New York ISO
Independent System Operator

# Markets and Planning for a Reliable Grid

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**State Energy Planning Board**
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# Appendix



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# Interconnection Process

- **The purpose of the NYISO's interconnection process is to:**
  - Evaluate impacts of proposed generation, transmission, and load projects on the system
  - Identify and cost allocate System Upgrade Facilities (SUFs) required to meet reliability requirements
  - System Deliverability Upgrades (SDUs) required to meet deliverability requirements for requested capacity rights

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# Load Interconnection Procedures

- NYISO's Load interconnection procedures apply to large load interconnections based on the MW size and voltage level:
  - Greater than 10 MW connecting at a voltage level of 115 kV or above and
  - 80 MW or more connecting at a voltage level below 115 kV
- Proposed Load interconnections that fall outside these criteria are not subject to the NYISO procedures but instead fall under the Transmission Owner's procedures.

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# Interconnection Class Year Overview

- **Of 70 projects that participated in the initial decision period, 35 projects accepted, 9 projects deferred, and 26 projects rejected their cost allocations.**
  - Prior to the decision period, eight projects withdrew from the Class Year.
- **NYISO issued a revised Class Year 2023 Study report on November 11**
  - 35 projects accepted cost allocation
  - 2 collateral defaults, requiring a revised report
- **Revised report issued December 9**
  - Security postings due December 16
  - If no party defaults, the process concludes

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# Cluster Study Process

- **On May 1, 2024, NYISO submitted to FERC tariff revisions in compliance with FERC Order No. 2023/2023A and requested an immediate effective date.**
  - Even though FERC has not yet acted on NYISO's compliance filing, the NYISO launched the first study in the new process on August 1, consistent with representations to FERC in its filing which included requested waivers should FERC reject the compliance filing.
- **Key Aspects of new process:**
  - An overall timeline that aligns with the timeline laid out in Order No. 2023/2023-A;
  - A rolling, optional Pre-Application process;
  - An enhanced scope for the Customer Engagement Window (including a physical infeasibility screen);
  - A two-phase Cluster Study that incorporates many aspects of the prior Class Year approach rather than individual impact studies;
  - Limited project modifications and opportunities to cure deficiencies;

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# Cluster Study Process

- **Current status**
  - Over 370 applications were submitted during the Application Window via the NYISO interconnection portal.
  - To assist customers in light of unique circumstances for the first Transition Cluster Study Process, NYISO provided a one-time extension of the Application Window until November 15, 2024, for the limited purpose of addressing deficiencies in applications that were submitted by October 15, 2024.
  - As of December 10, 2024, 309 proposals representing more than 60,000 MW were validated

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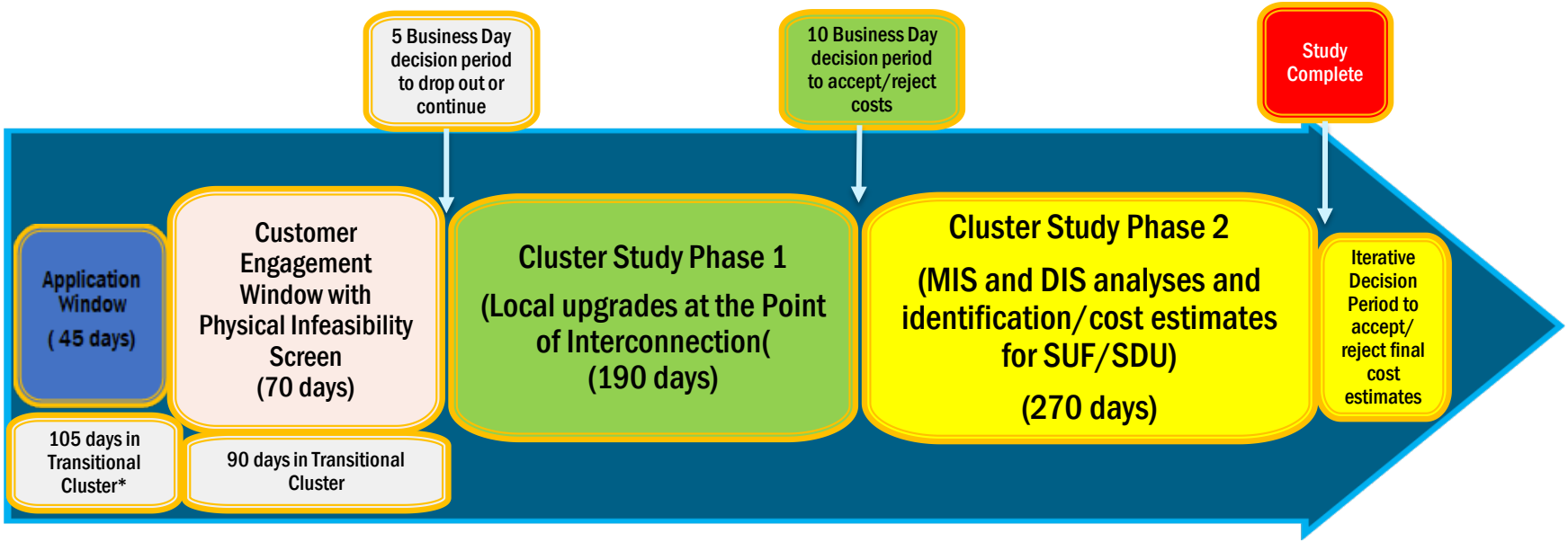
# Cluster Study Process




Total Timeline: 590 days (1.6 years)

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# NYPA Peaker Replacement Proposals in the Cluster Study

| Project Name | Location | Points of Interconnection | Existing GTs | Proposed Capacity |
|---|---|---|---|---|
| Greenwood Heights Energy Storage | NYC | Greenwood 138kV Substation | Gowanus 5 and 6 | 130 MW |
| Port Morris Energy Storage | NYC | Hell Gate Annex 138kV | Harlem River 1 and 2 | 130 MW |
| Brentwood Energy Storage | Long Island | Brentwood 69 kV Substation | Brentwood | 49.1 MW |
| Hell Gate Energy Storage | NYC | Hell Gate Bus Section 2 - 138kV | Hellgate 1 and 2 | 90 MW |
| Pouch Energy Storage System | NYC | Fox Hills 138kV Substation | Pouch | 47.1 MW |
| Flynn Energy Storage | Long Island | West Bus - 138kV | Flynn | 170 MW |

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# RNA Scenarios Increasingly Important to Planning

| Mitigation Scenarios that Increase Reliability Margins | Risk Scenarios that Result in Reliability Violations |
|---|---|
| 5,000 MW Additional Queue Projects | No Large Load Flexibility |
| 7,000 MW Additional Offshore Wind | High Demand Forecast Scenario |
| 700 MW Additional Firm Gas Generation | CHPE Unavailability |
| Demand Response in Transmission Security | Additional Generation Retirements |

- Scenarios provide a fuller picture of how the grid may evolve and perform under different sets of assumptions. Scenarios identify risks that may create reliability concerns as well as mitigating measures that may reduce those concerns
- Additional interconnection projects, demand response, and firm gas availability would significantly improve reliability
- Risks remain if demand is higher than expected, CHPE is unavailable, or more generation is unavailable

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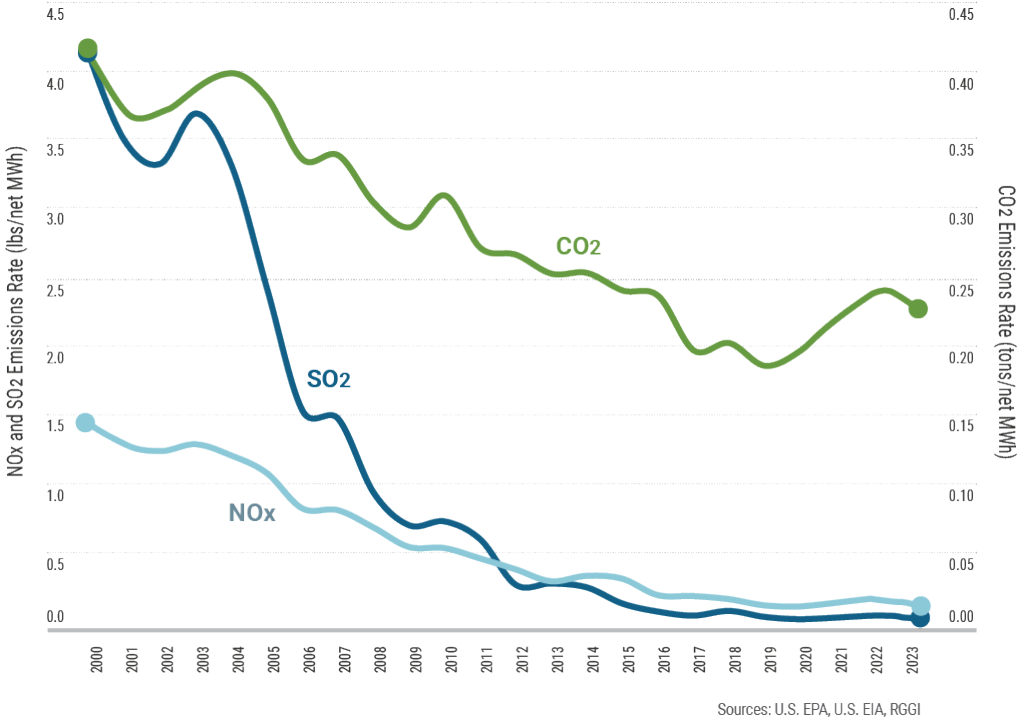
# Cleaner Generation

## Emissions Rates from Electric Generation in New York: 2000-2023

**From 2000 through 2023:**

- Sulfur dioxide ($SO_2$) dropped 99%
- Nitrogen oxides ($NO_x$) dropped 93%
- Carbon dioxide ($CO_2$) dropped 45%
- Recent $CO_2$ increases coincident with closure of Indian Point




Sources: U.S. EPA, U.S. EIA, RGGI

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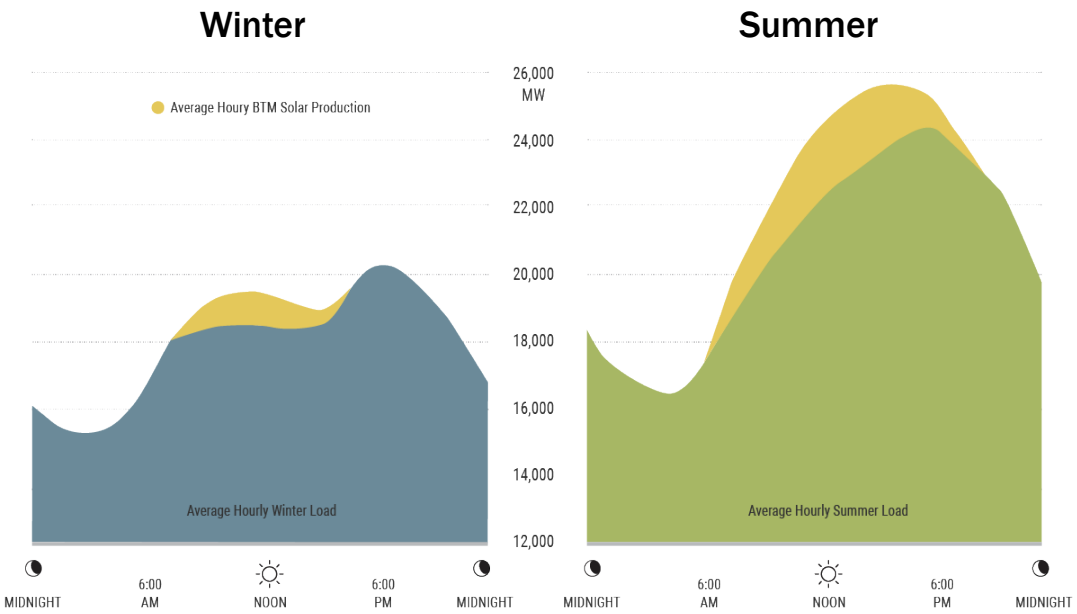
# Integrating Behind-the-Meter Solar

- 10,000 MW goal for BTM solar by 2030
- More than 4,200 MW of BTM solar installed by the end of 2022
- NYISO forecasting tools estimate and track real-time contributions of BTM solar production
- BTM solar resources reduce demand and lower the amount of energy delivered by the bulk power system

## Average Hourly Behind-the-Meter Solar Production

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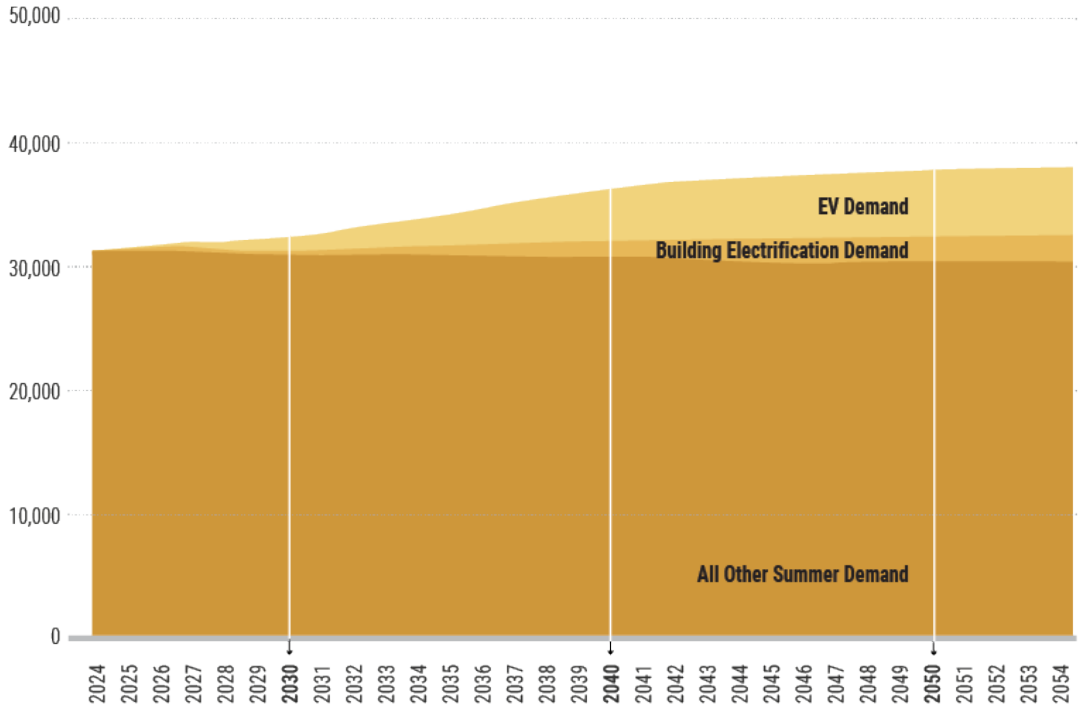
# Expected Impact of Electrification on Statewide Summer Peak Demand (MW)

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# A Grid In Transition - Reliability Considerations

- As the resource mix shifts from fossil generators to emission-free resources, essential grid services, such as operating reserves, ramping, regulation must still be available to provide New York with a reliable electric system


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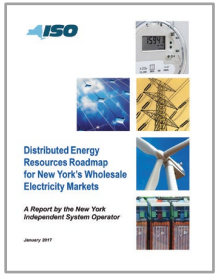
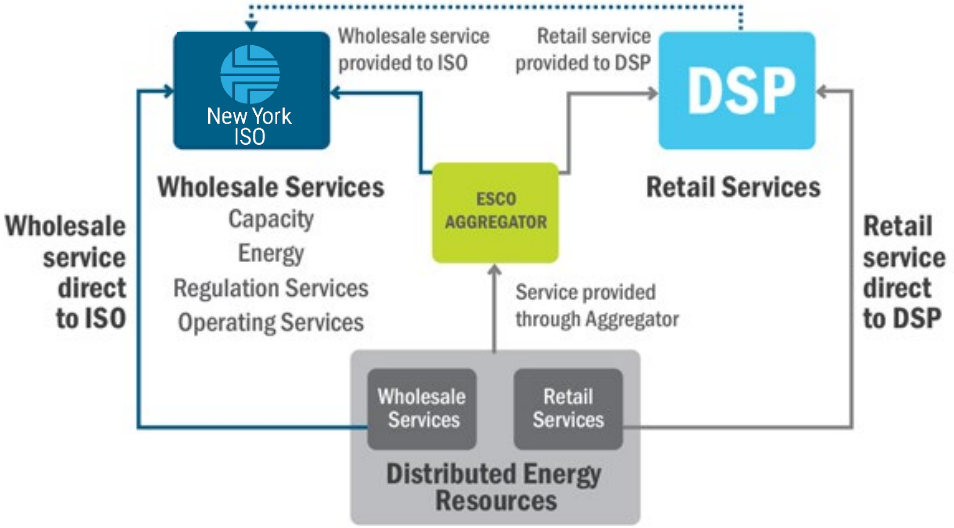



# Distributed Energy Resources (DERs)

## NYISO DER Roadmap: Integrating DER into Energy, Ancillary Services and Capacity Markets

- Flexible Demand and Distributed Resources are a key component of transitioning to a zero-carbon electric sector
- Aggregation of behind-the- meter resources key to successful integration with distributed energy resources
- Requires coordination and enhanced communication with Distribution Service Providers (TOs)

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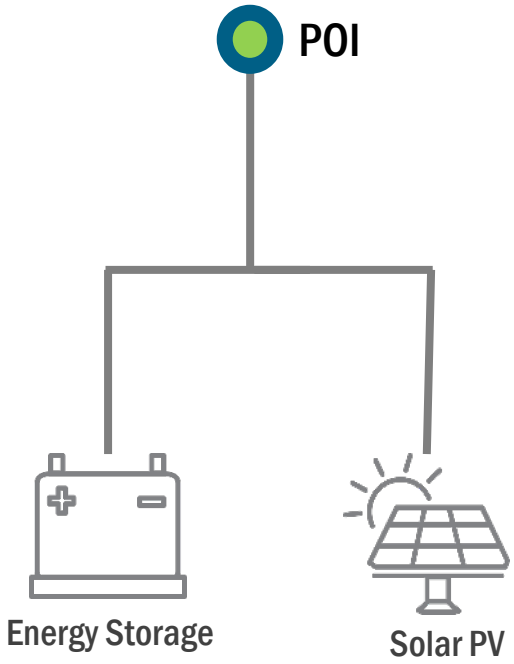
# Hybrid and Co-located Storage Resources

- **Federal and State incentives (subsidies), growing interconnection costs, and synergistic operating characteristics are driving new technologies to share a single point of interconnection**
- **The NYISO has developed a few options for these resources to participate**
  - Co-located Storage Resources allow the NYISO to schedule each resource independently while respecting any interconnection constraints such as invertor or generator step up transformer size (Implemented)
  - Hybrid Storage Resource will be scheduled as a single resource where multiple assets can be aggregated behind a single point of interconnection (Expected in 2025)

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