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Capacity Auction Design Memo 2.0 Expand Participation 2025

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Objective

The intent of this design memo is to outline the participation model for eligible variable generation (VG) resources in the Capacity Auction as part of the Expanding Participation enhancement. With forecasted demand expected to increase over the next several years, the IESO will continue to leverage competition through various Resource Adequacy Framework mechanisms to secure adequate supply in a cost-effective manner. The IESO is preparing a number of competitive opportunities for existing wind and solar resources to extend operations for facilities that are approaching the end of their contracts, including enabling future Capacity Auction participation. This participation opportunity will allow existing, non-committed variable generation resources to continue to provide system value and grid reliability, while also ensuring that their capacity is available to meet Ontario's anticipated demand growth.

Background

The Capacity Auction is expected to grow, securing a significant portion of Ontario's resource adequacy needs on an annual basis. To prepare the Capacity Auction for its growing role, the 2024-2027 Capacity Auction Enhancements, including the Expanding Participation enhancement, will look to increase competition and available supply while maintaining reliability as a top priority.

Existing Capacity Auction Eligibility

Variable generation facilities are not eligible to participate in the Capacity Auction under the current framework. Capacity Auction Resource types that are currently eligible for participation include the following:

- Capacity Generation
- Capacity Storage

- Demand Response (DR)
 - Capacity Dispatchable Loads (DL)
 - Physical Hourly Demand Response (HDR)
 - Virtual HDR Residential
 - Virtual HDR Commercial and Industrial (C&I)
- System-backed Capacity Import (SBI)
- Generator-backed Capacity Import (GBI)

Post-Implementation Design

The IESO is aiming to enable eligible variable generation resources to qualify and offer their resource's capacity beginning with the 2025 Capacity Auction. The following sections will outline the design details of this enhancement by category and the overall participation model applicable to VG resources in the Capacity Auction.

1.1 Eligibility

Variable generation facilities must meet the existing definition of a *capacity auction eligible generation resource* to qualify for and participate in the annual Capacity Auction.

capacity auction eligible generation resource means a non-committed resource that is associated with a generation facility, which is also a connected facility at the commencement of the capacity qualification process for a given capacity auction, and which is registered as dispatchable with the IESO prior to the obligation period in accordance with the timelines specified in the applicable market manual;

For additional clarity, Capacity Auction eligible resources cannot hold a capacity obligation and a commitment under an IESO long- or medium-term RFP or bridging extension for the same period. Capacity Auction eligible resources can, however, hold a capacity obligation during the IESO long- or medium-term RFP forward period.

1.2 Obligation Periods and Availability Windows

There will be no change to the existing Capacity Auction obligation periods or availability windows for variable generation resources.

1.3 Capacity Qualification

Capacity qualification methodologies are determined based on industry best practices and stakeholder consultations for each resource type eligible to participate in the Capacity Auction. The capacity qualification methodology for VG resources aligns with the IESO's system planning processes and the methodology used in recent procurements within the IESO's Resource Adequacy Framework.

It should be noted that resources with a nameplate capacity of 1 MW or greater can submit capacity qualification requests, however, all Capacity Auction Resources must have a minimum unforced capacity (UCAP) value of 1 MW to offer into the auction.

The approach to qualifying capacity for all resources, including variable generation, is generalized as follows:

UCAP = ICAP x Availability De-Rating Factor x Performance Adjustment Factor

Where:

- UCAP (unforced capacity) is the maximum amount, in MW, that a resource is qualified to offer into the Capacity Auction as an output of the capacity qualification process.
- ICAP (installed capacity, in the context of the Capacity Auction) should reflect the maximum expected capability, in MWs, of a resource given ambient temperature and operating conditions, as specified by the Capacity Auction Participant.
- Availability De-Rating Factor (ADF) is based on a resource's historical contribution and availability data.
- Performance Adjustment Factor (PAF) is the resource-specific de-rate applicable to an individual resource, as based on assessed performance during a previous seasonal capacity auction capacity test.

The IESO will determine the maximum amount of UCAP that any variable generation resource can offer into the Capacity Auction for one or both of the summer and winter obligation periods using the assessment criteria detailed below.

Submitted Installed Capacity (ICAP)

Submitted ICAP values for VG resources will be limited to the Demonstrated Performance (MW) amount for each resource, as assessed by the IESO. Submitted ICAP values for VG resources must be accompanied by one hour of historical allocated quantity of energy injected (AQEI) data. This data will be used to demonstrate the resource's maximum seasonal capability.

A VG resource's submitted ICAP must be less than or equal to its Demonstrated Performance, and will be determined as follows:

Demonstrated Performance (MW) = The sum of twelve consecutive 5-minute intervals of AQEI data within the availability window of the most recent applicable seasonal obligation period for which data is available

Where:

• AQEI is the Allocated Quantity of Energy Injected, in MWh, as determined by IESO metering data.

Variable generation resources with insufficient historical data will be limited to the lower of their nameplate capacity or the most recent IESO-contracted ICAP value for that resource.

Availability De-Rating Factor

The Availability De-Rating Factor reflects a resource's historical contribution and availability. As part of the capacity qualification assessment, Availability De-Rating Factors will be calculated for capacity auction eligible variable generation resources based on availability and production data coinciding with the Top 200 Hours of Ontario Demand per season, over the most recent five years for which data is available. The Top 200 Hours of Ontario Demand per season approach is used for other CA resources and is expected to capture an accurate reflection of a variable generation resource's contributions and availability during hours of system peak demand.

The ADF is calculated as shown below:

For Variable Generation Resources with 5 Years of Historical Data

For wind and solar:

Availability De-Rating Factor = Median of [(AQEI + Foregone Energy) / MAPC] in Top 200 Hours of Ontario Demand per season for the last 5 years

For Variable Generation Resources with Insufficient Historical Data

For wind:

Availability De-Rating Factor = Median of [(Zonal total AQEI + Zonal total Foregone Energy of the fleet) / MAPC] in Top 200 Hours of Ontario Demand per season for the last 5 years

For solar:

Availability De-Rating Factor = Median of [Fleet-wide zonal simulated solar capacity factor data] in Top 200 Hours of Ontario Demand per season

Where:

- AQEI is the Allocated Quantity of Energy Injected, in MWh, as determined by IESO metering data.
- Foregone Energy is the estimated amount of electricity, in MWh, that would have been generated and delivered by a resource, if not for actions or directives from the IESO that curtailed or limited generation due to transmission constraints.
- MAPC is the Maximum Active Power Capability, in MW, under any conditions without station service being supplied by the unit.

Performance Adjustment Factor (PAF)

The PAF is intended to encourage participants to submit accurate ICAP values that can be verified during a capacity auction capacity test. Capacity variable generation resources will not be subject to a capacity auction capacity test for either seasonal obligation period. Therefore, all variable generation resources will have a PAF equal to 1.

1.4 Capacity Auction Testing

Due to the uncertainty in wind/solar energy available at any particular moment, variable generators are unable to complete the self-scheduled capacity auction capacity test under the current requirements. Therefore, capacity variable generation resources will not be subject to a capacity auction capacity test and will instead be subject to the results of a historical performance assessment when submitting ICAP values in capacity qualification.

Capacity variable generation resources will not be subject to the capacity auction dispatch test.

1.5 Settlement

No new charge types (CT) are required for VG participation in the Capacity Auction. Some settlement charge types applicable to capacity generation resources will be updated to ensure compatibility with capacity variable generation resources.

Charge Types Applicable to VG Resources

Descriptions of all charge types applicable to VG resources and the anticipated updates relevant to the inclusion of capacity variable generation resources are listed below.

CT 1314 Capacity Obligation – Availability Payment

The Capacity Obligation Availability Payment is disbursed to all Capacity Market Participants who hold a capacity obligation. This payment is applicable for every business day of the obligation period and is based on the obligation amount (MWs) of each individual resource.

No changes will be made to this charge type.

CT 1315 Capacity Obligation – Availability Charge

The Capacity Obligation Availability Charge is applicable to all Capacity Market Participants who hold a capacity obligation. This charge is collected from all Capacity Market Participants who fail to submit and maintain energy bids/offers that are greater than or equal to their capacity obligation(s) for settlement hours within the availability window in accordance with the applicable market manual.

This charge will be calculated and applied to capacity auction variable generation resources as it is applied to all other Capacity Auction Resources.

CT 1319 Capacity Obligation – Buy-Out Charge

The Capacity Obligation Buy-Out Charge is applicable to all Capacity Market Participants or Capacity Auction Participants who, upon the IESO's acceptance, elect to buy out of all, or a portion of, their capacity obligation in accordance with the applicable market manual.

No changes will be made to this charge type.

CT 1324 Capacity Obligation – Availability Charge True-Up Payment

The Capacity Obligation Availability Charge True-Up Payment is applicable to all Capacity Market Participants who hold a capacity obligation. Capacity Market Participants are compensated for capacity made available in excess of their capacity obligation through energy market bids/offers. The true-up payment for the obligation period is limited to the total dollar value of charges that the relevant Capacity Auction Resource incurred through CT 1315 and/or CT 1323 during the applicable obligation period.

No changes will be made to this charge type.

CT 1325 Capacity Obligation – Capacity Auction Charges True-Up Payment

The Capacity Obligation Capacity Auction Charges True-Up Payment is applicable to all Capacity Market Participants who hold a capacity obligation. This true-up ensures that total charges incurred in an obligation period do not exceed availability payments in an obligation period.

No changes will be made to this charge type.

Charge Types Not Applicable to VG Resources

The charge types listed below will not be applicable to capacity variable generation resources.

CT 1316 Capacity Obligation – Administration Charge

This charge is applicable to HDR and GBI resources only.

CT 1317 Capacity Obligation – Dispatch Charge

This charge is applicable to HDR – C&I resources only.

CT 1318 Capacity Obligation – Capacity Charge

This charge is applicable to resources that are subject to the capacity auction capacity test.

CT 1320 Capacity Obligation – Dispatch Test Payment and Emergency Activation Payment

This charge is applicable to HDR resources only.

CT 1321 Capacity Obligation – Capacity Import Call Failure Charge

This charge is applicable to GBI resources only.

CT 1322 Capacity Obligation – Capacity Deficiency Charge

This charge is applicable to GBI resources only.

CT 1323 Capacity Obligation – In-Period Cleared UCAP Adjustment Charge

This charge is applicable to HDR resources only.

Market Rule/Market Manual Impacts

Changes will be required to be made to the following Market Rules and Market Manuals:

- Market Rules, Chapter 0.7 s. 18, 19
- Market Rules, Chapter 0.9 s. 3, 4
- Market Rules, Chapter 0.11
- Market Manual 0.5.5: IESO-Administered Markets Settlement Amounts s. 3.4

- IESO Charge Types and Equations
- Market Manual 0.12: Capacity Auctions

Note: The documents referenced in this section are based on the recently approved Market Renewal Program (MRP) Final Alignment versions of the Market Rules and Market Manuals.

Next Steps

For these changes to be in effect for the 2025 Capacity Auction (expected to be held in November 2025), amendments need to be made to the above-noted market rules/manuals (as applicable). Stakeholders will have an opportunity to review the proposed amendments and provide feedback, as per the IESO's market rule/manual amendment process, and timing will be communicated via the Capacity Auction Enhancements engagement. Pending stakeholder feedback, the IESO will aim to implement these changes ahead of the 2025 Capacity Auction.