

New Rules for ICAP Market Participation–Expanding Capacity Eligibility and Tailored Availability Metric

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Presentation Outline

- **New Rules for Installed Capacity (“ICAP”) Market Participation**
- **Expanding Capacity Eligibility**
 - Overview
 - ICAP Market Qualifications and Requirements
 - ICAP Market Participation for Resources with Energy Duration Limitations
 - DMNC
 - Derating Factors
 - Bid/Schedule/Notify Changes
 - GADS Submission Changes
 - ICAP AMS Screen Changes
- **Tailored Availability Metric**
 - Derating Factor and Performance Factor calculation for various types of ICAP Supplier Resources
- **Additional References**

New Rules for ICAP Market Participation

- **This presentation will provide an overview of changes to the NYISO's Capacity Market due to the implementation of:**
 - Expanding Capacity Eligibility, and
 - Tailored Availability Metric
- **The new ICAP market rules will become effective on May 1, 2021 and will apply to ICAP Suppliers beginning with the 2021 Summer Capability Period**

Expanding Capacity Eligibility

Expanding Capacity Eligibility - Overview

- **Resources with Energy Duration Limitations (EDL)**
 - A Resource with an EDL is a Resource that has a daily run-time limitation such that it cannot provide Energy in each hour of a day
 - Resources with a daily run-time limitation will be subject to modified ICAP market participation rules that accommodate their capability
 - Resources with an EDL will be able to elect, on an annual basis, an Energy Duration Limitation that is consistent with their capability
 - A Resource with an EDL may elect a 2, 4, 6, or 8 hour duration
 - ICAP market payments will reflect the elected duration

Expanding Capacity Eligibility - Overview

- **New Terms applicable to Resources with Energy Duration Limitations:**
 - Duration Adjustment Factors
 - Peak Load Windows
 - Adjusted ICAP

Overview: Duration Adjustment Factor

	Incremental Penetration of Resources with EDLs	
	Less than 1000 MW	1000 MW and greater
Energy Duration Limitation (hours)	Duration Adjustment Factor (%)	Duration Adjustment Factor (%)
2	45	37.5
4	90	75
6	100	90
8	100	100

- Duration Adjustment Factor: The value of Installed Capacity, expressed as a percentage, for a Resource**
 - Each Energy Duration Limitation has a corresponding Duration Adjustment Factor
 - The Duration Adjustment Factor is a component of Adjusted ICAP, UCAP, and therefore capacity payment for the resource

Overview: Peak Load Window

- Peak Load Window: Tariff defined time windows during which Resources with Energy Duration Limitations are expected to be available
 - Obligations for Resources with Energy Duration Limitations are tied to the Peak Load Window
 - B/S/N obligation, DMNC test, Derating Factor calculation, etc.

<u>6- hour Peak Load Window</u>	
Summer Capability Period	Winter Capability Period
HB 13 through HB 18	HB 16 through HB 21

<u>8- hour Peak Load Window</u>	
Summer Capability Period	Winter Capability Period
HB 12 through HB 19	HB 14 through HB 21

Overview: Peak Load Window

- NYISO Operations may shift the Peak Load Window for Resources with an Energy Duration Limitation
 - This does not affect the obligations of ICAP Suppliers that do not have an Energy Duration Limitation
- When the Peak Load Window is shifted for a given day:
 - An alert will be published to the NYISO Market & Operations web page at least four (4) hours before the close of the DAM
 - On the System Conditions page (<https://www.nyiso.com/system-conditions>), and
 - On the Real Time Events data section (<http://mis.nyiso.com/public/>)
 - This alert serves as NYISO's instruction to shift the day's offer window for Resources with Energy Duration Limitations (B/S/N obligation, see section 4.8.1 of ICAP Manual)
 - An email will also be sent to the contact for each Resource with an Energy Duration Limitation in the NYISO Market Information System (MIS)

Overview: Adjusted ICAP

- Adjusted ICAP: The amount of ICAP a Resource has available, taking into account its applicable Duration Adjustment Factor

$$\text{Adjusted ICAP} = \text{ICAP} * \text{Duration Adjustment Factor}$$


$$\text{ICAP} = \text{Min}(\text{CRIS}, \text{DMNC})$$

$$\text{UCAP} = \text{Adjusted ICAP} * (1 - \text{Derating Factor})$$

ICAP Market Qualifications

- Satisfaction of all registration requirements, including an effective Interconnection Agreement that allows wholesale market participation
- Resources must be electrically located within the NYCA to be eligible to elect an Energy Duration Limitation
- All Special Case Resources will have a 4 hour duration requirement and will be compensated commensurate with other four hour Resources*
- Intermittent Power Resources (Wind, Solar, RoR Hydro) are not eligible for an Energy Duration Limitation
- Minimum injection capability of 1 MW for all resources, excluding ESRs where the minimum injection capability is 0.1 MW

* ICAP Manual, Section 4.12.2

ICAP Market Qualifications and Requirements

- Resources with an Energy Duration Limitation must elect an Energy Duration Limitation when they register for wholesale market participation
 - If a Resource with an Energy Duration Limitation wishes to change its elected Energy Duration Limitation, it must inform the ISO by August 1, as specified in the ICAP Event Calendar, to be effective at the beginning of the following Capability Year
 - If an election is received by the NYISO after August 1, as specified in the ICAP Event Calendar, the election will not be effective
- A request to change an Energy Duration Limitation must include the following information:
 - Generator name and PTID
 - Duration election
 - Technical basis of the resource's daily run-time limitation
- The request must be provided in writing and must be received via electronic mail at Customer_Registration@nyiso.com and ICAP_Info@nyiso.com

ICAP Manual, Section 4.1.1,
ICAP Manual Attachment M

ICAP Market Participation: DMNC

- Demonstrated Maximum Net Capacity (DMNC) or equivalent testing:
- Initial DMNC: A new Resource with an Energy Duration Limitation must sustain maximum net output, during the applicable Peak Load Window :
 - For the number of hours that correspond to its elected Energy Duration Limitation, or
 - For “out-of-period” tests, DMNC or equivalent data must be from the applicable Peak Load Window for the Capability Period for which the test is effective
- For each Capability Period following its initial registration, Resources with an EDL should perform a DMNC test during the applicable Peak Load Window, for a minimum of either:
 - (i) Its elected Energy Duration Limitation or
 - (ii) The duration required by its technology type outlined in *ICAP Manual*/Section 4.2.2.1

[ICAP Manual, Section 4.2.1, 4.2.2.1, 4.2.2.2](#)

ICAP Market Participation: Derating Factors

- **Derating Factor calculations differ by resource type**
 - **The Derating Factor for traditional resources will continue to be based on the GADS/EFORd methodology**
 - **The derating factor will be measured over the applicable Peak Load Window for the applicable months**
 - **Activity that occurs outside of the Peak Load Window will not affect the Derating Factor (including startup failures and outages)**
 - **The Unavailability Factor calculation will be used for ESRs**
 - **Derating Factor will be measured in real time over the applicable Peak Load Window for applicable months**
 - **Activity that occurs outside of the applicable Peak Load Window will not affect the Derating Factor**

ICAP Market Participation: Bid, Schedule, Notify Obligations

- During the applicable Peak Load Window, and for the number of consecutive hours that correspond to its Energy Duration Limitation, or for the entire applicable Peak Load Window for an ESR, Resources with an EDL that have sold UCAP, must do one or more of the following, on a daily basis:
 - Bid [Offer] Energy in the DAM
 - Schedule a Bilateral Transaction

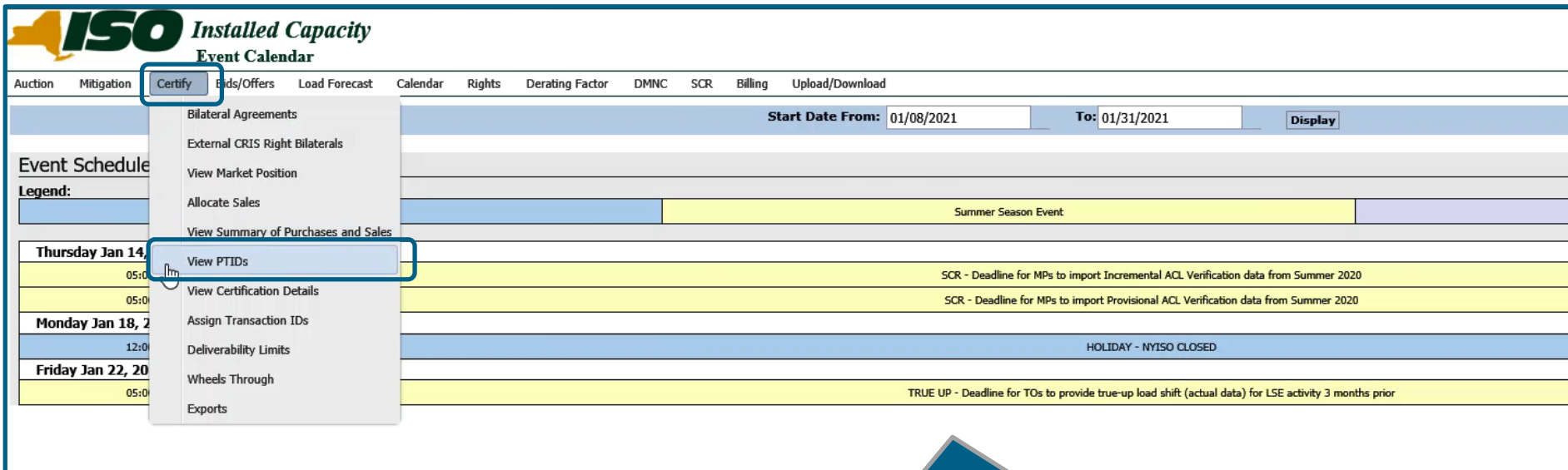
AND/OR

 - Notify the NYISO of any outage
- ESRs with an Energy Duration Limitation must also, on a daily basis and for each hour outside of the applicable Peak Load Window:
 - Bid, Schedule or Notify for the maximum of the ESR's negative ICAP Equivalent of UCAP sold or Lower Operating Limit
 - The amount bid, scheduled, and/or declared to be unavailable must reflect the Energy Storage Resource's entire injection operating range within the applicable Peak Load Window and withdrawal operating range outside of the applicable Peak Load Window
- The sum of the Resource's Bid, Bilateral Transaction MW, and outage must equal its ICAP Equivalent of UCAP sold

ICAP Market Participation: GADS Data Submission

- All resources will continue to submit complete year to date GADS data according to the NERC DRI and ICAP Manual Attachment K
- NYISO will now require Pumping (PO) and Synchronous Condensing (CO) to be submitted on the Event Card in addition to the Performance Card
 - Pumping Event Type: TU and Cause Code: 9345
 - Synchronous Condensing Type: CO and Cause Code: 9340

Expanding Capacity Eligibility: ICAP AMS Changes



ISO Installed Capacity Event Calendar

Auction Mitigation **Certify** Bids/Offers Load Forecast Calendar Rights Derating Factor DMNC SCR Billing Upload/Download

Start Date From: 01/08/2021 To: 01/31/2021 Display

Event Schedule

Legend:

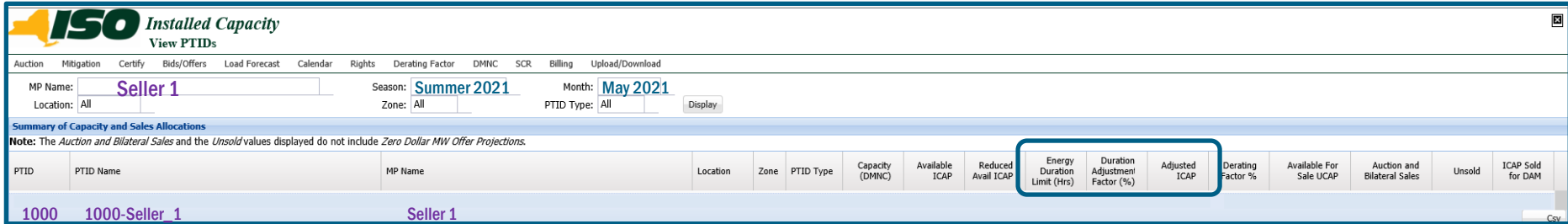
Date	Time	Event
Thursday Jan 14, 2021	05:00	Summer Season Event
Monday Jan 18, 2021	05:00	SCR - Deadline for MPs to import Incremental ACL Verification data from Summer 2020
Monday Jan 18, 2021	05:00	SCR - Deadline for MPs to import Provisional ACL Verification data from Summer 2020
Monday Jan 18, 2021	12:00	HOLIDAY - NYISO CLOSED
Friday Jan 22, 2021	05:00	TRUE UP - Deadline for TOs to provide true-up load shift (actual data) for LSE activity 3 months prior

View PTIDs

To view EDL specific information:

- Click the Certify tab from the ICAP AMS home screen menu
- Then select View PTIDs from the drop down menu

ICAP AMS Changes – New Fields



ISO Installed Capacity
View PTIDs

Auction Mitigation Certify Bids/Offers Load Forecast Calendar Rights Derating Factor DMNC SCR Billing Upload/Download

MP Name: Season: Month:
 Location: Zone: PTID Type:

Summary of Capacity and Sales Allocations
 Note: The Auction and Bilateral Sales and the Unsold values displayed do not include Zero Dollar MW Offer Projections.

PTID	PTID Name	MP Name	Location	Zone	PTID Type	Capacity (DMNC)	Available ICAP	Reduced Avail ICAP	Energy Duration Limit (Hrs)	Duration Adjustment Factor (%)	Adjusted ICAP	Derating Factor %	Available For Sale UCAP	Auction and Bilateral Sales	Unsold	ICAP Sold for DAM
1000	1000-Seller 1	Seller 1														

■ New Fields in ICAP AMS View PTIDs Screen:

- Energy Duration Limit (Hrs)
- Duration Adjustment Factor (%)
- Adjusted ICAP

ICAP AMS Changes – New Fields



Installed Capacity
View PTIDs

✖

Auction
Mitigation
Certify
Bids/Offers
Load Forecast
Calendar
Rights
Derating Factor
DMNC
SCR
Billing
Upload/Download

MP Name:

Location: All

Season:

Zone: All

Month:

PTID Type: All

Summary of Capacity and Sales Allocations

Note: The Auction and Bilateral Sales and the Unsold values displayed do not include Zero Dollar MW Offer Projections.

PTID	PTID Name	MP Name	Location	Zone	PTID Type	Capacity (DMNC)	Available ICAP	Reduced Avail ICAP	Energy Duration Limit (hrs)	Duration Adjustment Factor (%)	Adjusted ICAP	Derating Factor %	Available For Sale UCAP	Auction and Bilateral Sales	Unsold	ICAP Sold for DAM
1000	1000-Seller_1	Seller 1														

PTID Details

Current Selected PTID: 1000-Seller_1

Adjusted ICAP

Available For Sale UCAP

Auction and Bilateral Sales

DMNC MW:

CRIS MW:

CRIS %:

Available ICAP:

Wheel ICAP:

CRA ICAP:

UDR ICAP:

FCFS Reserved ICAP:

Reduced Available ICAP:

Reduced Available ICAP:

Duration Adjustment Factor:

Adjusted ICAP:

Click on the PTID row to reveal

- Adjusted ICAP Details for specific PTID

ICAP AMS Changes – New Fields



Installed Capacity
View PTIDs

✕

Auction Mitigation Certify Bids/Offers Load Forecast Calendar Rights Derating Factor DMNC SCR Billing Upload/Download

MP Name:

Season:

Month:

Location:

Zone:

PTID Type:

Summary of Capacity and Sales Allocations

Note: The Auction and Bilateral Sales and the Unsold values displayed do not include Zero Dollar MW Offer Projections.

PTID	PTID Name	MP Name	Location	Zone	PTID Type	Capacity (DMNC)	Available ICAP	Reduced Avail ICAP	Energy Duration Limit (Hrs)	Duration Adjustment Factor (%)	Adjusted ICAP	Derating Factor %	Available For Sale UCAP	Auction and Bilateral Sales	Unsold	ICAP Sold for DAM
1000	1000-Seller_1	Seller 1														

PTID Details

Current Selected PTID: 1000-Seller_1

Adjusted ICAP
Available For Sale UCAP
Auction and Bilateral Sales

Adjusted ICAP:

Derating Factor:

Available For Sale UCAP:

Click on the PTID row to reveal

- Available for Sale UCAP Details for specific PTID

Tailored Availability Metric

Tailored Availability Metric (TAM)

- **The purpose of TAM is to incentivize ICAP Suppliers to be available and perform during critical operating periods**
 - The implemented changes to the derating factors and performance factors more accurately reflects the reliability contribution of the Resource types affected
 - TAM changes impact the derating factor or performance factor calculations for all resources except Limited Control Run of River Hydro Resources and Special Case Resources

Availability-Based Resources

- **Traditional Availability-Based Resources**
 - NYISO will use the average of the previous two like Capability Period EFORds in determining an availability-based resource's UCAP calculation
 - Class average is used for new resources
 - Historic “like” data is used for resources that are in an ICAP ineligible state (*i.e.*, mothball and ICAP Ineligible Forced Outage)

Availability-Based Resources

- Summer UCAP Calculation

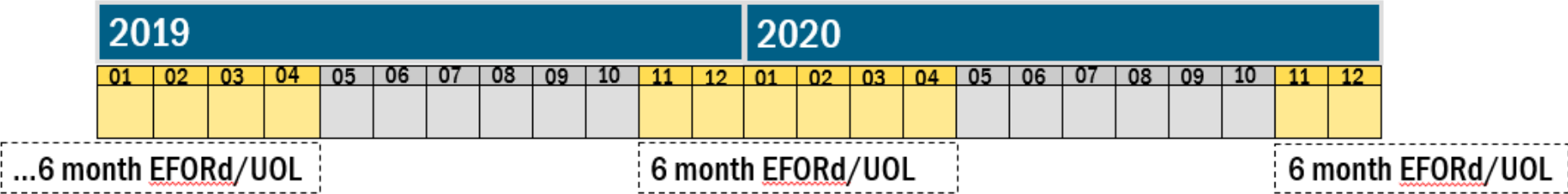
NYISO will use an average of two 6-month EFORd/UOL calculations to establish a Summer ICAP to UCAP derating factor (Avg EFORd, AEFORd_{summer})

2019												2020											
01	02	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12
				6 month EFORd/UOL										6 month EFORd/UOL									

Availability-Based Resources

- Winter UCAP Calculation

NYISO will use an average of two 6-month EFORd/UOL calculations to establish a Winter ICAP to UCAP derating factor (Avg EFORd, $AEFORd_{winter}$)



Availability-Based Resources

- **Energy Storage Resources (ESRs)**
 - NYISO will use an average of two 6-month Average Unavailability Factor (AUF) calculations to establish a Summer ICAP to UCAP Derating Factor (Avg AUF , AUF_{summer})
 - NYISO will use an average of two 6-month Average Unavailability Factor (AUF) calculations to establish a Winter ICAP to UCAP Derating Factor (Avg AUF, AUF_{winter})
 - **Class average for the technology class of the new Resource will be used**
 - **Historic “like” data is used for Resources that are in an ICAP ineligible state (*i.e.*, mothball and ICAP Ineligible Forced Outage)**

[ICAP Manual, Attachment J, Section 3.7](#)

Performance-based Resources

■ Wind, Solar, and Landfill Gas

- NYISO will apply the following set of weightings to production data to determine UCAP values
 - The applicable PLW is dependent on the penetration of Resources with Energy Duration Limitations
 - Once Resources with an EDL of 6-hours or less reach 1,000 MW of system-penetration the PLW window shifts from 6 hours and 8 hours and the window for wind and solar will also shift
- NYISO will conduct a reoccurring 4 year study to determine hourly capacity value weighting across the PLW

	Summer PLW		Winter PLW	
HB	6 Hr.	8 Hr.	6 Hr.	8 Hr.
12		5.00%		
13	12.50%	10.00%		
14	18.75%	17.5%		5.00%
15	18.75%	17.5%		5.00%
16	18.75%	17.5%	18.75%	17.5%
17	18.75%	17.5%	18.75%	17.5%
18	12.50%	10.00%	18.75%	17.5%
19		5.00%	18.75%	17.5%
20			12.50%	10.00%
21			12.50%	10.00%
Top 4 Hrs.	75%	75%	70%	70%

ICAP Manual, Attachment J, Section 3.4

Presentation Summary

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 - ICAP AMS Screen Changes
- **Tailored Availability Metric**
 - Derating Factor and Performance Factor calculation for various types of resources
- **Additional References**

Additional References

- **Market Services Tariff**
- **ICAP Manual, Section 4**
- **ICAP Manual Attachments J**
 - Unforced Capacity for Installed Capacity Suppliers
- **ICAP Manual Attachment M**
 - Procedure to Apply for a CLR, ELR or Ambient Condition-Dependent Classification and/or for an Energy Duration Limitation
- **ICAP Manual Attachment K**
 - Reportable Operating Data
- **ICAP AMS Users Guide, Section 4.6.1**
- **GADS Annual Training Presentation**

Questions?

For any future assistance, please contact NYISO Stakeholder Services at stakeholder_services@nyiso.com or by phone at (518) 356-6060