

# ESR Bidding Rules for ICAP Suppliers with an Energy Duration Limitation

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- Proposed Tariff Language
- Availability Calculation Example
- Next Steps
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# Background

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- Comprehensive Mitigation Review
- DER Participation Model
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Aligning Competitive Markets and New York State Clean Energy Objectives



- Enhancing Energy & Shortage Pricing
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- Enhancements to Resource Adequacy Models
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Improving Capacity Market Valuation



# Background

- As part of the NYISO's filing for the Distributed Energy Resource and Expanding Capacity Eligibility models, the NYISO proposed that ESR ICAP Suppliers with an Energy Duration Limitation have a DAM Bid/Schedule/Notify obligation (B/S/N) equal to the ICAP Equivalent of UCAP Sold (injection) during the Peak Load Window as ISO-Managed
- Subsequent to submitting this filing, FERC directed the NYISO to allow ESRs that are ICAP Suppliers to bid either ISO-Managed or Self-Managed in the DAM
- NYISO has since identified that when an ESR utilizes the ISO-Managed Energy Level bidding parameter, and enters the DAM with an Energy Level of 0 MWh, it could satisfactorily meet its B/S/N obligation, but not make the Energy backing the sold capacity available to the NYISO
- NYISO proposed to remedy this by requiring the ESR ICAP Supplier to B/S/N its full range (withdrawal to injection) as part of its obligations as an ICAP Supplier, which has since been accepted by FERC
  - See ICAPWG presentation dated 3/6/2020 and MC presentation dated 3/25/2020 for additional information
  - Note that the changes previously proposed applies to ESRs prior to the implementation of the Expanding Capacity Eligibility (ECE) ruleset

# Previous Presentations

- **July 14, 2020 ICAPWG – ESR Bidding Rules for ICAP Suppliers with an Energy Duration Limitation**
  - <https://www.nyiso.com/documents/20142/13769834/ESR%20Bidding%20for%20ICAP%20Suppliers%20with%20Energy%20Duration%20Limitations.pdf/>
- **June 2, 2020 ICAPWG – ESR Bidding Rules for ICAP Suppliers with an Energy Duration Limitation**
  - <https://www.nyiso.com/documents/20142/12891716/5%20ESR%20Bidding%20for%20ICAP%20Suppliers%20with%20E%20DL.pdf>
- **March 20, 2020 ICAPWG – ESR ICAP Manual Changes**
  - <https://www.nyiso.com/documents/20142/11452204/4%20ESR%20ICAP%20Manual%20Presentation.pdf>
- **March 6, 2020 ICAPWG – DAM Bidding Obligation for ESR ICAP Suppliers**
  - <https://www.nyiso.com/documents/20142/11214986/ESR%20Bidding%20for%20ICAP%20Suppliers.pdf>
- **February 10, 2020 ICAPWG – ESR ICAP Manual Changes**
  - <https://www.nyiso.com/documents/20142/10753567/ESR%20ICAP%20Manual%20Changes%20pres.pdf>
- **December 5, 2019 ICAPWG – ESR ICAP Manual Changes**
  - <https://www.nyiso.com/documents/20142/9622070/ESR%20ICAP%20Manual%20Changes%20presentation.pdf>
- **July 10, 2019 ICAPWG – ESR ICAP Manual Changes**
  - <https://www.nyiso.com/documents/20142/7503488/ESR%20ICAP%20Manual%20Changes%20presentation.pdf>

# Purpose of Today's Meeting

- **Review draft tariff revisions in MST Sec. 5.12.7 corresponding to NYISO's DAM bidding proposal for Energy Storage Resources with an Energy Duration Limitation (EDL)**
  - The Expanding Capacity Eligibility and the rules discussed today will become effective beginning with the Day-Ahead Market run for the operating day May 1, 2021
    - Note that the proposed changes to the B/S/N obligation for ESRs with an EDL will require changes to the MST and ICAP Manual
- **Review example corresponding to availability calculation for ESRs**
  - The change in DAM bidding obligation will influence the availability calculation for ESRs with an EDL
    - Note that the proposed changes to the availability calculation for ESRs with an EDL will require a change to the ICAP Manual

# Proposed Tariff Language



# MST 5.12.7

- **This section contains revisions to the bid, schedule, notify obligations for ESRs with an Energy Duration Limitation**
  - The revisions specify that ESRs with an Energy Duration Limitation to Bid or schedule a Bilateral for their full injection range for all hours during the Peak Load Window, or notify the NYISO of a derate, and to bid their full withdrawal range for all hours outside of the Peak Load Window, or notify the NYISO of a derate

# Availability Calculation Example

# Availability Calculation for ESRs

- **For ESRs with an EDL, the Unavailability Factor will be calculated using the following components:**
  - UOL Availability<sub>gi</sub>, Storage Availability<sub>gi</sub>, Energy Level Availability<sub>gi</sub>, and Interval Seconds<sub>gi</sub>
    - Interval Seconds<sub>gi</sub> capture all RTM intervals in respective Peak Load Window (PLW) for applicable month (excluding RTM intervals when Resource g is fully unavailable due to a planned or maintenance outage)
- **For ESRs without an EDL, the Unavailability Factor will be calculated using the following components, in accordance with Section 3.7 of Attachment J of the ICAP Manual:**
  - UOL Availability<sub>gi</sub>, LOL Availability<sub>gi</sub>, Storage Availability<sub>gi</sub>, Energy Level Availability<sub>gi</sub>, and Interval Seconds<sub>gi</sub>
    - Interval Seconds<sub>gi</sub> captures all RTM intervals for applicable month (excluding RTM intervals when Resource g is fully unavailable due to a planned or maintenance outage)

# Availability Calculation Examples

- **The following slides include two examples of the availability calculation for the following resource:**
  - The 4 hour Captured Energy (The 4ce)
    - Battery storage resource with four (4) hour Energy Duration Limitation
    - 40 MWh
    - 10 MW ICAP

# Example 1

- For a given day, assume the following:
  - The 4ce has a DAM schedule of 10MW each hour HB12 through HB15
  - In the RTM, The 4ce injects 10MW each hour HB12 through HB15, meeting its DAM schedule
    - Consequently, the resource is considered fully available for this day

**The 4ce**

HB	UOL Availability	Storage Availability	Energy Level	Total Available	Total Expected
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12	1	1	1	3600	3600
13	1	1	1	3600	3600
14	1	1	1	3600	3600
15	1	1	1	3600	3600
16	1	1	1	3600	3600
17	1	1	1	3600	3600
18	1	1	1	3600	3600
19	1	1	1	3600	3600
20					
21					
22					
23					
<b>The 4ce's Average Availability</b>				<b>100.0%</b>	

# Example 2

- For a given day, assume the following:
  - The 4ce has a DAM schedule of 10MW each hour HB16 through HB19
  - In the RTM, The 4ce injects 10MW each hour HB12 through HB15
    - Consequently, the resource is unavailable to meet its DAM schedule which is reflected in its Energy Level Availability

**The 4ce**

HB	UOL Availability	Storage Availability	Energy Level	Total Available	Total Expected
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12	1	1	1	3600	3600
13	1	1	1	3600	3600
14	1	1	1	3600	3600
15	1	1	1	3600	3600
16	1	1	0	0	3600
17	1	1	0	0	3600
18	1	1	0	0	3600
19	1	1	0	0	3600
20					
21					
22					
23					

The 4ce's Average Availability

50.0%

# Next Steps

# Next Steps

- **The NYISO is seeking to bring the proposed revisions to MST 5.12.7 to an upcoming BIC and MC**
- **The ICAP Manual will be updated later this year/early 2021 to accommodate the Expanding Capacity Eligibility rules**
  - The changes to the Availability Calculation for ESRs will be incorporated at that time



# Feedback/Questions?

Email additional feedback to: [scarkner@nyiso.com](mailto:scarkner@nyiso.com) and [deckels@nyiso.com](mailto:deckels@nyiso.com)

# Appendix

*\*The following slides were included in the July 14, 2020 ICAPWG presentation on this topic*

# Proposed DAM B/S/N Obligation for ESRs

Included in  
3/5/2020  
ICAPWG  
presentation

- **NYISO is proposing to require all ESR ICAP Suppliers to B/S/N the full range of the ESR**
  - Requirement will be applicable to ESRs utilizing both the ISO- and Self-Managed Energy Level bidding parameters
  - The proposed rule is necessary to harmonize the unique physical and operating characteristics of Energy Storage Resources with the purpose of the existing B/S/N requirements
    - The purpose of the B/S/N requirements is to either make the Energy backing the ICAP Supplier's capacity available or notify the NYISO that the capacity is unavailable in order for the NYISO to maintain reliability
    - Without the proposed requirement for an ESR, an ESR could meet its tariff obligation and yet not make that Energy available, which is inconsistent with the purpose of the requirement
    - Additionally, not reflecting an ESRs anticipated charging in the DAM could cause reliability issues in real-time by not having enough resources committed from the DAM to meet actual load, reserves, and the ESRs charging

# Availability Calculation for ESRs

- **The Unforced Capacity calculation for Energy Storage Resources will be based on the resource's availability to the Real-Time Market System**
  - This calculation uses the same timeframe as the EFORd calculation
    - This will consider all real-time intervals (e.g. 24 hours) for appropriate months, except for when the resource is fully unavailable due to planned or maintenance outages
  - Additional detail on these equations are included in Section 3.7 of ICAP Manual Attachment J

# Background

## ■ MST 2.1 Definitions

- Energy Duration Limitation
  - for a Resource that is not capable of providing Energy for twenty-four hours each day, the number of consecutive hours per day that a Resource elects and is obligated, pursuant to Services Tariff Sections 5.12.1 and 5.12.7, to (i) schedule a Bilateral Transaction; (ii) Bid Energy in the Day-Ahead Market; or (iii) notify the ISO of any outages in the Day-Ahead Market as an Installed Capacity Supplier for the ICAP Equivalent of UCAP sold, as identified in Section 5.12.14 of the ISO Services Tariff.
- Peak Load Window
  - The time period during which a Resource with Energy Duration Limitations must offer Energy in the Day-Ahead Market as specified in Section 5.12.14 of the ISO's Services Tariff.

# Background

## ■ Peak Load Windows

- Obligations for Resources with Energy Duration Limitations are tied to the Peak Load Window
  - B/S/N obligation, DMNC test, derating factor calculation, etc.
- The duration of the Peak Load Window will be tied to the lowest Energy Duration Limitation eligible for 100% capacity payment
  - The 6 hour Peak Load Window
    - Winter: HB 16 – 21
    - Summer: HB 13 – 18
  - The 8 hour Peak Load Window
    - Winter: HB 14 – 21
    - Summer: HB 12 – 19

# DAM B/S/N Proposal

# Proposed Change to DAM B/S/N Obligation

- **NYISO is proposing to require all ESR ICAP Suppliers with an Energy Duration Limitation to Bid, Schedule, or Notify the full injection range for all hours during the Peak Load Window and Bid, Schedule, or Notify the full withdrawal range for all hours outside of the Peak Load Window**
  - Bidding the full injection range, i.e. Installed Capacity Equivalent (ICE), for all hours during the Peak Load Window is consistent with the proposed rules for ESRs with an EDL
  - Bidding the full withdrawal range, i.e. max(negative Installed Capacity Equivalent, Lower Operating Limit), for all hours outside of the Peak Load Window will:
    - Ensure that the ESR has an opportunity to charge prior to the start of the PLW
    - Facilitate scheduling additional hours needed to charge beyond resource's duration due to roundtrip efficiency losses



# Proposed Change to Availability Calculation

- **ESRs without an EDL will use the availability calculation that has previously been discussed with stakeholders, and was subsequently approved at the May 2020 BIC**
  - Details of this calculation are included in Section 3.7 of Attachment J of the ICAP Manual
    - [https://www.nyiso.com/documents/20142/2923635/app\\_a\\_attach\\_icapmnl.pdf](https://www.nyiso.com/documents/20142/2923635/app_a_attach_icapmnl.pdf)
- **ESRs with an EDL will have a revised availability calculation, as compared to ESR ICAP Suppliers without a daily-run time limitation**
  - The availability calculation for ESRs with an EDL will be calculated over the Peak Load Window, consistent with proposed rules
  - The availability calculation for ESRs with an EDL will not reflect the LOL Availability component since the bidding obligation during the Peak Load Window does not extend to the withdrawal range

# Availability Calculation Examples

# Example Calculation

- **The following slides include examples of the availability calculation for ESRs without and with an EDL**
  - Carbon-Free Powered Operation (C-free PO)
    - Battery storage resource without an EDL (i.e. no daily run-time limitation)
  - Brockport Battery-8 (BB-8)
    - Battery storage resource with 8 hour EDL
- **For the purposes of this example, assume that the two ESRs operate comparably for a given day**

# Availability Calculations for ESRs

## ■ C-free PO (without EDL)

- The Unavailability Factor will be calculated using the following components:
  - UOL Availability<sub>gi</sub>
  - LOL Availability<sub>gi</sub>
  - Storage Availability<sub>gi</sub>
  - Energy Level Availability<sub>gi</sub>
  - Interval Seconds<sub>gi</sub>
    - Captures all RTM intervals in applicable month (excluding RTM intervals when Resource g is fully unavailable due to a planned or maintenance outage)
- Note that the availability calculation for C-free PO will follow the rules as laid out today in ICAP Manual Attachment J Section 3.7

## ■ BB-8 (8 hour EDL)

- The Unavailability Factor will be calculated using the following components:
  - UOL Availability<sub>gi</sub>
  - Storage Availability<sub>gi</sub>
  - Energy Level Availability<sub>gi</sub>
  - Interval Seconds<sub>gi</sub>
    - Captures all RTM intervals in respective Peak Load Window (PLW) for applicable month (excluding RTM intervals when Resource g is fully unavailable due to a planned or maintenance outage)
- Note that the availability calculation for BB-8 will not include the LOL Availability component and will be calculate over PLW hours only

# Example Calculation

**C-free PO**

HB	UOL Availability	LOL Availability	Storage Availability	Energy Level Availability	Total Available ICAP Seconds	Total Expected ICAP Seconds
0	1	1	1	1	3600	3600
1	1	1	1	1	3600	3600
2	1	1	1	1	3600	3600
3	1	1	1	1	3600	3600
4	1	1	1	1	3600	3600
5	1	1	1	1	3600	3600
6	1	1	1	1	3600	3600
7	1	1	1	1	3600	3600
8	1	1	1	1	3600	3600
9	1	1	1	1	3600	3600
10	1	0.5	1	1	1800	3600
11	1	1	1	1	3600	3600
12	0.8	1	1	1	2880	3600
13	0.8	1	1	1	2880	3600
14	1	1	1	1	3600	3600
15	1	1	1	1	3600	3600
16	1	1	1	1	3600	3600
17	1	1	1	1	3600	3600
18	1	1	1	1	3600	3600
19	1	1	1	1	3600	3600
20	1	1	1	1	3600	3600
21	1	1	1	1	3600	3600
22	1	1	1	1	3600	3600
23	1	1	1	1	3600	3600

C-free PO Average Availability

96.3%

**BB-8**

HB	UOL Availability	Storage Availability	Energy Level Availability	Total Available ICAP Seconds	Total Expected ICAP Seconds
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12	0.8	1	1	2880	3600
13	0.8	1	1	2880	3600
14	1	1	1	3600	3600
15	1	1	1	3600	3600
16	1	1	1	3600	3600
17	1	1	1	3600	3600
18	1	1	1	3600	3600
19	1	1	1	3600	3600
20					
21					
22					
23					

BB-8 Average Availability

95.0%

# Questions?

# Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

