

# Capacity Auction Design Memo 5.1

**Engagement Topic:** Capacity Qualification – HDR Resources

**Engagement Status:** Complete

**Date:** January 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 availability window of an obligation period. This availability is represented by offers and bids in the energy market that accurately reflect a resource's capability.
- 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.

To help meet these objectives a capacity qualification process for all resources will be used to derive an Unforced Capacity (UCAP) value that a resource can offer into the auction.

## Existing Design

All capacity market participants self-enroll capacity for each resource, including HDR resources, into an auction during the pre-auction period. 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 is not necessarily reflective of its contribution to resource adequacy needs, which is defined as the amount of capacity a resource can be expected to provide, on average, during a pre-defined window of peak hours in the obligation period.

## **Post-Implementation Design**

A capacity qualification process will be used in the pre-auction period starting with the 2023 capacity auction to derive the Unforced Capacity (UCAP) value that a resource can offer into the capacity auction.

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

$$\text{UCAP (MW)} = \text{ICAP (MW)} \times \text{Availability De-Rating Factor}$$

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 is based on a resource's historical data.

A resource-specific UCAP value will be determined during the capacity qualification process for each seasonal obligation period. The capacity auction participant can then choose to offer up to the resource's maximum summer and winter UCAP value into the Capacity Auction.

## **Submission of a Capacity Qualification Request**

Authorized capacity auction participants who wish to participate in a given capacity auction must complete the capacity qualification process for **each** potential capacity auction resource. Details of the process have been described in Design Memo 1.1 Capacity Qualification – Non-HDR

## **Capacity Qualification Assessment**

Based on the information provided by the participant as part of the capacity qualification request, the IESO will determine the maximum amount of UCAP that each capacity auction resource can offer into the capacity auction for one or both of the summer and winter obligation periods using the assessment criteria detailed below.

### **UCAP Assessment for HDR Resource**

The formula for determining the maximum UCAP for an HDR resource is as follows:

$$\text{UCAP (MW)} = \text{ICAP (MW)}$$

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.

There will be no availability de-rating factor applied in the pre-auction qualification of HDR resources. The IESO HDR participation model allows for HDR resources to remove their energy market bids for the day if they do not receive a standby notification prior to 7 am day-at-hand, therefore daily bid data is often incomplete and cannot be used to determine an availability de-rate for this resource type. The absence of an availability de-rate for HDRs does not support the objectives laid out above, and would represent an unacceptable level of unfairness across resource types. An alternative to this availability de-rate must be empirical and defensible, recognizing equivalency to other auction resource types.

In lieu of an availability de-rate, the IESO will apply an in-period UCAP adjustment based on an HDR resources' performance in the capacity auction capacity test, which will include a claw back of availability payments made for overstated capacity. This process is further described below.

### **In-Period UCAP Adjustment**

The IESO will use the performance from the capacity auction capacity test (detailed in the Design Memo 2.1: Testing Framework) to assess an HDR resource's ability to deliver to at least its capacity obligation (cleared UCAP), with no performance thresholds applied. If the HDR resource fails to deliver to at least its capacity obligation (cleared UCAP), the IESO will do the following to apply an in-period UCAP adjustment:

1. Effective within 2 business days of notifying the participant, revise the capacity obligation to the capacity value demonstrated in the capacity test;
2. Revoke any availability payments incurred for the portion of the capacity obligation that was not delivered in the capacity test through the application of a non-performance charge (UCAP adjustment charge)

For greater clarity, no floor or limit on the in-period adjustment will apply. The in-period UCAP adjustment charge will be equal to the availability payments received for the undelivered capacity obligation, less any availability charges incurred for that same capacity. For example, an HDR resource has a capacity obligation (cleared UCAP) of 10 MW and delivers 8 MW in a capacity test. The in-period UCAP adjustment will apply a charge to claw back any availability payments received for the 2 MW being removed from the obligation, less any availability charges that may have been incurred for that same 2 MW during the same period.

As the in-period adjustment will be applied based on the resource's delivered performance during a capacity auction capacity test, the assessment will be conducted based on the performance data submitted as part of that test. Per the data submission requirements of the capacity auction capacity test, the capacity market participant must notify the IESO of the specific day, hours and dispatch intervals for which they wish their performance to be assessed (within the five-day testing window). This must be done no later than the 6<sup>th</sup> business day before the end of the subsequent month following the testing window.

If the capacity market participant fails to meet these submission requirements, or fails to submit the measurement meter data file to the IESO (for virtual HDR resources), the resource will be assumed to have delivered 0 MW during the test. Consequently, the participant will be deemed to have forfeited the obligation MW amount for the entire obligation period. Any payments made

during the obligation period prior to the test will be clawed back and no further payments will be made to the participant including the testing month.

All offers/bids and availability/obligation performance assessments are determined on a single decimal point basis. In cases where, as a result of an in-period adjustment, the obligation of a resource falls below 1.0 MW, that resource will be deemed to have forfeited the obligation amount for the entire obligation period.

The capacity prudential support will be reassessed based on the revised capacity obligation. If the capacity prudential support obligation is revised downward due to an in-period UCAP adjustment, the IESO will refund the difference, at the participant’s request, after the IESO has received the payment for the in-period adjustment charge.

### Application of the in-period adjustment – Example

Assume that the capacity obligation (cleared UCAP) of an HDR resource during a summer obligation period is 10 MW. The HDR resource must deliver that full amount during the self-scheduled capacity test to avoid an in-period UCAP adjustment but the resource delivers only 8 MW.

As part of the assessment for the in-period adjustment for UCAP, the capacity obligation will be revised to 8 MW and a non-performance charge will be applied equal to the availability payments already made to the participant for the 2 MWs removed from the obligation (assume no availability charges were incurred). A separate assessment on the capacity test performance data, would also be performed to determine the application of a capacity charge (not shown in Table 1-1 below).

The calculation below demonstrates the application of an in-period UCAP adjustment charge in greater detail:

- Auction clearing price (2021) = 264.99\$/MW-day in summer
- Capacity obligation (cleared UCAP) = 10 MW
- Testing month: June (2nd month of summer obligation period) and assuming 22 business days in a month
- Delivered capacity in capacity test = 8 MW

**Table 1-1: Application of in-period UCAP adjustment charge**

Obligation Months (Summer)	Availability Payment	UCAP Adjustment Charge (20%)	Net Payment
<b>May</b>	\$ 58,297.80	-\$ 11,659.56	\$ 46,638.24
<b>June</b>	\$ 58,297.80	-\$ 11,659.56	\$ 46,638.24
<b>Total</b>	<b>\$ 116,595.6</b>	<b>-\$ 23,319.12</b>	<b>\$ 93,276.48</b>

If the resource incurred an availability charge on 2 MW not made available in the month of May, that availability charge would be subtracted from the UCAP adjustment charge. If an availability charge was applied on 4 MW not made available, the charge incurred for 2 of those MW would be subtracted from the UCAP adjustment charge.

The availability payments for the remainder of the obligation period will be based on the revised 8 MW capacity obligation, as shown in table 1-2.

**Table 1-2: Remaining availability payment for balance of the obligation period (based on 8 MW obligation)**

<b>Obligation Months (Summer)</b>	<b>Availability Payment</b>
<b>July</b>	\$ 46,638.24
<b>August</b>	\$ 46,638.24
<b>September</b>	\$ 46,638.24
<b>October</b>	\$ 46,638.24
<b>Total</b>	<b>\$ 186,552.96</b>