Capacity Auction Design Memo 10.1

Engagement Topic: Performance Adjustment Factor

Engagement Status: Complete

Date: April 2023

Objectives of the Capacity Auction

Key objectives of the Capacity Auction include:

- Procuring capacity in a transparent, open, and fair manner, with all resource types treated as equal as possible;

- Ensuring that the capacity product for each type of resource secured through the auction contributes equally towards meeting resource adequacy needs, while considering the unique characteristics of the underlying technology. The capacity product secured through the auction is the availability of capacity (MWs) during the obligation period. This availability is represented by offers and bids in the energy market that reflect a resource's capability during that time.

- The demonstrated performance capability and average availability of a resource should be reflected in the qualified capacity methodology, to ensure only reliable capacity is procured through the auction. This is important for power system reliability as the IESO plans generation and transmission outage schedules and prepares system operations based on capacity that can be relied upon to deliver in real-time.

To help meet these objectives, a performance adjustment factor (PAF) has been designed that will help derive the maximum capacity value that a resource can be qualified to offer into the Capacity Auction.

The PAF is intended to aid the IESO in acquiring capacity that can be proven to be delivered through historical performance data. The design also encourages participants to submit accurate installed capacity (ICAP) values which can be verified during a Capacity Auction capacity test. If, during the capacity test period, resources are unable to demonstrate that they are capable of delivering their cleared ICAP, within a resource-specific performance threshold, then a performance adjustment factor is applied. However, the impact of the performance adjustment factor can be avoided in a future auction, if the resource demonstrates that it is able to fully provide its cleared ICAP in a capacity test.

Existing Design

Participants enroll capacity into an auction during the pre-auction period, which can then be offered into the auction without undergoing capacity qualification. Enrolled capacity is defined as the amount of capacity a participant is willing to provide from a specific resource and usually represents a resource's installed capacity (ICAP). A resource's ICAP may not necessarily reflect its contribution to resource adequacy needs, which is typically defined by the amount of capacity it can be expected to provide, on average, during a pre-defined window of hours in the obligation period.

Performance Adjustment Factor Design

Each resource will undergo a pre-auction capacity qualification process to determine an unforced capacity (UCAP) value that can be offered into the auction. Capacity qualification methodologies have been determined based on industry best practices and stakeholder consultations for each resource type eligible to participate in the auction. As part of capacity qualification, a seasonal PAF will be calculated using capacity test data from the most recent applicable seasonal obligation period's capacity test.

The approach to qualifying capacity for all resources is generalized as follows:

UCAP (MW) = ICAP (MW) x Availability De-Rating Factor[1] x PAF

Where:

- PAF is the Performance Adjustment Factor, applicable to an individual resource, as based on assessed performance during a previous seasonal capacity auction capacity test.

A resource's PAF will be calculated in the pre-auction period for each obligation period, prior to the annual Capacity Auction. The PAF will be based on performance during the most recent applicable seasonal obligation period's capacity auction capacity test, subject to the resource-specific performance thresholds outlined in Memo 6.3 – Performance Thresholds.

If a resource passed the capacity auction capacity test or was not subject to a capacity auction capacity test in the relevant obligation period being used to assess the PAF, the PAF will equal 1. This will result in no impact to the UCAP calculation. ☐

If a resource failed the capacity auction capacity test, the PAF will be calculated for the capacity qualification methodology based on three data inputs:

  A. The cleared ICAP the resource was required to deliver to during the previous applicable seasonal obligation period's capacity auction test

  B. The capacity the resource was assessed by the IESO to have delivered during the previous applicable seasonal obligation period's capacity auction test

  C. The submitted ICAP for the seasonal obligation period for which the resource's capacity is being qualified

Based on these data inputs, the PAF will be calculated and applied in one of three different ways, as described in the scenarios below. These scenarios assume that the resource has failed the

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[1] See: Design Memo 1.1 - Capacity Qualification (Non-HDR) & Design Memo 5.2 - HDR Capacity Qualification

previous applicable capacity auction test by failing to deliver within the resource-specific performance threshold of its ICAP value.

Scenario 1 - (Input C <= Input B):

If the submitted ICAP in the current auction is less than or equal to the capacity delivered during the most recent applicable seasonal obligation period's capacity test then a PAF with a value of one (1) is applied, resulting in no impact to the UCAP calculation.

PAF = 1

Rationale: The PAF with a value of one is applied because the participant is submitting an ICAP value that does not exceed the resource's maximum capability as demonstrated in the applicable capacity test.

Scenario 2 - (Input C >= Input A):

If the submitted ICAP in the current auction is greater than or equal to the cleared ICAP from the last capacity auction, then a PAF is calculated using results from the most recent applicable seasonal obligation period capacity test.

PAF = Input B / Input A

Rationale: A PAF is applied because the participant is submitting an ICAP value that exceeds the resource's maximum capability as demonstrated in the previous applicable capacity test.

Scenario 3 - (Input B < Input C <Input A):

If the submitted ICAP in the current auction is greater than the capacity delivered during the most recent seasonal capacity test but less than the ICAP cleared in the last auction, then the PAF is calculated based on the formula described below:

PAF = Input B / Input C

Rationale: A PAF is applied because the participant is submitting an ICAP value that exceeds the resource's maximum capability as demonstrated in the most recent applicable capacity test. The formula for scenario 3 differs from scenario 2 in that it recognizes that the PAF applied should not result in a UCAP value less than the resource's delivered capacity during the previous applicable seasonal obligation period's capacity test.

PAF Cap

The PAF will be capped at 0.75 in the following situations:

- If, based on capacity test performance data, the PAF calculation would result in a PAF of less than 0.75

- If a capacity market participant fails to notify the IESO of the specific day, hours and dispatch intervals for which they wish their performance to be assessed or fails to submit the measurement data for a self-scheduled capacity auction test (for a virtual HDR resource) the PAF will be 0.75 and delivered performance will be assumed to be 0 MW

PAF Implementation Timing

The IESO will use capacity test data from the previous summer obligation period to determine a PAF for the summer obligation period of the current auction. Similarly, capacity test data to determine PAFs for winter obligation periods will be sourced from the most recently completed winter obligation period.

For capacity test data from the previous summer obligation period to be available for use in determining a PAF for the following summer obligation period, the capacity test for the summer obligation period will need to be completed before July 31 of the applicable summer obligation period. If the IESO is unable to schedule the capacity test by July 31 of the auction year, then under the current data submission timelines for the HDR resource, results from the capacity test will not be available until after the qualification submission window for the next capacity auction has opened.

Therefore, if the test is conducted after July 31, the IESO will not apply a PAF to the resource for the summer obligation period as part of the summer obligation period's capacity qualification process for the following auction. There is no time limitation to complete the capacity test for the winter obligation period.

The timelines have no bearing on the application of any non-performance charges.

Treatment of the PAF in HDR Measurement Data Audit Results

PAFs for HDR resources will not be reassessed based on the results of an HDR measurement data audit.

Example and Implementation of the revised PAF mechanism

The table below shows the data inputs that will be used to determine the PAF and the historical obligation periods from which that data will be sourced.

	2023 Capacity Auction		2024 Capacity Auction		2025 Capacity Auction	
Obligation Period	Summer: May to October 2024	Winter: November 2024 to April 2025	Summer: May to October 2025	Winter: November 2025 to April 2026	Summer: May to October 2026	Winter: November 2026 to April 2027
PAF Data Inputs	N/A	N/A	Test performance from 2024 summer obligation period	N/A	Test performance from 2025 summer obligation period	Test performance from 2024/25 winter obligation
			Cleared ICAP from 2024 summer obligation period		Cleared ICAP from 2024 summer obligation period	Cleared ICAP from 2024/25 winter obligation period

	2023 Capacity Auction		2024 Capacity Auction		2025 Capacity Auction	
Obligation Period	Summer: May to October 2024	Winter: November 2024 to April 2025	Summer: May to October 2025	Winter: November 2025 to April 2026	Summer: May to October 2026	Winter: November 2026 to April 2027
			Submitted ICAP for 2025 summer Obligation period		Submitted ICAP for 2026 summer obligation period	Submitted ICAP for 2026/27 winter obligation period

The example in the next section demonstrates how the revised PAF mechanism will be used to determine the PAF for a resource.

PAF Calculation Example

To demonstrate the PAF design mechanism, let us assume the following:

Resource's cleared ICAP during Dec 2023 auction: 100 MW

Summer 2024 Obligation Period Capacity Test Performance: 80 MW

Winter 2024/25 Obligation Period Capacity Test Performance: 80 MW

As the above assumptions indicate, a PAF will be applied in a future capacity qualification process because the resource would have failed the capacity test by not delivering the cleared ICAP within the acceptable performance thresholds.

The following demonstrates how the PAF will be calculated for a capacity resource under each of the three scenarios described in section 'Final Performance Adjustment Factor Design' of this document.

1. If the resource submits an ICAP value of 75 MW for the summer obligation period during the capacity qualification process of the 2024 auction, a PAF with a value of one (1) is applied because the participant is submitting an ICAP value that does not exceed the resource's maximum capability as demonstrated in the previous applicable capacity test. This means that UCAP calculations will not be impacted by the PAF.

2. If the resource submits an ICAP value of 120 MW for the winter obligation period during the capacity qualification process of the 2025 auction, the PAF will be calculated as follows because the submitted ICAP value is higher than the previous applicable cleared ICAP value of 100 MW.

   PAF = 80 / 100 = 0.8 (80%)

3. If the resource submits an ICAP value of 95 MW for the summer obligation period during the capacity qualification process of the 2024 auction, the PAF calculation will use the summer 2024 capacity test delivered capacity and the submitted ICAP value for the 2024 capacity auction to determine the relevant PAF.

   PAF = 80 / 95 = 0.8421 (84.2%)