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Independent System Operator

Tariff Modifications Required for the ESR Participation Model

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Agenda

- **Background**
- **Proposed Tariff Changes**
  - Day-Ahead Margin Assurance Payments
  - Method for setting feasible Day-Ahead and Real-Time schedules
  - Generator offer caps, mitigation and reference levels
  - ICAP Supplier bidding requirements
- **Next Steps**

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Background

- During software development for the Energy Storage Resource Project, NYISO identified additional tariff revisions required to support the ESR participation model
- The proposed revisions address:
  - Day-Ahead Margin Assurance Payments
  - Method for setting feasible Day-Ahead and Real-Time schedules
  - Generator offer caps and reference levels
  - ICAP Supplier bidding requirements
- This presentation discusses the necessary changes

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DAMAP and Feasible Schedules

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Day-Ahead Margin Assurance Payments

- MST Section 25 - Attachment J
- Clarify which of the two Energy contribution formulas will apply to ESR schedule changes
- NYISO proposes to simplify and remove redundancy from the defined terms in Section 25.3.4 for the DAMAP formula
- NYISO proposes to add an exception to specify that Fast-start units that increase their minimum generation bids in real-time will not be eligible for DAMAP
  - The proposed clarification is consistent with the Tariff rules that apply to increasing Incremental Energy Bids or Start-Up Bids in real-time
  - This proposed change is related to Fast-Start, not ESRs

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Setting Feasible Real-Time Schedules

- MST 4.4.2.1
- Tariff revision needed to support the market software used to achieve feasible real-time schedules for ESRs
  - As described in the NYISO's Order No. 841 compliance filing, the NYISO's Real-Time Dispatch software will account for the Energy Level of all ESRs, and is designed to avoid infeasible dispatch of both Self-Managed and ISO-Managed Energy Storage Resources.
  - Tariff language submitted and accepted states that the market software will reduce the ESR's UOL or increase its LOL, as appropriate, to an achieve a feasible schedule
  - In the process of coding the market software, the NYISO determined that it is not necessary and may be inefficient to modify an ESR's UOL/LOL to achieve feasible real-time schedules
  - The software operates consistent with the intent and purpose of the accepted ESR tariff. It will determine feasible real-time schedules based on an ESR's actual telemetered energy storage level.

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ESR Offer Caps, Mitigation and Reference Levels

Offer Price Capping

- The NYISO proposes to update the offer price capping logic so that offers to withdraw energy are capped at the lowest of the following:
  - The price of the energy offer
  - The price allowed by the current capping logic
  - The price required to account for the unit's round trip efficiency (new)
- The proposed solution is intended to ensure that no performance issues with SCUC, RTC and RTD arise
- The current price capping logic will continue to be applied if a unit's energy offer does not cross zero, and will be applied to all energy segments that are greater than zero
- Proposed Revisions to MST 23.7.2

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Mitigation of ESRs

- If any mitigation of an ESR's incremental energy curve would result in a mitigated curve that does not reflect the unit's round trip efficiency, mitigation will be adjusted only so far as is necessary to account for the ESR's round trip efficiency

MWh	-20	0	10	20
Mitigated Curve $	A	B	C	D

- Using the mitigated offer curve above, market close will perform the following:

  If $B > C\eta$, then C will be set to B/η

  - Where η is the units round trip efficiency
- Existing logic will ensure that the final mitigated energy curve is monotonically increasing
- Proposed Revisions to MST 23.4.2.2

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New Unit Reference Clarification

- **Energy Storage Resource Reference Levels should only be calculated using cost-based Reference Levels**
  - Current tariff language would require ESRs that are New Capacity to have a New Unit Reference Level
  - New Unit Reference Levels are based on historical LBMPs and would not be representative of ESRs costs or operating parameters such as round trip efficiency
- **New tariff language is needed to explicitly exempt ESRs from requiring a New Unit Reference Level**
- **Proposed Revision to Section 23.1.4.3**

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ICAP Supplier Bid, Schedule, Notify Obligation

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Background

- As part of the NYISO's compliance filing responsive to FERC Order No. 841, the NYISO proposed that ESR ICAP Suppliers have a DAM Bid/Schedule/Notify obligation (B/S/N) equal to the ICAP Equivalent of UCAP Sold (injection)
- Subsequent to submitting the compliance filing, NYISO identified that when an ESR utilizes the ISO Managed Energy Level bidding parameter, and enters the DAM with an Energy Level that is not sufficient to satisfy its obligation to be able to deliver Energy up to its Capacity obligation, the ESR could submit Bids to inject Energy that appear to satisfy the B/S/N obligation, but that do not make the Energy backing the sold capacity available to the NYISO

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Proposed change to DAM B/S/N Obligation

- **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

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MST 5.12.7 Revisions

- MST 5.12.7 revisions to add the requirement that ESRs must B/S/N the maximum of the negative of the Installed Capacity Equivalent of Unforced Capacity sold or the Lower Operating Limit

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Next Steps

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Next Steps

- **Motion on proposed revisions**
- **If approved by stakeholders, present the proposed modifications to the Board of Directors (Board) in April 2020**
  - If approved by the Board, the NYISO would seek to submit a filing to FERC in April 2020

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Questions?

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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

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