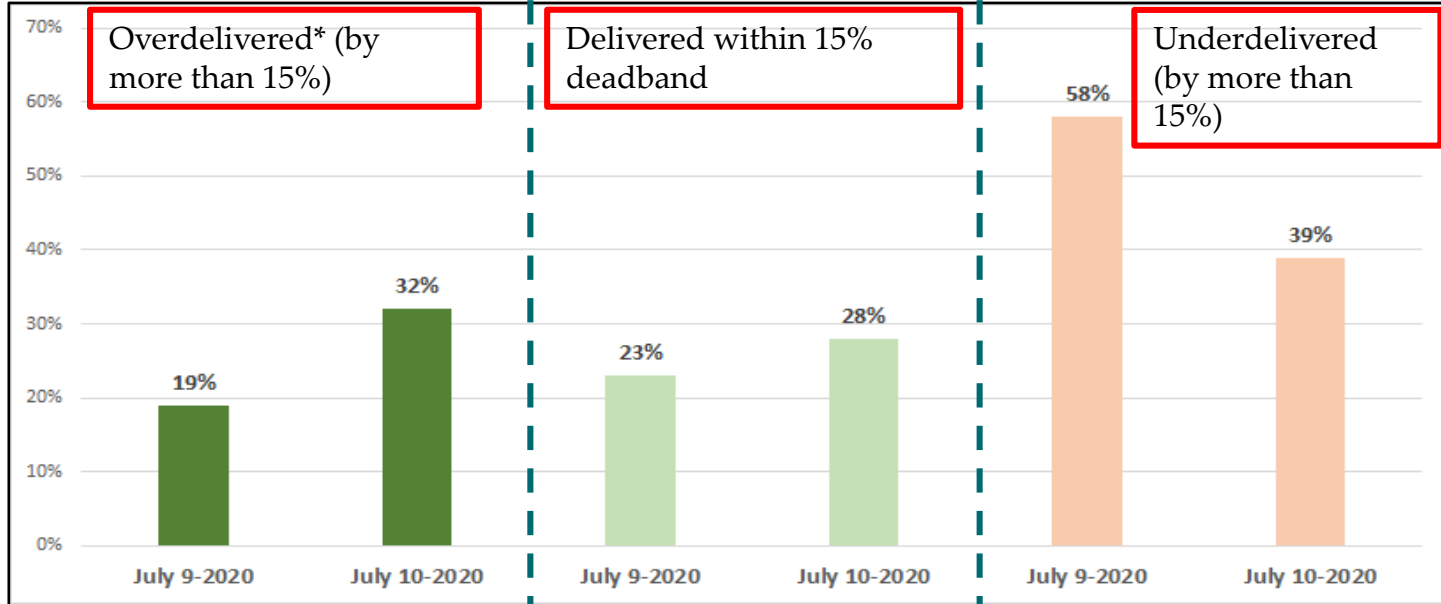
July 9 and 10 Activation Results



July 9 and 10 Activation Results (continued)

- **July 9:** The first tranche of HDR resources was activated for HE 16 to HE 19, the second tranche of HDR resources was activated for HE 18 to HE 21
- **July 10:** All available HDR resources activated at once for hours 16 – 19
- On average, total HDR resource fleet responded providing approximately 90% of capacity obligations for the first tranche on July 9 and for July 10

July 9 and 10 Activation Results (continued)

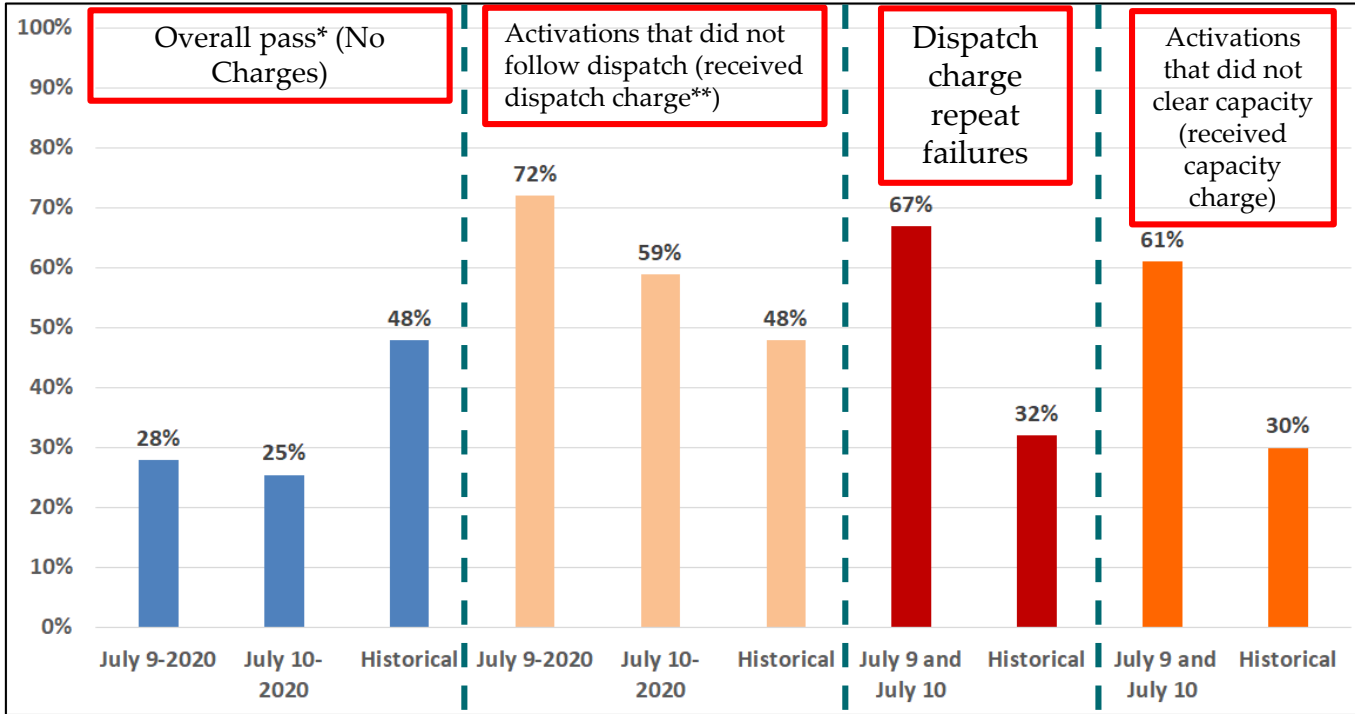


* Percentages are based on interval count

July 9 and 10 Activation Results (continued)

- The percentage of over-delivered capacity increased on July 10 whereas the under-delivered capacity decreased by about 20%
- The goal is to have each resource accurately respond rather than to either over or under-deliver

July 9 and 10 Activation Results (continued)



*Percentages are based on the count of resources instead of interval count **Settlement charges are assessed against HDR resources' bid quantity

July 9 and 10 Activation Results (continued)

- Consistent with historical trend, HDRs' failure to follow dispatch instructions in the majority of cases occurred for all hours of activation (4 hours)

Performance Assessment

- New HDR performance criteria for operational testing took effect beginning May 1, 2020
- An HDR resource performs successfully if it delivers capacity for each hour of the activation period, within a 15% dead-band compared to its demand response capacity obligation (e.g. at least 85% of the demand response capacity obligation must be delivered).

Performance Assessment (continued)

- For C&I resources:
 - The load reduction across each 5-minute interval is summed for each activation hour (all 12 intervals)
 - The load reduction amount per 5-minute interval will be capped to 115% of HDR's energy bid quantity (15% is consistent with HDR's dispatch dead-band)

Performance Assessment (continued)

- Successful performance on both days was only 20% (delivery assessed against HDR capacity obligations).
- HDRs that successfully performed during July activations will be eligible for reduced test duration starting in November 2020

Challenges Faced During HDR Activations

- Many DRMPs with HDR resources reported forced outages after receiving activation notices
- The Control Room received many calls from DRMPs requesting to reduce their bids in the mandatory window
- The IESO has provided clarifications, internally and externally, as a reminder of obligations and processes associated with activations

Lessons Learned and Next Steps

- The IESO is interested in learning more about issues DRMPs with HDR resources faced during the July activations
 - **Bid Changes:** What led DRMPs with HDR resources to reduce their bids on the activation days after receiving the activation notices?
 - **Failure to deliver capacity and follow dispatch:** The IESO would like to better understand the root cause of activation day failures

Lessons Learned and Next Steps (continued)

- In addition to the DRWG discussions, the IESO is happy to have further 1-on-1 discussions with DRMPs to better understand these issues
- Written feedback can be provided by October 30 to engagement@ieso.ca using the feedback form on the DRWG [webpage](#)

Appendix – Settlement Charges (Capacity and Dispatch)

- HDR resources are deemed to pass the capacity charge if they are 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
- HDR resources are deemed to pass the dispatch charge if they are able to follow dispatch, measured as HDR resource's consumption against its dispatch signals in each interval, within a 15% dead-band.



Stakeholder Feedback – August 6, 2020 DRWG Meeting

Emma Ferner, Advisor, Market Development

Re-Cap of August DRWG Meeting

- At the last virtual DRWG meeting, the IESO identified barriers to proceeding with the two priority DRWG 2020 work plan initiatives, both regarding HDR

Priority Item	Rationale for Pause
In-Day Adjustment Factor methodology	Proposed changes to methodology would enable multi-hour ramp without penalty, effectively redefining the hourly product and creating reliability risks without modeling tool changes. Further internal IESO analysis required to determine acceptability of enabling multi-hour ramp
Enabling registration of multiple virtual C&I HDR resources per zone	Unclear if initiative has value independent of changes to In-Day Adjustment methodology

Re-Cap of August DRWG Meeting (continued)

- The IESO introduced the need for a broader discussion to establish a clear objective for the HDR resource type and reassess priorities in light of significant developments since the establishment of the 2020 work plan
- The IESO solicited feedback on:
 - the proposed next steps for the 2020 work plan; and
 - the scope and format of the broader discussion

Stakeholder Feedback - Overview

- The IESO received one feedback submission from the Advanced Energy Management Alliance (AEMA)
- AEMA provided general feedback to the materials presented at the August 6th DRWG meeting, as well as specific feedback, as requested by IESO
- The following slides summarize the feedback and the IESO's responses

Stakeholder Feedback

- AEMA indicated it is difficult to understand the firm “no” from the IESO regarding changes to in-day adjustment factors since other jurisdictions have maintained reliability in their systems while allowing for a variety of forms of inclusivity

IESO Response

- The August 6 DRWG presentation was not intended to signal an end to potential changes to the in-day adjustment initiative but to communicate issues uncovered during internal work on the initiative requiring additional investigation
- While some other jurisdictions offer more than one baseline methodology, their DR product definitions, DR participation models, and market engines differ from Ontario

Stakeholder Feedback

- AEMA indicated it has advocated for enabling the DR resource to provide more value to the Ontario electricity system and have worked with IESO to remove the barriers to DR participation
 - The Capacity Auction has highlighted the barriers that DR resources face in bringing their full value to bear on the market
- AEMA indicated it continues to struggle to understand why the IESO is not embracing and enabling DR resources – resources that are cost effective, flexible, clean and reliable

IESO Response

- IESO has not changed our position that DR will continue to provide valuable capacity to Ontario into the future
- IESO has worked continually with the DR community since 2014 on opportunities to more fully enable DR participation in the IESO-administered markets, and remains committed to continuing to do so

Stakeholder Feedback

Are there other areas of DR participation that this discussion should focus on?

- AEMA members request that the IESO staff immediately bring forward a presentation on the current IESO tools, the changes that will be made through the Market Renewal Project (MRP), and how the priorities of 2020 will face challenges

IESO Response

- IESO tools, including the Contract Manager and the Dispatch Scheduling Optimization tool, assume HDR resources deliver their capacity obligation within one hour
- Consequently changes to the in-day adjustment factor methodology enabling multi-hour ramp down would require changes to how these tools model HDR resources to maintain energy balancing
- The objective of MRP is to fundamentally reform the province's electricity markets to improve how we supply, schedule and price electricity

IESO Response (cont'd)

- MRP is not intended to address resource-type specific design issues, meaning the scope of MRP does not include changes to the participation model for HDR resources or dispatchable loads
- However, MRP has received feedback from stakeholders, including AEMA, on the Detailed Design documents, and those comments and concerns will be addressed through the MRP engagement process

Stakeholder Feedback

What is your preferred format for these discussions?

- AEMA indicated its members have participated in all manner of stakeholder engagement activities including stakeholder and Working Group meetings, round tables, and one-on-one discussions

IESO Response

- A proposed format for the broader discussions is addressed on slides 48-51

Stakeholder Feedback

What questions about demand response participation and product design would stakeholders benefit from having IESO clarify?

- AEMA included five specific questions to address this request for feedback

IESO Response

- IESO has responded at a high-level to each of these questions in the following slides, and is open to further discussion on these topics as part of the broader discussions

AEMA Clarifying Questions and IESO Response

AEMA Question #1: Why did it take a year for the IESO to identify internal challenges on the identified priorities?

- Throughout 2020, IESO has worked with the DRWG to explore the two priority initiatives
- The exploration into potential changes to the in-day adjustment methodology revealed issues that were not immediately apparent when discussions with the DRWG began
- Outcomes of this discussion may impact stakeholder interest in enabling multiple virtual C&I HDR registration per zone

AEMA Clarifying Questions and IESO Response (cont'd)

AEMA Question #2: What changes have been initiated within IESO software and tools to enable the participation of the DR resource fully in the market?

AEMA Question #3: Since the responsibility for the DR resource was shifted to the IESO in 2014, why have decisions been made to not fully enable DR despite the stated desire to integrate the resource into its market mechanisms?

(see next slide for response)

AEMA Clarifying Questions and IESO Response (cont'd)

- IESO has continuously worked with the DR community since 2014 to evolve the DR participation model in Ontario, including:
 - Changes to measurement data submission criteria and VEE process for missing measurement data to reduce the cost of audit for DRMPs
 - Revised test criteria to address concerns articulated by DRMPs
 - Introduced out-of-market payments for test and emergency activations to reduce the financial risk associated with an out of market activation

AEMA Clarifying Questions and IESO Response (cont'd)

(cont'd from previous slide)

- Enabled greater utilization of HDR resources by adding them to the EOSCA list and increasing the availability of HDR resources in the energy market at times of system need by modifying the trigger for a standby notice
- Launched the Demand Response Pilot to better understand the capabilities of DR resources to provide hourly load following and unit commitment services to the bulk power system

AEMA Clarifying Questions and IESO Response (cont'd)

(cont'd from previous slide)

- Launched the Brant Local Demand Response Pilot and York Region NWA Demonstration Project to better understand capabilities of DR resources to address local wires constraints
- Led an initiative to better understand DR potential in Ontario over the next ten years

AEMA Clarifying Questions and IESO Response (cont'd)

Why weren't the identified challenges enabled/resolved via the Market Renewal Project?

- The objective of MRP is to address known market inefficiencies with our current market design and introduce three foundational improvements (a single-schedule market, a day-ahead market, and an enhanced real-time unit commitment)
- The project is focussed and scoped to address issues related to those market enhancements, which does not include the issues articulated through this feedback

AEMA Clarifying Questions and IESO Response (cont'd)

What are the timelines the IESO proposes for discussions/engagement on the objectives of the DR resource recognizing that the first Capacity Auction is scheduled for December 2020?

- Details on proposed timelines for the broader discussion including identifying objectives for the HDR resource type are further detailed on Slides 32-38

Stakeholder Feedback – Concluding Statement

- Through broader discussion with DR stakeholders, the IESO will seek to understand how DR resources can be more fully enabled
- Implementation of changes to participation models must be evaluated internally against other IESO projects and priorities



Draft HDR Objective Statement

Tom Aagaard, Supervisor, Market Development

Draft HDR Objective Statement

The objective of the Hourly Demand Response resource type is to provide capacity by making energy available to maintain reliability during times of localized or global system stress.

IESO is broadly supportive of exploring design changes that can enhance the resource type's value for maintaining system reliability, such as increasing flexibility of utilization, or enhanced competition in the IESO-Administered Markets.

Draft HDR Objective Statement (cont'd)

Consistent with expectations for other resources, the IESO expects the HDR resource type to be dependable in the planning timeframe (e.g. HDRs reliably make their full obligated capacity available in the energy market) and operational timeframe (e.g. energy market bids reliably reflect actual capacity available); and when activated, to comply with dispatch instructions for the duration of the activation.

Draft HDR Objective Statement - Feedback Requested

- How can the HDR objective statement be improved? When reviewing and providing feedback, please consider:
 - The HDR resource's role in ensuring a cost-effective and reliable system for Ontario consumers
 - This objective statement will be used to identify and evaluate future market development proposals for the resource
 - Does the draft HDR objective statement accurately describe the objectives of the HDR resource from a stakeholder, ratepayer and system operator point of view?



Broader Discussion on Demand Response – Next Steps

Tom Aagaard, Supervisor, Market Development

Broader Discussion – Format and Timing

- The IESO proposes to begin the broader discussion at the next virtual DRWG meeting (December 3 or 4) with presentations from the IESO and stakeholders
- IESO will present on:
 - Summary of market development initiatives since introduction of the HDR resource type
 - Final HDR objective statement
 - Position on changing resource type design to enable multi-hour ramp-down without penalty

Broader Discussion – Format and Timing (continued)

- Stakeholders are invited to present on:
 - Current priorities for DR in light of various 2020 developments
 - How stakeholders would like to see the participation model for DR resources evolve long-term to maximize value
 - Opportunities to better align the present HDR participation model with the HDR objective statement

Broader Discussion – Stakeholder Presentations

- Stakeholders to indicate interest in providing up to a 20-minute presentation (including time for Q&A) on the topics indicated in the previous slide
- Please indicate interest by email to engagement@ieso.ca by October 30th
- An opportunity for written input on these topics will be provided as an alternative to a presentation
- The IESO will share a draft prioritized list of market development activities based on stakeholder feedback prior to finalizing

2020 Work Plan Priorities

- The DRWG 2020 work plan initiatives that were established in late 2019 are summarized in the following table

Work Plan Initiative	Level of Focus	Status
In-day adjustment methodology	Primary	Analysis continues
Baseline methodology	Primary	Jurisdictional scan complete
Registering multiple virtual HDR resources	Primary	Analysis continues
Facilitating DR input into Capacity Auction design	Primary (as needed)	As needed
Explore barriers to residential DR	Secondary	Not yet started

Potential Future Priorities

- Building on the 2020 Work Plan, the IESO has identified a number of potential areas of interest for DR stakeholders moving forward

Potential Priority Areas

Continue exploring changes to application of In-Day Adjustment Factor (conditional on IESO position on multi-hour ramp-down)

Review baseline methodology accuracy

Establish cost/benefits of enabling registration of multiple virtual C&I HDR resources

Facilitating DR input into Capacity Auction design

Explore barriers to residential DR

Explore Brattle Report's "broader recommendations"



Notice of Market Manual Amendment

Tom Aagaard, Supervisor, Market Development

Context

- Pursuant to the Market Rules, HDR resources are eligible for compensation for measured demand response capacity provided in response to an out of market activation leading up to and/or during an emergency operating state or test activation
- HDR resource over-delivery during the July 2020 activations has highlighted the need for an amendment to clarify the payment calculation set out in IESO Market Manuals

Current Payment Calculation

- Currently, when activated under the Emergency Operating State Control Action (EOSCA) list, HDR resources are eligible for compensation based on $(\text{HOEP} - \text{bid}) \times \text{curtailed capacity (MW)}$
- When activated for a test, HDR resources are eligible for compensation at $\$250/\text{MWh} \times \text{curtailed capacity (MW)}$
 - Underpinning the spirit of this rationale was that delivered curtailment quantity would match the curtailment quantity of the scheduled activation (i.e., the difference between the bid and scheduled consumption)

Planned Amendment

- Moving forward, HDR resources will be compensated at the minimum of either (i) measured curtailment (ii) curtailment quantity of the scheduled activation, or (iii) capacity obligation
- The objective of the amendment is to ensure resources are not compensated for load reduction greater than their scheduled curtailment quantity per dispatch instructions

Next Steps

- Amendments will be made to Market Manual 5.5 Physical Markets Settlement Statements, Section 1.6.26.2.1A; and IESO Charge Types and Equations document (Charge Type 1320) to reflect this change
- Notice will be provided on the DRWG engagement page when the Market Manual changes have been posted for stakeholder comment
 - Targeting posting red-line in late October, final in late November
- There will be no retroactive adjustments to out-of-market payments made as a result of the July 2020 activations



Stakeholder Feedback Requested and Next Steps

Summary of Stakeholder Feedback Requests

- The IESO is interested in learning more about issues DRMPs with HDR resources faced during the July activations
 - **Bid Changes:** What led DRMPs with HDR resources to reduce their bids on the activation days after receiving the activation notices?
 - **Failure to deliver capacity and follow dispatch:** The IESO would like to better understand the root cause of activation day failures

(Refer to slide 18)

Summary of Stakeholder Feedback Requests (cont'd)

- How can the HDR objective statement be improved? When reviewing and providing feedback, please consider:
 - The HDR resource's role in ensuring a cost-effective and reliable system for Ontario consumers
 - This objective statement will be used to identify and evaluate future market development proposals for the resource
 - Does the draft HDR objective statement accurately describe the objectives of the HDR resource from a stakeholder, ratepayer and system operator point of view?

(Refer to slide 47)

Summary of Stakeholder Feedback Requests (cont'd)

- Stakeholders to indicate interest in providing up to a 20-minute presentation (including time for Q&A) on the following topics at the next DRWG meeting:
 - Current priorities for DR in light of various 2020 developments
 - How stakeholders would like to see the participation model for DR resources evolve long-term to maximize value
 - Opportunities to better align the present HDR participation model with the HDR objective statement

(Refer to slide 50-51)

Next Steps

- Please provide feedback by October 30th to engagement@ieso.ca using the feedback form on the [DRWG engagement webpage](#)
- The IESO will consider feedback as articulated in today's discussion, as well as written feedback submitted after this meeting, in order to revise the draft HDR objective statement and inform content for the "broader discussion" presentations at the next DRWG virtual meeting

Thank You

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