New York ISO
Independent System Operator

Storage as Transmission

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Agenda

- Introduction and Background
- Issues Identified
- Project Recommendation

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Introduction and Background

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Storage as Transmission

- **Project Background:**
  - The characteristics of energy storage allow these assets to provide many potential services to grid operators. When operating as a market resource, storage can have positive impacts on transmission systems by shifting demand, supporting ancillary services, and managing transmission congestion
  - In some select instances, storage used exclusively as a regulated transmission asset, instead of a market resource, could provide similar services as traditional transmission solutions
  - The NYISO's current market rules consider storage to be a market-based Generator that competes and is scheduled in parallel with other suppliers. The current rules do not allow assets that are suppliers, such as energy storage, to be eligible for cost-of-service rate recovery
- **Deliverable: Q4 Issue Discovery**
- **The report is posted with today's meeting materials**

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Issues Identified

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Market Impacts

- **The NYISO-administered markets provide the foundation for supplying consumers in New York with reliable electricity in the most cost-effective manner**
- **Storage inherently interacts with the wholesale markets, regardless of whether it receives regulated rate recovery, as it could in a storage as transmission ("SAT") model**
  - Therefore, it is critical to consider the impacts that the implementation and operation of SAT will have on the wholesale markets, and thus its impact on market signals for attracting and retaining resources needed to meet NY's reliability needs

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Interconnection Process Requirements

- The NYISO's interconnection process consists of three components:
  - Large generating facility
  - Small generating facility
  - Load interconnection
- Additionally, there is also a Transmission Interconnection Process
- The NYISO may need to determine how to incorporate and study SAT within the interconnection process

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Eligibility and Use Cases

- The NYISO may consider how to incorporate SAT within the Comprehensive System Planning Process ("CSPP"), including the types of transmission needs the regulated storage may address
- The selection of SAT should avoid conflicts with existing reliability rules and storage deployment programs, including, but not limited to:
  - Special Protection Systems/Remedial Action Schemes
  - Non-wires alternatives
- Additionally, SAT should not be selected as a solution that could be met by a Generator participating in the NYISO-administered markets

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Evaluation

- **Consistent with the NYISO planning processes, SAT would be included in the evaluation process with other solutions to determine the more efficient or cost-effective solution to address an identified need**
  - This creates incentives to maximize the benefits of transmission development to ratepayers
- **When comparing the cost and performance of SAT to a traditional wires solution or other alternatives, the NYISO may determine the need to develop new methodology and criteria, which may include:**
  - Assessing the ability of the proposed SAT to meet the identified need
  - Incorporating additional considerations unique to storage, such as a rapid response time or development considerations

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Size and Duration

- When evaluating proposed SAT, the NYISO may assess whether the size (MW) and duration (MWh) of the storage resource is appropriate for the identified need and will:
  - Effectively meet the required need
  - Not result in reliability issues due to the operation of the asset
- The evaluation may consider the treatment of excess capacity installed, taking into consideration degradation of the SAT over time
- The evaluation may include an assessment of the market impacts of the proposed SAT

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Operation of Assets

- Protocols that detail the dispatch and operation of the SAT in response to a contingency must be developed, which may vary based on the use case of the resource
- Consideration may be given for dispatching the SAT in emergency conditions outside of the limited pre-determined situations, including assessing the implications of doing so
- Because the SAT will inherently interact with the wholesale markets, market rules may be necessary to minimize the market impact of the SAT
  - This also includes considering the market implications and costs if the SAT is unavailable due to an outage or having already been activated to serve its intended purpose

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Roles of Entities

- **The NYISO may need to consider who the responsible entity will be for a number of aspects of the SAT model, including, but not limited to:**
  - Build and ownership
    - This includes eligibility of entities to receive rate recovery, i.e., whether the entity that owns SAT may need to either be or become a Transmission Owner
  - Maintaining the asset
  - Maintaining the necessary state of charge

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Modeling and Treatment of SAT

- **Because storage is currently not eligible to be proposed as a regulated solution through the CSPP, there is no established method for evaluating storage resources in comparison to transmission solutions**
  - The NYISO may need to develop a process to ensure that the SAT meets the need, and the analysis may also compare the asset to other proposed solutions, which may include a traditional wires solution or a market-based resource
- **The NYISO may also consider how to model SAT once it is in operation, since it will be charging from and injecting onto the grid**
  - This includes incorporation of SAT into the Installed Reserve Margin and the Locational Minimum Installed Capacity Requirements

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Treatment of Market Revenues

- Despite acting as a transmission asset, SAT will be charging from and discharging onto the grid, resulting in potential costs and/or revenues from the NYISO-administered Energy market
- The NYISO may need to consider how these resulting costs and/or revenues will be treated in connection to the resource's regulated rate recovery
  - For example, the SAT may be a price taker when charging and injecting, and the costs and revenues may be netted and passed through the regulated rate to the ratepayers
- The NYISO may consider opportunities for SAT to provide Voltage Support Service and how the revenues earned from providing this service will be treated

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Project Recommendation

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Project Recommendation

- **Develop a Market Design Concept Proposed ("MDCP") for a SAT model in 2024**
  - Further discussions will be needed on the following topics during the development of the MDCP:
    - How SAT may be considered in the CSPP
    - Ownership requirements for being a regulated asset (i.e., whether the SAT owner needs to be a transmission owner)
    - Operating and reliability considerations
    - Scheduling and dispatch
    - Treatment of market revenues that result from SAT operation
- **The NYISO SAT model will:**
  - Address the eligibility of a storage resource to address a transmission need and receive cost-based rate recovery
  - Consider how SAT will be addressed in the NYISO planning process
  - Address the expected operation of a storage resource to address a transmission need

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Questions?

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Our Mission & Vision

Mission

Ensure power system reliability and competitive markets for New York in a clean energy future

Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

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