



**MARCH 21, 2024**

# Capacity Auction Enhancements: 2024 and Beyond

**Capacity Auction Team**

# Today's Discussion

- To discuss observations from the 2023 Capacity Auction
- Plan for a prioritized set of enhancements for the next three Auctions (2024-2026)

# Agenda

- 2023 Capacity Auction Results
- Future Enhancements: Engagement Timelines and Approach
- Administrative Updates
- 2024 Capacity Auction Enhancements
- Future Enhancement Priorities for 2025 and Beyond
- Joint Work with Demand-Side Vision Engagement
- Summary and Next Steps



# 2023 Capacity Auction Results

# Observations

- The 2023 results show a continued, strong interest in the annual Capacity Auction, following the introduction of a capacity qualification process, new testing and performance requirements, and updates to the demand curve
- With a sizeable increase in cleared capacity over the 2022 Capacity Auction, the Auction continues to demonstrate its ability to leverage competition to meet growing system needs
- Consistent with previous years, virtual hourly demand response makes up the largest share of capacity cleared by resource type; however, the overall supply mix continues to become increasingly more diverse

# 2023 Capacity Auction Results Overview

## 2023 Capacity Auction cleared:

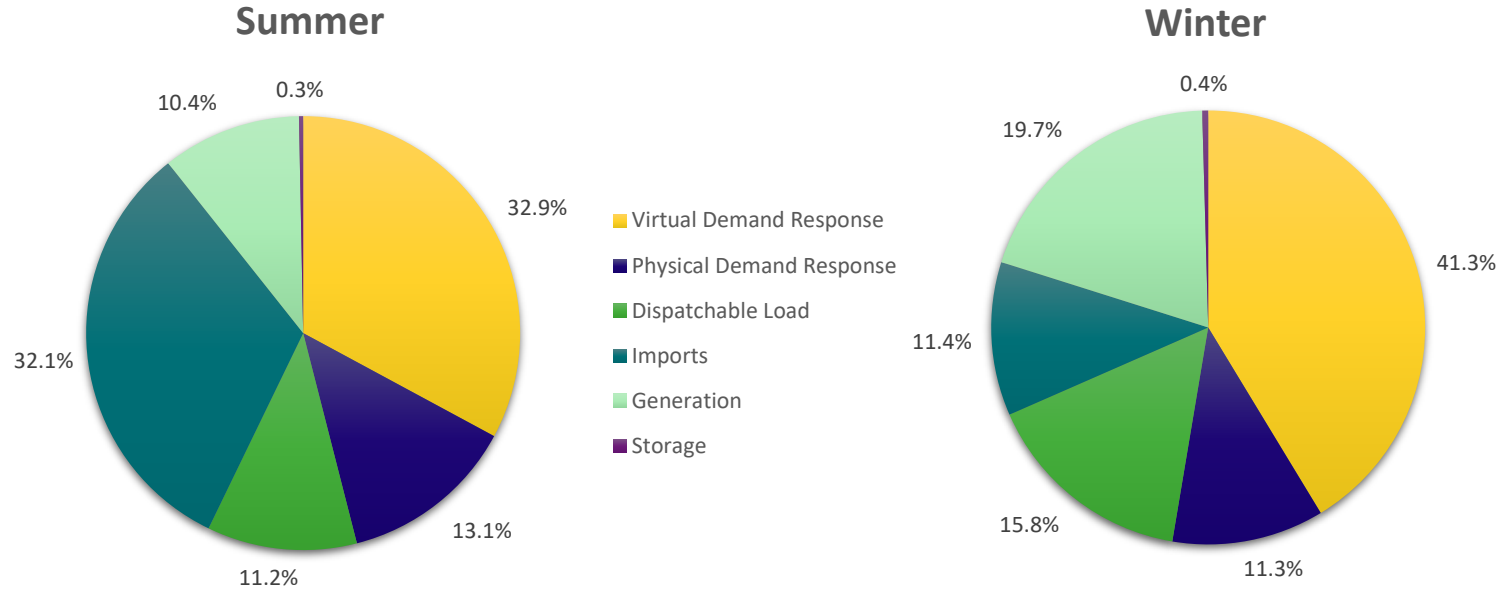
- **1867.2 MW at \$367.41/MW-day** for the summer 2024 obligation period
- **1310.8 MW at \$146.96/MW-day** for the winter 2024/2025 obligation period

## Compared to 2022 Auction results:

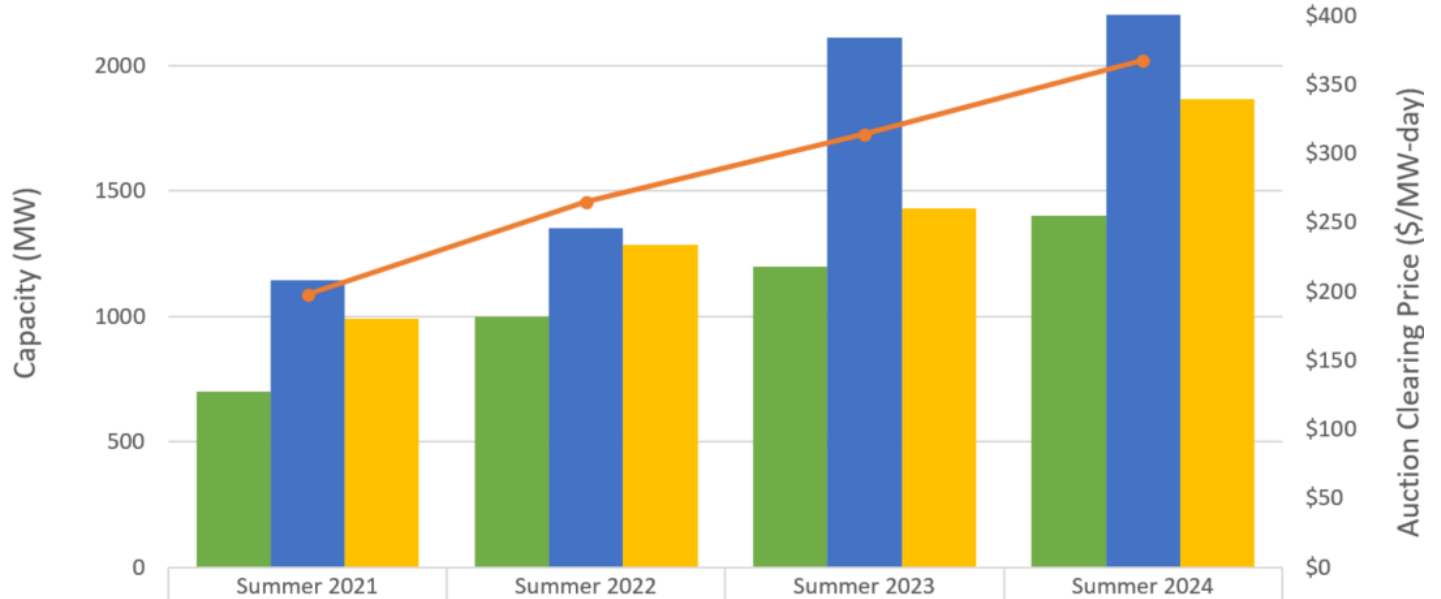
- 31% more summer capacity for only a 15% price increase
- 13% more winter capacity for only an 11% price increase



# Capacity Cleared by Resource Type



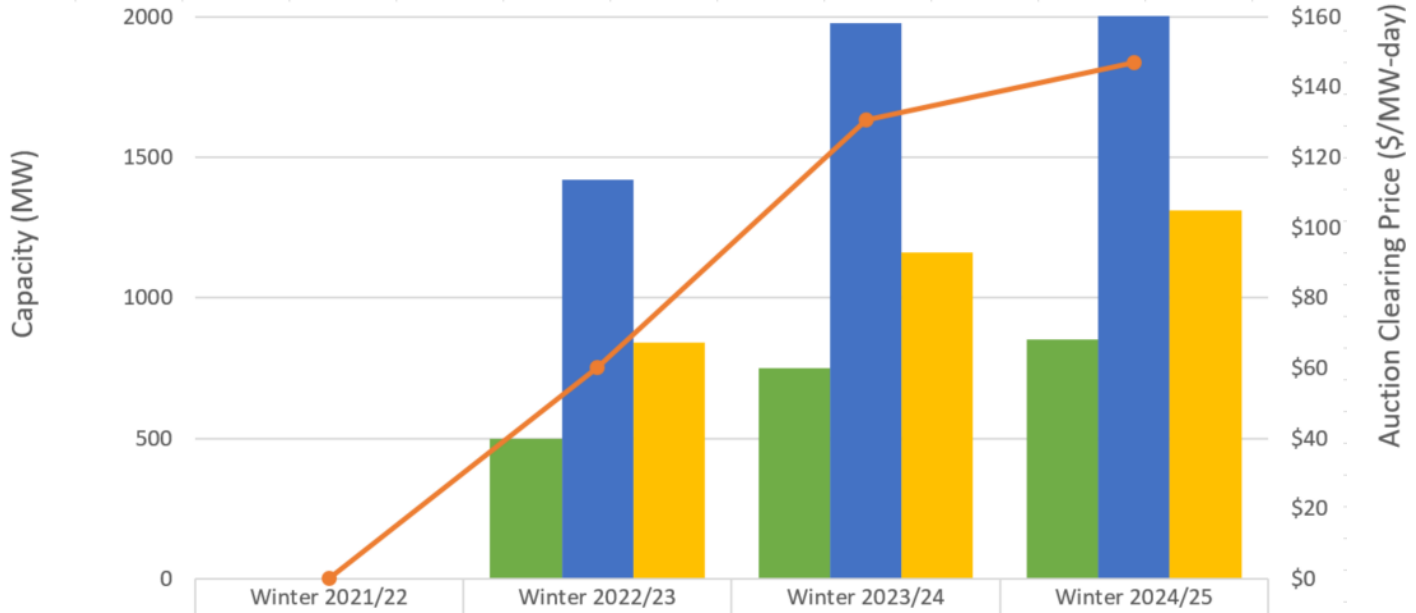
# Year-Over-Year Comparison: Summer



<span style="color: green;">■</span> Target Capacity (MW)	700	1000	1200	1400
<span style="color: blue;">■</span> Capacity Offered (MW)	1144.1	1352.6	2112.5	2318.3
<span style="color: yellow;">■</span> Capacity Cleared (MW)	992.1	1286.7	1430.6	1867.2
<span style="color: orange;">—●—</span> Auction Clearing Price (\$/MW-day)	197.58	264.99	313.78	367.41



# Year-Over-Year Comparison: Winter



Target Capacity (MW)	0	500	750	850
Capacity Offered (MW)	0.0	1420.1	1976.3	2049.7
Capacity Cleared (MW)	0.0	841.9	1160.0	1310.8
Auction Clearing Price (\$/MW-day)	0.00	60.00	130.75	146.96

# E-Learning Module and Upcoming Q&A Sessions

- An E-Learning module is available until May 1 for organizations that secured an obligation for the upcoming 2024-2025 Capacity Auction Commitment Period
- The module will help prepare participants for the newly implemented participation rules that were introduced for the 2023 Capacity Auction
- IESO will also be holding two Q&A sessions to discuss any questions that may arise while completing the eLearning Module. Please follow **one** of the links below to register:
  - Q&A Session #1 (March 27, 2024) – [Registration Link](#)
  - Q&A Session #2 (April 3, 2024) – [Registration Link](#)



# Future Enhancements

# Capacity Auction Enhancements Objective Statement

The following objective statement reflects the value that the Capacity Auction contributes to the [Resource Adequacy Framework](#) and IESO-Administered markets:

*"Future Capacity Auction enhancements should help ensure the Capacity Auction can adapt to evolving market conditions and continue to be a competitive, transparent and accessible marketplace for a diverse range of capacity resources"*

# Engagement Timelines and Approach

- Proposed schedule for engaging with stakeholders on enhancements for the next three Auctions (2024 through 2026)
- Considerations for prioritization:
  - Benefits/Objectives: Does the enhancement offer significant value to participants, ratepayers, and the IESO, and does it meet the Auction's objectives?
  - Resources/Complexity: Is the enhancement complex? Does it require Market Rule or Manual amendments? What is the impact on IESO system tools, systems and processes?
  - Priorities/Timelines: Are there other competing IESO initiatives, such as Market Renewal, that could impact the implementation of this enhancement?

# Prioritized 2024-2026 Enhancements (1 of 3)

Enhancement	Description	Target Implementation	Commentary
Administrative Updates	Regular updates to Capacity Auction market rule and manual language based on lessons learned, error corrections, etc.	2024	Annual process
Reference Price Review	Review of the reference price in the Capacity Auction Demand Curve	2024	Consider inflation, changing supply mix, updated cost of capacity
HDR Standby Price Trigger Review	Annual review of HDR standby price trigger (\$) amount based on current market conditions	2024	Annual process
Review of Virtual Zonal Limits (short-term solution)	Gather contributor locational information to inform IESO modelling study	2024	IESO requires input from aggregators by end of March 2024

# Prioritized 2024-2026 Enhancements (2 of 3)

Enhancement	Description	Target Implementation	Commentary
Review of Auction Engine Features	Regular audit and enhancements to the Capacity Auction optimization engine	2025	Stakeholder feedback to consider an alternative tie-breaking mechanism
Comprehensive Demand Curve Review	Review of the Capacity Auction Demand Curve	2025	Recommendations from the Brattle Group may include changes to the overall width and shape
Potential Changes to the Dispatch Testing Framework	Stakeholder request to reduce the number of IESO discretionary dispatch tests. Other features may be considered.	2025	Further discussion needed to determine value proposition
Review of Commitment Management Options	Review of buy-outs and transfers	2025	Further discussion needed

# Prioritized 2024-2026 Enhancements (3 of 3)

Enhancement	Description	Target Implm.	Commentary
Review of Virtual Zonal Limits (long-term solution)	Investigate long-term solution to alleviate virtual zonal limits	2026	Relatively complex design including changes to IESO tools, processes and systems
Regular Review of UCAP Methodologies	Updates to resource types' UCAP methodologies	2026	Includes updates to the market manual, IESO systems and tools
Multiple HDR Resources per Zone	Enable virtual HDR CAPs to register >1 resource per zone	2026	Relatively complex design; changes to IESO tools, processes and systems
Expand Participation	Enable additional resource types to participate including wind, solar and DER aggregations	2026	Complex design including changes to market rules/manuals, IESO tools, processes and systems
Improve Performance	Incentivize more accurate, reliable performance including during emergency events	2026	Relatively complex design including changes to market rules/manuals, IESO tools, processes and systems



# 2024 Capacity Auction Enhancements: Key Activities

Enhancement	IESO Actions	Date
1. Administrative Updates	Present draft language for administrative updates in manuals, request stakeholder feedback	May 2024
	Post draft market manuals as part of baseline process	June 2024
	Market manuals effective	August 2024
2. Reference Price	Present recommendation, request stakeholder feedback	May 2024
3. HDR Standby Trigger	Present recommendation, draft language for administrative updates in manuals, request stakeholder feedback	May 2024
	Post draft market manuals as part of baseline process	June 2024
	Market manuals effective	August 2024
4. Virtual Zonal Limits	Present recommendation, request stakeholder feedback	May 2024

# 2025 Capacity Auction Enhancements Timeline

Starting Date	Item
Q2 2024	Discuss Recommended Changes with Stakeholders
Q4 2024	Create Final Design Memos, Draft Rules and Manuals
Q1 2025	Present at Technical Panel: Education
Q2 2025	Present at Technical Panel: Vote to Post
Q2 2025	Present at Technical Panel: Vote to Recommend
Q2 2025	Obtain IESO Board Approval
Q3 2025	Market Rules Effective



# Administrative Updates

# Administrative Update Summary

Administrative Topic	Detail	Market Rule or Manual
Performance Adjustment Factor	<ul style="list-style-type: none"> <li>- Additional language to specify which hour of the capacity test a performance adjustment factor will be based on</li> </ul>	MM 12: Capacity Auctions
Settlements	<ul style="list-style-type: none"> <li>- Re-inserting definitions omitted through the baseline process</li> <li>- Adjust formula for capacity charge assessment for C&amp;I HDR resources</li> </ul>	MM 5.5: Physical Markets Settlement Statements
Import Operations	<ul style="list-style-type: none"> <li>- Update the number of boundary entity resources available to generator-backed imports</li> </ul>	MM 4.2: Submission of Dispatch Data
Capacity Test Data Submission	<ul style="list-style-type: none"> <li>- Remove requirement to submit data to the IESO via email and change to submission via Online IESO</li> </ul>	MM 12: Capacity Auctions
Cleared ICAP	<ul style="list-style-type: none"> <li>- Adjust the formula to calculate the post-Auction cleared ICAP to consider the PAF</li> </ul>	Ch. 7

# Performance Adjustment Factor (PAF)

**Overview:** The PAF was implemented as part of the 2023 Capacity Auction. Capacity test results from the 2024 summer obligation period will feed into the calculation of a summer PAF for the 2024 Capacity Auction.

**Administrative Update:** The PAF requires updating in the Market Manual to specify what value will be used in determining the PAF.

In the case of a failed four-hour capacity test, the PAF will be based on the MW quantity demonstrated by the resource for the entire four hours.

# Cleared ICAP

**Overview:** The cleared ICAP is calculated post-auction by taking the cleared UCAP and dividing it by the availability de-rate and the PAF. It represents the amount the Capacity Auction resource must deliver to in the capacity test.

**Administrative Update:** Update the cleared ICAP calculation in Ch. 7 of the market rules to incorporate the PAF which was inadvertently omitted from stream 2 of the market rules approval for the 2023 Capacity Auction.

## Market Rule Language (Ch. 7)

18.8.2 The IESO shall, following the conclusion of a *capacity auction*, issue post-auction reports to each *capacity auction participant* by the date specified in accordance with section 18.5.4.5, to detail the *capacity auction offers* that have cleared in the *capacity auction* and the associated *capacity obligations* and *cleared ICAPs* for each *obligation period* in accordance with the applicable *market manual*:

18.8.2.1 the *cleared ICAP* is calculated as:

$$\text{cleared ICAP} = \text{cleared UCAP} \times \left( \frac{1}{\text{availability de-rating factor}} \right) \times \left( \frac{1}{\text{performance adjustment factor}} \right)$$

# Administrative Updates Timeline (Market Manual)





# Administrative Update Timeline (Market Rules)





# 2024 Capacity Auction Enhancements

# Reference Price (1 of 2)

**Overview:** The reference price is being reviewed and two possible updates are under consideration:

1. Update the reference price to account for inflation
  2. Update the reference price/technology to better reflect the cost of capacity in Ontario using the results of the LT1 procurement (expected in late Q2/early Q3)
- The current reference technology is a single cycle gas turbine generator
  - IESO will review the reference technology and consider moving to a non-emitting resource due to the changing policy landscape in Ontario

## Reference Price (2 of 2)

### **Benefits:**

- Enable pricing that is more consistent with the anticipated cost of new generating capacity
- More accurately reflect current market and policy conditions for procuring capacity to inform price discovery

**Complexity:** Low; minimal tool/system impacts, no market rule changes required

# Review of HDR Standby Trigger

**Overview:** As part of the Capacity Auction Design Memo 4.0 issued in September 2022, the IESO committed to reviewing the hourly demand response (HDR) standby notice price threshold annually

- The standby trigger was set at \$200 for the 2022 and 2023 Capacity Auctions, respectively (increased from \$100 in previous years' Auctions)
- The IESO is currently revisiting the original analysis from September 2022 to determine if a new price should be implemented ahead of the 2024 Capacity Auction
- Results of this analysis will be shared at a future engagement session

**Benefits:** Auction mechanisms and price signals are up-to-date

**Complexity:** Medium; market analysis, minor system/tool impact, market manual update

# Review of Virtual Zonal Limits

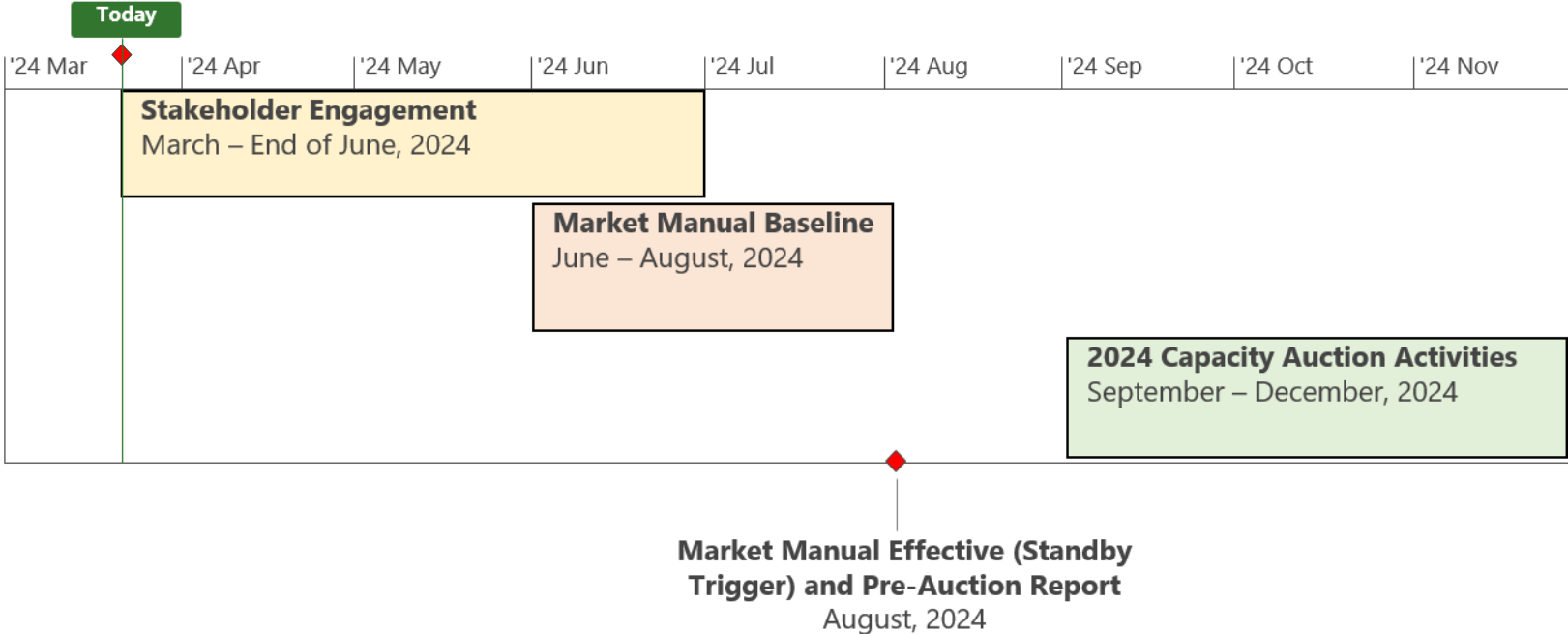
**Overview:** Stakeholders requested the IESO review the virtual zonal limits, and explore the feasibility of raising limits to enable greater virtual resource participation

**Scope:** For the 2024 Auction, the IESO will undertake a review of the virtual zonal limits for zones that were constrained in the 2023 Auction only. To complete this review, participants with virtual resources in the West and Niagara zones should provide the IESO with the closest transmission bus for each contributor

**Benefits:** Enable greater participation from virtual resources in constrained zones

**Complexity:** Medium; IESO engineering assessments required, potential modelling impacts

# Timelines: 2024 Enhancements





# Future Enhancements: Priorities for 2025 Capacity Auction



# Review of Key Auction Engine Features

**Overview:** Review existing Auction engine features and determine any enhancements that can be implemented; this will include a review of the Auction engine's tie-break methodology

**Benefits:**

- Potential to improve social welfare optimization, competition, and attractiveness of the Auction
- Ensure the Auction continues to drive competition and ratepayer value

**Complexity:** High; updates to market rules/manuals, potentially significant IESO tool/system changes required

# Comprehensive Demand Curve Review

**Overview:** The demand curve was reviewed and the reference price and maximum Auction clearing price were updated in advance of the 2023 Capacity Auction. The IESO is exploring other potential updates to demand curve parameters to ensure the Auction remains a cost-effective, reliable and robust procurement mechanism.

**Benefits:** Signal IESO reliability needs, improve price signals, and mitigate over/under-procurement

**Complexity:** Medium; requires market analysis, updates to market rules/manuals, updates to IT systems/tools such as Auction clearing engine, pre-Auction report

# Updates to Dispatch Testing Methodology

**Overview:** The IESO is considering changes to the Capacity Auction dispatch testing framework. Considerations include but are not limited to reassessing the number of dispatch tests per obligation period and pre-test notification procedures.

**Benefits:** Reducing the number of dispatch tests per obligation period may reduce barrier to entry of the Auction and increase administrative efficiency. Other updates will aim to increase ratepayer value.

**Complexity:** Low; updates to market rules/manuals

# Review of Commitment Management Options

**Overview:** Review the potential of enabling greater flexibility in the management of capacity commitments, including:

- Enabling obligation transfers during an obligation period
- Review of buy-out charges

## **Benefits:**

- Reduce unfulfilled capacity obligations and buy-outs, increased participation
- Enabling resources to actively manage risks and improve performance

**Complexity:** High; updates to market rules/manuals, changes to IT systems/tools, changes to prudential/settlement systems



# Future Enhancements: 2026 Capacity Auction

## Virtual Zonal Limits (1 of 2)

**Overview:** Virtual hourly demand response resources are limited by virtual zonal limits set in each zone. Both the IESO and stakeholders have a shared interest in exploring whether these constraints can be removed.

**Background:** Virtual HDR resources are all modelled to a single location in a zone regardless of where their contributors are electrically located within that zone. This modelling solution requires a limit on virtual HDRs because the actual location of contributors may be different than what is assumed in the IESO's systems. This mismatch can lead to reliability concerns when virtual HDRs are activated.

## Virtual Zonal Limits (2 of 2)

**Benefits:** Increasing or eliminating virtual limits could allow for more capacity from aggregated resources. Depending on the solution, could more accurately disperse the virtual capacity across the zone.

**Complexity:** High; the solution for increasing or removing virtual limits would be closely connected to any solution designed for 'Multiple HDR Resources per Zone'

# Regular Updates to Capacity Qualification Methodologies

**Overview:** Review of capacity qualification (UCAP) methodologies to ensure accurate capacity accreditation, including:

- Proxy  $EFOR_d$  value for storage resources
- GBI UCAP methodology

**Benefits:** Enhanced accuracy of capacity accreditation

**Complexity:** Medium; updates to market rules and manuals and Online IESO



## Multiple HDR Resources per Zone

**Overview:** Each market participant can only have one virtual HDR resource per type (C&I or residential) per zone. Stakeholders have asked that the IESO review this requirement and increase this limit.

**Benefits:** Greater risk management for participants with aggregated resources; could more accurately reflect MW relative to location

**Complexity:** High; contributor management system, registration processes, measurement data submission, baseline, control room tools, market rules and manuals, may introduce additional complexity into contributor management process

**Target Effective:** Post MRP go-live

# Expanded Resource Participation

**Overview:** Develop and implement participation models to enable wind, solar, DER, and hybrid resources to participate in the Capacity Auction

## **Benefits:**

- Enable a wider range of resources and revenue opportunities for off-contract resources
- Increased competition from a more diverse set of resources
- Increased MW of offered capacity

**Complexity:** High; updates to market rules/manuals, changes to IT systems/tools, changes to settlement systems

# Improve Participant Performance

**Overview:** Incentivize more accurate resource performance during in-market and emergency activations

**Benefits:**

- Ensure reliability as the system enters a period of tight supply conditions
- Provide participants with more incentive, agency, and flexibility to follow market signals more closely/accurately
- Increased competition and potential for improved performance during activations

**Complexity:** High; updates to market rules/manuals, changes to IT systems/tools, changes to settlement systems



## Future Enhancements: Not Being Investigated Further

# Enhancements Not Being Investigated Further

	Enhancement	Category
1.	Accommodating short-term obligation buy-outs	Review of Commitment Management Options
2.	Introducing a rebalancing auction	Review of Commitment Management Options
3.	Including avoided line losses credit in HDR capacity qualification	UCAP Methodologies

## Rationale:

- These specific enhancements do not deliver sufficient value and/or the complexity outweighs potential benefits to the IESO and ratepayers

NOTE: IESO is willing to re-open these topics if new information becomes available

# Review of Commitment Management Options

## Detailed Rationale:

**1. Short-term obligation buy-outs:** The existing buy-out process is intended for participants who can no longer fulfill their obligation, in whole or in part, for the remainder of an obligation period. Enabling short-term buy-outs has been deemed not of sufficient value and not consistent with the enhancements objective statement at this time.

**2. Rebalancing auction:** The current annual Capacity Auction has a short forward period leading up to the commitment start, therefore the administrative load and complexity of introducing a rebalancing auction is currently not justified by the potential benefit or outcome.

# UCAP Methodologies

## Detailed Rationale:

**3. HDR Avoided Line Losses Credit:** Benefits to the IESO-controlled transmission system and ratepayers are unclear since line losses are only incurred on the distribution system when a resource is activated; the complexity of modeling resource-level or contributor-level loss factors and modifications to HDR settlement charges outweighs potential benefits to system/ratepayers.



# Demand-Side Vision Engagement



# Joint Work with Demand-Side Vision Engagement

- The Demand-Side Vision engagement is focused on demand-side participation in the energy market and IESO programs and how incremental participation can be unlocked
  - This is in contrast to the Capacity Auction Engagement's focus on Capacity Auction participation
- The IESO is working with demand response stakeholders on several previously identified priority items through technical sessions taking place over 2024
- For stakeholder feedback on identified or new initiatives, if it is unclear which engagement stream should handle a topic, please bring it forward to either engagement stream and the IESO will ensure the feedback is addressed



# Summary and Next Steps

# Summary

- Focusing on achievable, modestly sized changes for the 2024 Auction
  - Engagement on these enhancements will conclude in June
  - Certain information must be confirmed for the pre-Auction report publication in August
- Priority enhancements will be the focus of the 2025 Auction
  - Engagement will commence during the next stakeholder session in May
  - These enhancements require changes to market rules and will be presented to the Technical Panel starting Q1 2025
- Enhancements targeted for the 2026 Auction and beyond typically require more extensive design, stakeholder engagement and implementation discussions

# Next Steps

- Using the feedback form provided, stakeholders are invited to submit questions and comments by April 4, 2024 on the following items:
  - Administrative updates and other 2024 enhancements
  - The prioritized plan for the next three Auctions as presented today
  - Enhancement details
- May 2024 Engagement Session
  - IESO to present recommendations and draft market manual language regarding these items for stakeholder feedback

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# Thank You

[ieso.ca](http://ieso.ca)

1.888.448.7777

[customer.relations@ieso.ca](mailto:customer.relations@ieso.ca)

[engagement@ieso.ca](mailto:engagement@ieso.ca)



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