



Settlement Treatment for Storage as a Transmission-Only Asset

Treatment of real-time energy obligations

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Proposed Effective Date: July 2024

- The ISO received stakeholder requests to consider energy storage devices as transmission facilities and seeks to meet those requests with its Storage as a Transmission-Only Asset (SATO) proposal
 - During the 2019 Competitive Transmission Solicitation Enhancements effort
 - As part of the 2021/2022 Boston 2028 RFP Lessons Learned process
 - At various ISO and NEPOOL meetings
 - FERC noted the ISO’s commitment to consider “allowing storage to be considered transmission when addressing reliability concerns” in Docket No. ER22-733-000
- Changes to the planning process are being discussed at the Transmission Committee (TC); the Markets Committee (MC) will discuss the associated settlement treatment
- This presentation addresses stakeholder questions and describes conforming energy settlement rules to incorporate Pool Transmission Facility (PTF) energy injections and withdrawals by a SATO

SATOA Proposal Summary

- A SATOA is an energy storage device connected to the PTF at 115 kV or higher which can inject stored power to address transmission system concerns
- The storage medium will not be restricted to one particular technology
- Details associated with the planning process are being discussed at the TC
- A SATOA will have a market settlement only for the energy it injects and withdraws on the PTF to operate
- A SATOA will not otherwise participate in markets, and will not use bids/offers or be subject to economic dispatch



Transmission Facility Cost Recovery

- Since a SATOA is considered transmission, the cost of construction and operation are recovered through the Regional Network Service (RNS) rate
- Real-Time Energy costs and revenues resulting from a SATOA performing its transmission function will be reflected in a transmission owner's annual revenue requirement
 - Costs will be added to the owner's transmission revenue requirements
 - Revenues will be used to offset the owner's transmission revenue requirements
- Other than those described above, there will be no other payments made - such as Day-Ahead Energy, Reserve, Regulation, NCPC, Capacity, VAR, Black Start, etc.



FOLLOW-UP FROM STAKEHOLDER QUESTIONS



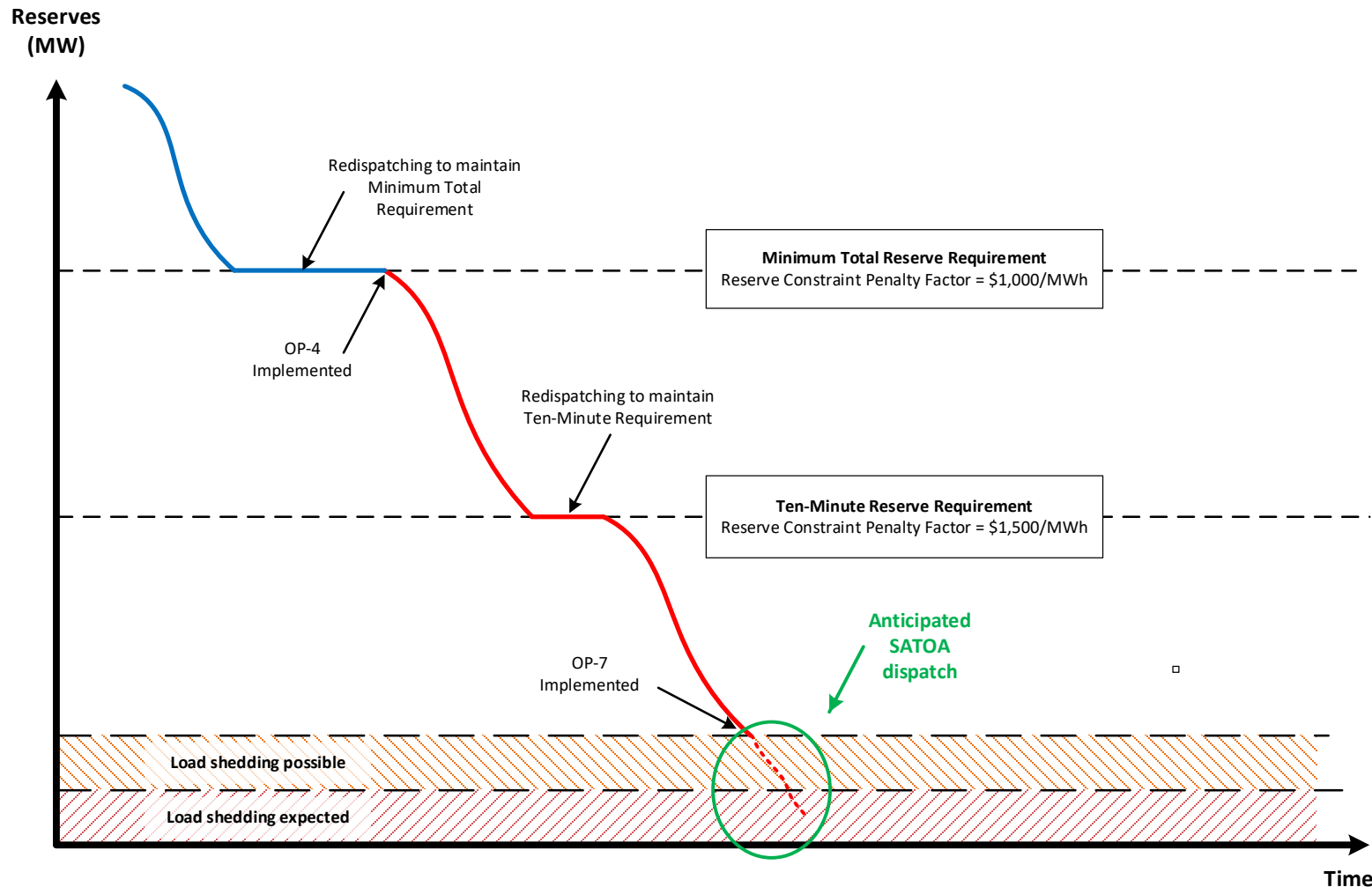
Follow-up from Stakeholder Questions

When will SATOAs operate?

- A SATOA will charge or discharge only to:
 - Address the applicable system concern for which the SATOA has been identified to address through a Needs Assessment, Solutions Study, Public Policy Transmission Study, and/or competitive solution process
 - In order to maintain required state-of-charge or maintenance of the SATOA
 - Mitigate load-shedding when a SATOA may help and available market actions that can address the system concern have been exhausted (see example on the next slide)
 - Allow use of a SATOA's capabilities during system restoration
 - Allow auditing of a SATOA's capabilities
- The conditions when the ISO could direct a SATOA to discharge will be defined in the operating procedures
 - Updates to operating procedures are expected to be brought to the NEPOOL Committees soon after a SATOA has been selected through the planning process



Example: Reserve Deficiency (Capacity Scarcity Condition) and SATOA Dispatch



Follow-up from Stakeholder Questions

Will SATOAs be included in the Installed Capacity Requirement?

- SATOAs will not be considered as capacity resources in the calculation of ICR
 - Excluding SATOAs is consistent with the treatment of other transmission elements
 - Using a SATOA as a capacity resource to meet the system resource adequacy requirements would deviate from its original design intent, which is to support the transmission system and not to provide capacity or reserves
 - Excluding SATOAs minimizes the impact on the markets



Follow-up from Stakeholder Questions

Will SATOAs receive capacity performance payments?

- The ISO has revisited information on performance payments presented at the June MC
- SATOAs will not receive performance payments if operating (injecting MW) during a Capacity Scarcity Condition
 - SATOAs are not market assets
 - If a SATOA received performance payments, any PFP revenue would be included in the SATOA owner's revenue requirement
 - Excludes SATOAs from impacting the PFP compensation among other capacity resources
- Energy provided by SATOAs will be excluded from the Actual Capacity Provided (ACP) calculation
 - As a result, SATOAs will be excluded from the balancing ratio and performance payment calculations

Follow-up from Stakeholder Questions

Why settle SATOAs in the RT Energy settlement?

- The suggested alternate settlement treatment (i.e., as losses) would reassign energy obligations of SATOA to load owners
 - Losses are allocated to load assets in the metering domain, which impacts the Real-Time Load Obligation (RTLO) of those assets
 - The load assets in the metering domain would pay for the energy settlement obligation
 - The allocation of other market costs to RTLO will be impacted
- The ISO proposes to settle SATOA energy obligations using the asset's directly metered MWh and the RT LMP:
 - The adverse impacts to load owner's RTLO obligations are prevented
 - The SATOA's owner will receive settlements for energy obligations and include those in their annual revenue requirement for cost-recovery
 - E.g., Energy market payments would be reflected as offsets to their revenue requirements
- The proposed settlement treatment is consistent with MISO's SATOA filing

SETTLEMENT OF SATOA



Real-Time Energy Market Settlements

- A SATOA will receive Real-Time Energy market payments and charges
- Energy produced while discharging or consumed while charging will be paid or charged at the RT LMP
- A SATOA will have a separate pricing node (pnode) – to minimize market impacts, no other market activity will be permitted at that node



Other Settlements

- A SATOA will not participate, and therefore will not receive payments or charges in other markets such as Day-Ahead Energy, Reserve, Regulation, Capacity, VAR, Black Start, etc.
- Since SATOAs are transmission assets they are excluded from market cost allocations



TARIFF REVISIONS



Proposed Tariff Changes, Section I

Tariff Section	Tariff Change	Reason for Change
Section I.2.2	<p><u>Real-Time SATOA Obligation is defined in Section III.3.2.1(b) of Market Rule 1.</u></p>	Establishes the term for use in settlement
Section I.2.2	<p><u>Storage as Transmission-Only Asset (SATO) is electric storage equipment that: (1) is connected to or to be connected to Pool Transmission Facilities in the New England Transmission System at a voltage level of 115 kV or higher; (2) the ISO approved to be included in the Regional System Plan and RSP Project List as a regulated transmission solution and Pool Transmission Facility pursuant to the regional system planning processes in Attachment K of the OATT; and (3) is capable of receiving energy only from the Pool Transmission Facilities and storing the energy for later injection to the Pool Transmission Facilities.</u></p>	Establishes the term for use in other Tariff sections



Proposed Tariff Changes, Section III

Tariff Section	Tariff Change	Reason for Change
Section III.1.7.21	<p>III.1.7.21 → → SATOA Participation in Markets: A Node will be established for each SATOA. A Market Participant's market activity, transactions, and actions taken at a SATOA's Node and a SATOA's participation in the New England Markets shall be limited to those necessary to consume or inject energy from or to PTF for any period, magnitude, and duration identified as necessary to: (1) address the applicable system needs or provide the transmission function for which the SATOA was selected as the preferred solution; or (2) as specified in the ISO New England Operating Documents, avoid or mitigate Load Shedding after all available Dispatchable Resources that can effectively provide relief to avoid or mitigate the Load Shedding have been dispatched. ¶</p>	New section added to define the limited participation of a SATOA in markets
Section III.3.2.1(b)(iv)	<p>(iv) → Real-Time Locational Adjusted Net Interchange—Each Market Participant shall have for each settlement interval a Real-Time Locational Adjusted Net Interchange at each Location equal to the Real-Time Adjusted Load Obligation plus the Real-Time Generation Obligation plus the Real-Time SATOA Obligation at that Location. ¶</p>	SATOA added to ensure that real time supply and demand are addressed

Proposed Tariff Changes, Section III

Tariff Section	Tariff Change	Reason for Change
Section III.3.2.1(b)(vi)	<p>(vi) → Real-Time SATOA Obligation → Each PTO shall have for each settlement interval a Real-Time SATOA Obligation for energy at each Location equal to the sum of: (1) the MWhs of energy, where such MWhs of energy shall have positive value, provided by SATOAs at that Location; and (2) the MWhs of load, where such MWhs of load shall have a negative value, consumed by SATOAs at that Location.¶</p>	New section added to ensure that each PTO accounts for charging and discharging of the SATOA
III.3.2.2(a)	<p>(a) → Revenue Quality Metering and Telemetry for Assets other than Demand Response Assets¶ The megawatt-hour data of each Generator Asset, Tie-Line Asset, and Load Asset, and SATOA must be metered and automatically recorded at no greater than an hourly interval using metering located at the asset's point of interconnection, in accordance with the ISO operating procedures on metering and telemetering. This metered value is used for purposes of establishing the hourly revenue quality metering of the asset.¶</p> <p>The instantaneous megawatt data of each Generator Asset (except Settlement Only Resources), and each Asset Related Demand, and each SATOA must be automatically recorded and telemetered in accordance with the requirements in the ISO operating procedures on metering and telemetering.¶</p>	Added SATOA to metering requirements

SUMMARY AND NEXT STEPS



Conclusion

- The ISO received stakeholder requests to consider energy storage devices as transmission facilities and seeks to meet that request with its SATOA proposal
- Conforming energy settlement rules to incorporate PTF energy injections and withdrawals by a SATOA are needed
 - A SATOA will incur costs and receive revenues for charging and discharging in the Real-Time Energy settlement
 - These costs and revenues will be offset by increasing and reducing the SATOA's owner's annual revenue requirement
 - The costs of a SATOA will be recovered through the Regional Network Service rate
- The proposed effective date of these changes is July 2024

Stakeholder Schedule for Storage as a Transmission-Only Asset

Proposed Effective Date – July 2024

Stakeholder Committee and Date	Scheduled Project Milestone
April 14, 2022 TC	Discussion of concepts
May 31, 2022 TC	Continued discussion of concepts
June 7-8, 2022 MC	Introduction of settlement conforming changes
June 28, 2022 TC	Review of proposed Tariff redlines
July 27, 2022 TC	Respond to questions, review incremental changes to Tariff redlines and discuss any proposed stakeholder amendments
August 9-10, 2022 MC	Discussion on Tariff changes to enable settlement of SATOAs, introduction of redlines, follow up on stakeholder questions
August 16-17, 2022 TC	Vote on proposal and any stakeholder amendments
August 23, 2022 B & F	Discussion of the proposed language changes related to the indirect link to Schedule IV.A
September 13-14, 2022 MC	Vote on the proposed Tariff revisions related to settlement provisions and any proposed amendments
Participants Committee October 6, 2022	Vote on the proposed Tariff revisions and any proposed amendments

Questions

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