Capacity Auction Design Memo 10.0

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Engagement Topic: Performance Adjustment Factor

Engagement Status: Ongoing

Date: February 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; and

- 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 via the Capacity Auction 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 submitted ICAP then a performance adjustment factor is applied. If in future test periods, the resource demonstrates that it is able to fully provide its submitted ICAP, then the performance adjustment factor will not apply in the next auction.

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.

Proposed Performance Adjustment Factor Design

The IESO proposes to use the most recent historical capacity test data to determine a PAF in each resource's capacity qualification methodology.

This PAF will be used as an additional component in determining the resource's UCAP value in the pre-auction qualification process. With the addition of the PAF, the approach to qualifying capacity for all resources is generalized as follows:

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

Where:

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

Including the PAF in the qualification process allows the IESO to derive the UCAP value that accounts for the performance capability of the resource as demonstrated during a capacity test in a previous obligation period. This will provide the IESO more certainty that the capacity being offered into the auction is reliable.

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 capacity auction capacity test, and will always be calculated pursuant to the performance assessment and settlement criteria detailed in the [Capacity Auction Design Document](#) that was posted on the IESO Resource Adequacy Engagement webpage on February 24, 2022.

As an example, let us assume that a virtual C&I HDR resource qualifies and clears 10 MW (UCAP) during the 2023 capacity auction, with a corresponding cleared ICAP value of 10 MW (No PAF has been applied to the resource during 2023 capacity auction qualification process). When a capacity test is conducted in the 2024 summer obligation period, the HDR resource is expected to deliver its cleared ICAP value within the prescribed performance threshold (10% in this example). Now assume that the resource delivers only 8 MW during its capacity test. The PAF_{Summer} for this resource will be calculated as,

$PAF_{Summer} = 1 − (8MW / 10MW) = 1 - 0.8 = 0.2$ (20%)

Similarly, a capacity test is conducted in the 2024/25 winter obligation period, and the resource delivers only 8.5 MW during its capacity test. The PAF_{Winter} for this resource will be calculated as,

$PAF_{Winter} = 1 − (8.5MW / 10MW) = 1 - 0.85 = 0.15$ (15%)

Therefore, if the resource offers ICAP of 100 MW into a subsequent Capacity Auction, for summer as well as winter obligation period, their resulting $UCAP_{Summer}$ and $UCAP_{Winter}$ will be,

$$\text{UCAP}_{\text{Summer}} = \text{ICAP} \times (1 - \text{PAF}_{\text{Summer}}) = 100\text{MW} \times (1 - 0.2) = 80\text{MW}$$
$$\text{UCAP}_{\text{Winter}} = \text{ICAP} \times (1 - \text{PAF}_{\text{Winter}}) = 100\text{MW} \times (1 - 0.15) = 85\text{MW}$$

PAF Implementation Timing – Updated Based on Stakeholder Feedback

Under the previously proposed PAF design, the PAF was proposed to be applied to all resources beginning with the 2025 Capacity Auction using capacity test activation data from December 2023 auction's summer obligation period of May to October 2024 and the winter obligation period of November 2024 to April 2025. Subsequent capacity qualification processes were proposed to be conducted according to the same time lags. The reason for the 2-year time lag is because the capacity qualification process is conducted once in the pre-auction period for each auction for both the summer and winter obligation periods. The capacity qualification process occurs part way through the previous auction's winter obligation period so the capacity test, data submissions and calculation of PAF results will not have been completed yet. Figure 1 below explains the timelines and overlap between obligation periods and the qualification process:
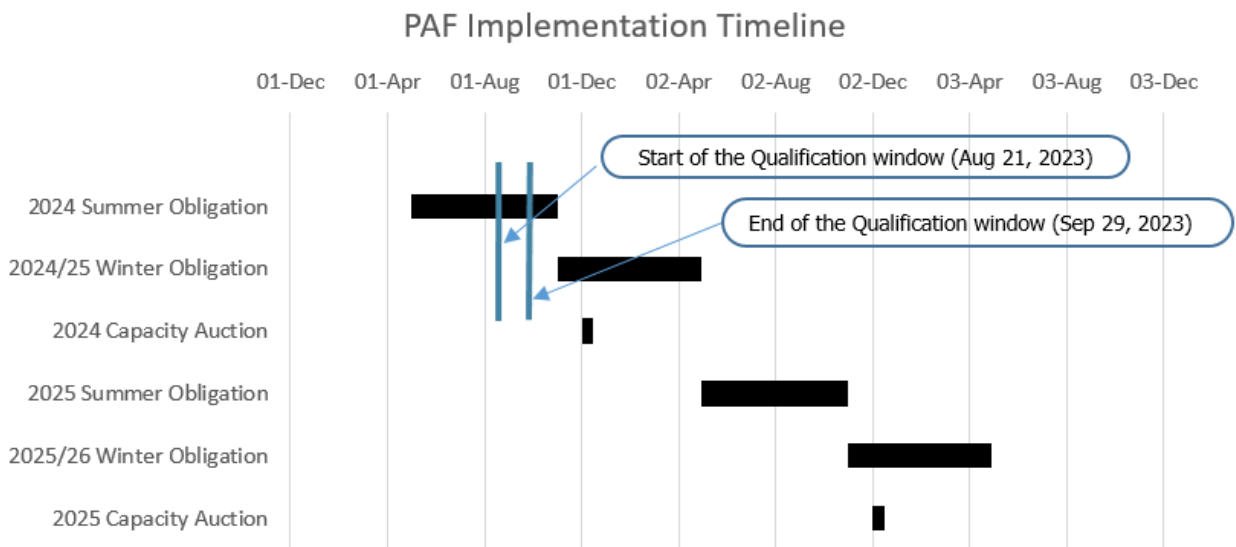

Figure 1: Capacity Auction timeline and overlap with the qualification process

During the January 26, 2023, engagement, the IESO informed participants that IESO will issue the notice to conduct the capacity test in the first two months of the obligation period, when possible. This modification to the Testing Framework design enhancement will allow the IESO to collect and process the test data submitted by the HDR resource in time for the test results from the previous summer obligation period to be used in pre-auction qualification process of the next auction.

The IESO proposes to use capacity test activation data from the previous summer obligation period to determine a PAF for the summer obligation period. Capacity test activation data to determine PAFs for winter obligation periods will have to be sourced from the most recently completed winter obligation period. This modification to the PAF design and implementation timelines will help to address stakeholder concerns that the PAF is applied in a subsequent auction to a resource that could be significantly different than the one that the PAF is based on.

For capacity test activation 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. If the test is conducted after July 31, 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 for the next capacity auction has opened.

Therefore, in the rare event that the test is conducted after July 31, the IESO will use a fleet average for the resource type to determine a PAF that will be applied to the resource as part of the capacity qualification process. There is no time limitation to complete the capacity test for the winter obligation period since the capacity test activation data will be sourced from the most recently completed winter obligation period.

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

Example and Implementation of the revised PAF mechanism

The table below shows how the PAF will be implemented under the revised PAF mechanism.

	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 Qualification Inputs	N/A	N/A	Test performance from 2024 summer obligation	N/A	Test performance from 2025 summer obligation	Test performance from 2024/25 winter obligation

The examples below demonstrate how the revised PAF mechanism will be applied in an example scenario using an HDR resource, including how an HDR resource can avoid a PAF in future capacity qualification.

<u>Example Scenario Assumptions for an HDR Resource</u>

Cleared ICAP (for all examples): 100 MW

Summer 2024 Obligation Period Capacity Test Performance: 80 MW

Winter 2024/25 Obligation Period Capacity Test Performance: 85 MW

Summer 2025 Obligation Period Capacity Test Performance: 100 MW

Winter 2025/26 Obligation Period Capacity Test Performance: 100 MW

<u>Example Scenario: 2024 Capacity Auction Capacity Qualification Process</u>

An HDR resource registers for the 2024 Capacity Auction with an ICAP of 100 MW. During the pre-auction capacity qualification process, a PAF_{Summer} is calculated based on capacity test performance data from the summer 2024 obligation period. The HDR resource's PAF_{Summer} is calculated as follows:

$PAF_{Summer} = 1 - (80MW / 100MW) = 1 - 0.8 = 0.2$ (20%)

Based on this PAF_{Summer}, the HDR resource's $UCAP_{Summer}$ is calculated as follows:

$$UCAP_{Summer} = ICAP \times (1 - PAF_{Summer}) = 100MW \times (1 - 0.2) = 80MW$$

Therefore, the HDR resources' qualified capacity that can be offered into the summer 2025 obligation period is 80 MW.

No PAF_{Winter} will be calculated for the winter 2025/26 obligation period because the winter 2024/25 obligation period will not have been completed yet and data to determine a PAF_{Winter} cannot be sourced from an earlier winter obligation period prior to when the 2023 Capacity Auction enhancements will be implemented.

Example Scenario: 2025 Capacity Auction Capacity Qualification Process

An HDR resource registers for the 2025 Capacity Auction with an ICAP of 100 MW. During the pre-auction capacity qualification process, a PAF_{Summer} is calculated based on capacity test performance data from the summer 2025 obligation period. The HDR resource's PAF_{Summer} is calculated as follows:

$PAF_{Summer} = 1 - (100MW / 100MW) = 1 - 1 = 0$ (no PAF applied)

Based on this PAF_{Summer}, the HDR resource's $UCAP_{Summer}$ is calculated as follows:

$$UCAP_{Summer} = ICAP \times (1 - PAF_{Summer}) = 100MW \times (1 - 0) = 100 \ MW$$

Therefore, the HDR resources' qualified capacity that can be offered into the summer 2026 obligation period is 100 MW.

A PAF_{Winter} is calculated based on capacity test performance data from the winter 2024/25 obligation period. The HDR resource's PAF_{Winter} is calculated as follows:

$PAF_{Winter} = 1 - (100MW / 100MW) = 1 - 1 = 0$ (no PAF applied)

Based on this PAF_{Winter}, the HDR resource's $UCAP_{Winter}$ is calculated as follows:

$$UCAP_{Winter} = ICAP \times (1 - PAF_{Winter}) = 100MW \times (1 - 0) = 100 \ MW$$

Therefore, the HDR resources' qualified capacity that can be offered into the winter 2026/27 obligation period is 100 MW.