MAY 23, 2024

Capacity Auction Enhancements

Capacity Auction Team

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Today's Discussion

- Stakeholder feedback from March 21, 2024 engagement
- Updates on 2024 Capacity Auction enhancements
  - Market Rule & Manual Amendments, including determining Delivered MWs from capacity test
  - Reference Price Update
  - HDR Standby Price Trigger Update
  - Virtual Zonal Limits (Niagara, West) Review
- Update on post-2024 enhancements and engagement plans

Summary of Stakeholder Feedback (March 2024 session)

March Stakeholder Feedback

- IESO response to stakeholder feedback received following the March engagement session is posted to the Capacity Auction Enhancements engagement webpage
- Following the March session, the IESO met with a targeted group of stakeholders to discuss feedback received on the proposed administrative Market Manual (MM) and Market Rule (MR) amendments

Stakeholder Feedback – Enhancement Prioritization

- **Feedback**: Stakeholders provided feedback related to timelines and prioritization of future enhancements, including the following:
  - Sufficient time should be allocated in 2024 to review the new capacity test outcomes
  - 2024 timelines are insufficient/abbreviated for:
    - The review of Market Rule & Manual Amendments
    - Virtual zonal limits: Should be prioritized and reviewed prior to the 2024 auction
  - 2025 review of commitment management options should be a higher priority
  - Accelerate review of multiple HDR resources per zone (move from 2026 to 2025)
  - Accelerate wind and solar participation (move from 2026 to 2025)

Stakeholder Feedback – IESO Response

- **Response**: In response to stakeholder feedback received, the IESO has revised the timelines for investigating future enhancements for the 2024 to 2027 auctions, as will be discussed in the following slides

Future Enhancements:
Changes to Prioritization and Implementation Schedules

Updates to Prioritized List of Enhancements

- Changes have been made to the draft enhancements investigation schedule based on evolving priorities, stakeholder feedback, and latest information
  - The work plan now extends to 2027
- The Prioritized Enhancements scope, target implementation dates, and overall plan is likely to evolve as we further investigate and conduct detailed scoping of enhancements
- Adjustments may continue in the future pursuant to performance results, resource adequacy needs, IESO resource availability, engagement discussions, etc.

Prioritized Enhancements (2024)

Enhancement	Description	Target Implementation	Commentary
Market Rule & Manual Amendments	Regular updates to Capacity Auction MM/MR 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 reviewing contributor information

Prioritized Enhancements (2025)

Enhancement	Description	Target Implementation	Commentary
Expand Participation	Enable additional resource types to participate including wind and solar	2025 (previously 2026)	Complex design including changes to MM/MRs, IESO tools, processes and systems
Comprehensive Demand Curve Review	Review of Capacity Auction Demand Curve, including max and min capacity, curve width and shape	2025	May include changes to overall width and shape
Review of Commitment Management Options (Part 1)	Review of tools, systems, processes available to participants to manage commitments	2025	Further discussion needed

Prioritized Enhancements (2026)

Enhancement	Description	Target Implementation	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
Improve Performance	Incentivize more accurate, reliable performance including during emergency events	2026	Relatively complex design including changes to MM/MRs, IESO tools, processes and systems

Prioritized Enhancements (2026) – Cont'd

Enhancement	Description	Target Implementation	Commentary
Review of Commitment Management Options (Part 2)	Review of tools, systems, processes available to participants to manage commitments (i.e., buy-outs, transfers, contributor management, etc.)	2026 (previously 2025 only)	Further discussion needed to develop scope of enhancements
Potential Changes to the Dispatch Testing Framework	Stakeholder request to reduce the number of IESO discretionary dispatch tests, other features may be considered	2026	Further discussion needed to determine value proposition

Prioritized Enhancements (2027)

Enhancement	Description	Target Implementation	Commentary
Review of Auction Engine Features	Regular audit and enhancements to the Capacity Auction engine	2027 (previously 2025)	Stakeholder feedback to consider an alternative tie-breaking mechanism
Multiple HDR Resources Per Zone	Enable virtual HDR CAPs to register >1 resource per zone	2027 (previously 2026)	Relatively complex design; changes to IESO tools, processes and systems
Review of Commitment Management Options (Part 3)	Review of tools, systems, and processes available to participants to manage commitments (i.e., buy-outs, transfers, contributor management, etc.)	2027 (previously 2025 only)	Further discussion needed to develop scope of enhancements

2024 CA Enhancements: Key Activities

Enhancement	IESO Actions	Date
Market Rule & Manual Amendments	Present draft language for market manual amendments, request stakeholder feedback	May 2024
	Post draft market manuals as part of baseline process	June 2024
	Market manuals effective	August 2024
Reference Price Review	Provide update on progress and timelines	May 2024
	Present recommendation	June 2024
	Pre-auction report published	August 2024
HDR Standby Trigger	Present recommendation	May 2024
Virtual Zonal Limits	Provide update on progress and timelines	May 2024
	Present results of review for discussion and stakeholder feedback	June 2024
	Pre-auction report published	August 2024

2024 Capacity Auction Enhancements: Status Updates

Status Update:
Market Rule & Manual Amendments

Market Rule & Manual Amendments

Administrative Topic	Detail	Market Rule or Manual
Performance Adjustment Factor (PAF)	Additional language to specify capacity test delivered MWs for calculating the performance adjustment factor	MM 12: Capacity Auctions
Settlements	Adjust formula for capacity charge assessment for C&I HDR resources	MM 5.5: Physical Markets Settlement Statements
Import Operations	Update the number of boundary entity resources available to generator-backed imports	MM 4.2: Submission of Dispatch Data
Cleared ICAP	Adjust the formula to calculate the post-Auction cleared ICAP to consider the PAF	MR Ch. 7
Availability Charge ***NEW***	Uncertainty created through transposition into MR Ch. 9, resulting in availability charge not described as intended for HDR resources	MR Ch. 9

- Updates to capacity test data submission requirements and settlement definitions are **not** proceeding

Capacity Test Delivered MW in PAF Calculation

Overview: Stakeholders indicated that the determination of 'delivered MW' based on the lowest hourly delivered MW from the four-hour capacity test was not the PAF design understood by demand response stakeholders.

Engagement Process: After receiving this feedback, the IESO met with stakeholders to propose an alternative determination. This proposal is presented in the following slides and accompanying amendments to MM12 for broader stakeholder input.

Capacity Test Delivered MW

Updated Proposal: In the case of a failed capacity test, the PAF will be calculated based on the MW delivery from each hour, or each interval in the case of dispatchable loads, of the capacity auction capacity test.

PAF Delivered MW will be calculated by averaging the MW delivery from all hours or intervals, as applicable, of the resource-specific capacity auction capacity test duration outlined in section 5.3.4 of MM12.

A limit will be applied in the calculation of the PAF Delivered MW based on the resource-specific performance threshold used in the capacity auction capacity test performance assessment outlined in section 5.3.4 of MM12.

Determining PAF Delivered MW (1 of 4)

- HDRs
  - PAF Delivered MW is the four-hour average reduction in withdrawal of energy in the capacity auction capacity test
  - If the PAF Delivered MW value is greater than 90% of the HDR resource's cleared ICAP, then the PAF Delivered MW will be equal to 90% of the cleared ICAP

Determining PAF Delivered MW (2 of 4)

- Capacity generation resource, capacity storage resource, generator-backed capacity import
  - PAF Delivered MW is the four-hour average injection of energy in the capacity auction capacity test
  - If the PAF Delivered MW value is greater than 95% of the capacity auction resource's cleared ICAP, then the PAF Delivered MW will be equal to 95% of the cleared ICAP

Determining PAF Delivered MW (3 of 4)

- Capacity dispatchable load resource
  - PAF Delivered MW is the average reduction in withdrawal of energy in a dispatch interval, calculated over the three consecutive dispatch intervals of the capacity auction capacity test
  - If the PAF Delivered MW value is greater than 95% of the capacity auction resource's cleared ICAP, then the PAF Delivered MW will be equal to 95% of the cleared ICAP

Determining PAF Delivered MW (4 of 4)

- System-backed capacity import resource
  - PAF Delivered MW is calculated by averaging the hourly amount of energy scheduled by the system-backed capacity import resource from all hours of the capacity auction capacity test
  - If the PAF Delivered MW value is greater than the system-backed capacity import resource's cleared ICAP, then the PAF Delivered MW will be equal to the cleared ICAP

'PAF Delivered MW' in the PAF Calculation

Resource Type	Capacity Test Performance Requirement [1]	Limit for 'PAF Delivered MW' in PAF Calculation [2]
Hourly Demand Response	90% of *cleared ICAP*	90% of *cleared ICAP*
Capacity Storage	95% of *cleared ICAP*	95% of *cleared ICAP*
Capacity Dispatchable Load	95% of *cleared ICAP*	95% of *cleared ICAP*
Capacity Generation	95% of *cleared ICAP*	95% of *cleared ICAP*
Generator-Backed Capacity Import	95% of *cleared ICAP*	95% of *cleared ICAP*
System-Backed Capacity Import	100% of *cleared ICAP*	100% of *cleared ICAP*

(1) Capacity test performance requirements are outlined in s. 5.3.4 of MM 12
(2) Cleared ICAP is the cleared ICAP the capacity auction resource was assessed against in the most recent applicable seasonal capacity auction capacity test

Example A: 'PAF Delivered MW' for HDR Resource

- Cleared ICAP = 10 MW
- Capacity test assessment: **FAIL (due to under-delivery in hour 3)**
  - 'PAF Delivered MW' = (10 + 10 + 5 + 10) / 4 = 8.8 MW
  - 8.8 MW is less than 90% of cleared ICAP of 10 MW
- 'PAF Delivered MW' used in PAF calculation = 8.8 MW

Test Hour	Hour Start (HE)	Start Interval	End Hour (HE)	End Interval	Delivered Capacity (MW)	Delivered Capacity Assessment Result
1	17	1	17	12	10	PASS
2	18	1	18	12	10	PASS
3	19	1	19	12	5	FAIL
4	20	1	20	12	10	PASS

Example B: 'PAF Delivered MW' for HDR Resource

- Cleared ICAP = 10 MW
- Capacity test assessment: **FAIL (due to under-delivery in hour 3)**
  - 'PAF Delivered MW' = (10 + 10 + 8 + 10) / 4 = 9.5 MW
  - 9.5 MW is more than 90% of cleared ICAP of 10 MW
- 'PAF Delivered MW' used in PAF calculation = 9.0 MW (capped at 90% of cleared ICAP)

Test Hour	Hour Start (HE)	Start Interval	End Hour (HE)	End Interval	Delivered Capacity (MW)	Delivered Capacity Assessment Result
1	17	1	17	12	10	PASS
2	18	1	18	12	10	PASS
3	19	1	19	12	8	FAIL
4	20	1	20	12	10	PASS

Availability Charge

Overview: In 2023, the Technical Panel approved market rule amendments to Ch. 9 pertaining to the Capacity Auction. This was part of a larger effort to bring settlement equations and variables that were previously in the market manuals into the market rules.

Update: An unintentional transposing issue occurred when drafting the availability charge into Ch. 9 that may mislead market participants about how the charge applies to demand response resources. The language must be updated to reflect the original design of that charge and how it is meant to be applied.

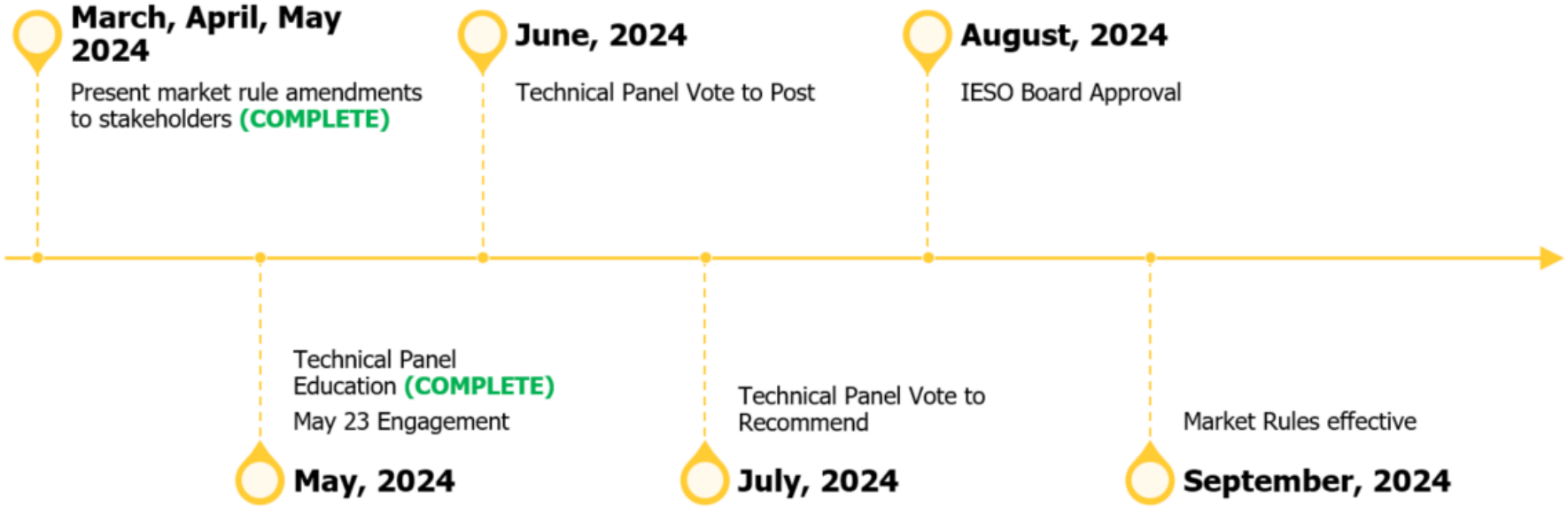
Availability Charge for HDRs

The availability charge is designed to assess HDRs in two different timeframes:

Standby Notice Issued	Availability Assessment
Yes	From day-ahead through to real-time
No	From day-ahead through to 7 a.m. of the dispatch day

The transposing issue resulted in a description of the availability charge that does not clearly describe these two different scenarios. The availability assessment as currently drafted into the rules explains how an HDR will be assessed for an availability charge when a standby notice is issued but does not clearly explain how availability is assessed if no standby is issued.

Market Rule Amendments Timeline



Market Manual Amendments Timeline

Status Update:
Reference Price Review

Reference Price Review

Overview: The IESO is considering two approaches to update the reference price for the 2024 auction:

1. Update the existing reference price for inflation
2. Update the reference price/technology considering the results of the Long-Term 1 procurement (LT1)

Reminder - The IESO sets the reference price based on the indicative estimate of the **Net CONE** of the lowest cost marginal resource that would be developed if new generation was needed (i.e., the reference technology).

Update for Inflation

Reference price analysis: An inflation adjustment for the 2024 Capacity Auction demand curve would be calculated using the 2023 Consumer Price Index published in the Bank of Canada's Annual Report 2023 (3.9%), and applied to the existing reference price of $644/MW-bd:

- Inflation Adjustment: $644/MW-bd * 1.039 = **$669/MW-business day**
- Reference technology would remain unchanged as single cycle gas turbine

Update Based on LT1 Results

Reference price analysis: The IESO is assessing the recently released results of the LT1 RFP for the Capacity Auction reference price analysis

- Storage: weighted average price of $672.32/MW-bd (based on a 20-year contract term)
- Non-storage: weighted average price of $1,681.14/MW-bd (based on a 12-year contract term)

Next Steps

- **June** – IESO to communicate the recommended reference price update along with accompanying analysis
- **August –** Pending stakeholder feedback, reference price will be updated and included in the release of the 2024 pre-auction report

Status Update:
Review of Virtual Zonal Limits (short-term solution)

Review of Virtual Zonal Limits

Overview: The Niagara and West zones met their respective virtual limits in the last auction. Stakeholders requested the IESO review these limits.

Update: The IESO requested additional contributor information such as existing and potential contributors' grid connection point locations within these zones, to attempt to more accurately map those contributor locations and how they could affect grid reliability in those areas.

- This analysis is feasible this year as it will not include any changes to tools, systems or processes and will support the IESO's determination of whether the virtual zonal limits in these zones can be modified in advance of the November 2024 auction

Next Steps: IESO to communicate findings in June in advance of the pre-auction report

Status Update:
HDR Standby Price Trigger Review

HDR Standby Notice Price Trigger Review (1 of 2)

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 trigger annually.

The standby trigger was set at $200 for the 2022 and 2023 Capacity Auctions, respectively (increased from $100 in previous years' Auctions).

HDR Standby Notice Price Trigger Review (2 of 2)

Update: Any changes to the HDR standby notice price trigger, if applicable, would take effect ahead of the summer 2025 obligation period, which begins on May 1, 2025. This timing coincides with the go-live target date of the Market Renewal Program.

- With this in mind, the soon-to-be introduced Locational Marginal Pricing (LMPs) can be analyzed in comparison with existing pre-dispatch shadow prices before any further changes are made to the HDR standby notice price trigger;
- As such, the IESO is proposing to maintain the HDR standby notice price trigger at $200 for the 2024 Capacity Auction;
- The IESO will revisit the HDR standby notice price trigger following the successful implementation of the Market Renewal Program.

Summary and Next Steps

Summary

- Updated the implementation schedule for 2024-2027 enhancements based on stakeholder feedback and evolving priorities
- Completed Technical Panel education session regarding market rule amendments (availability charge, cleared ICAP) on May 14
- Proposed market manual amendments presented for stakeholder input

Next Steps (1 of 2)

- Using the feedback form provided, stakeholders are invited to submit questions and comments by June 6, 2024, on the following items:
  - Proposed methodology to determine PAF Delivered MWs from capacity test
  - Market Manual amendments: Draft language posted
  - General comments on revised prioritized enhancements list and 2024 enhancements
- Market Rule amendments to Technical Panel - June 11

Next Steps (2 of 2)

- June 2024 Engagement Session
  - Recommendations for 2024 enhancements
    - Reference Price
    - Virtual Zonal Limits in Niagara and West zones
- July 2024 Engagement Session
  - Begin engagement on 2025 enhancements
  - Present performance results of winter 2023/24 activations

Capacity Test Reminder

Capacity Test – Reminder

- The capacity auction capacity test week is from May 27 to May 31, 2024, for all resources except for generator-backed import resources
- Review MM 12 for capacity testing procedures and requirements in advance of the capacity test
- A supplementary capacity test FAQ document is posted on the Capacity Auction webpage
- For test data submissions, please attach the capacity test data submission form with your email for each tested resource, the form is posted on the Capacity Auction webpage

Thank You

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