New York ISO
Independent System Operator

Attachment #1.6

2023 Power Trends

A Balanced Approach to a Clean and Reliable Grid

Media Briefing

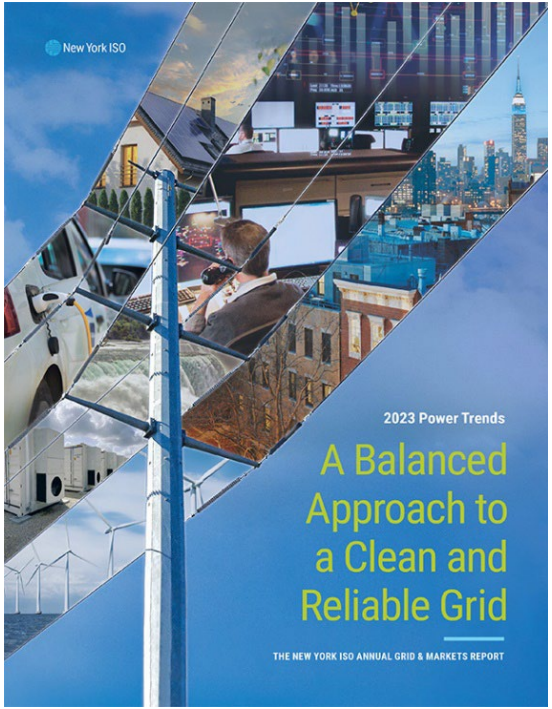
July 14, 2023

Power Trends 2023: A Balanced Approach to a Clean and Reliable Grid

Current and emerging trends transforming the grid and electricity markets

Key Themes:

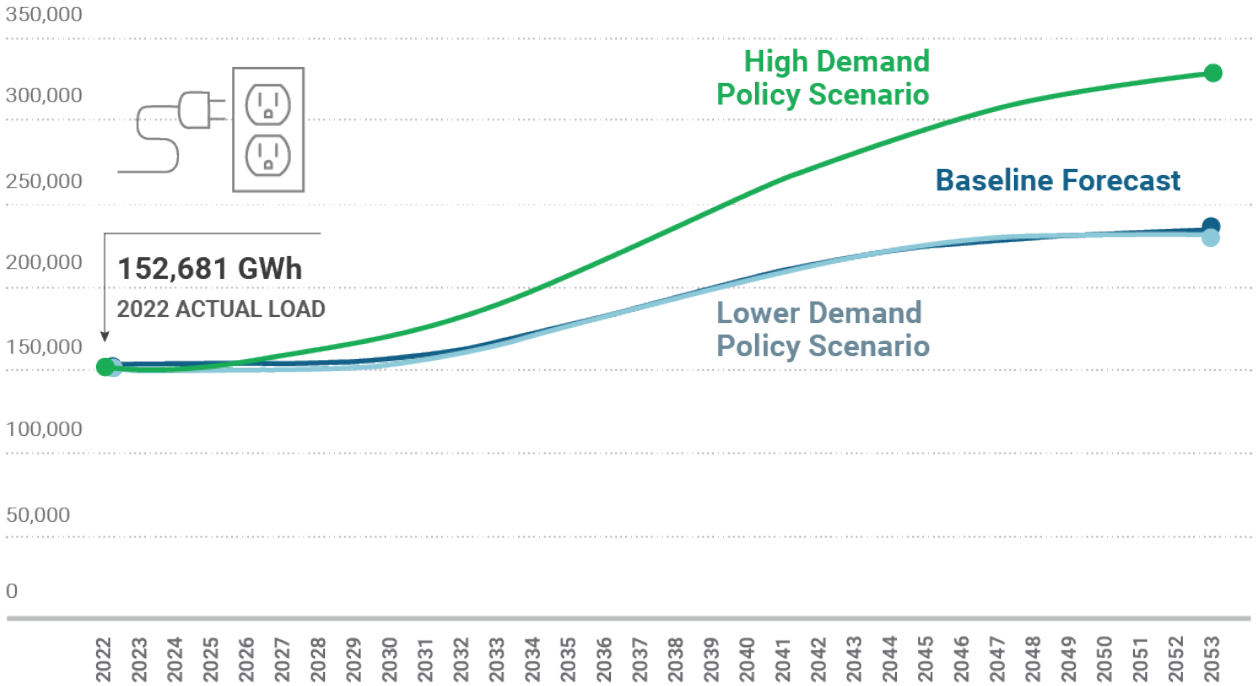
- Public Policies are driving rapid change in the electric system in the state, impacting how electricity is produced, transmitted, and consumed.
- Reliability margins are shrinking. Electrification programs are driving demand for electricity higher. Generators are retiring at a faster pace than new renewable supply is entering service.
- Driven by public polices, new supply, load and transmission projects are seeking to interconnect to the grid at record levels.
- To achieve the mandates of the CLCPA, new emission-free supply with the necessary reliability services will be needed to replace the capabilities of today's generation. Such new supply is not yet available on a commercial scale.
- New wholesale electricity market rules are supporting the grid in transition. These markets are critical for a reliable transition.



New York ISO

Actual & Forecast Energy Usage (GWh)

Electric Energy Load Forecast in New York State: 2022-2053



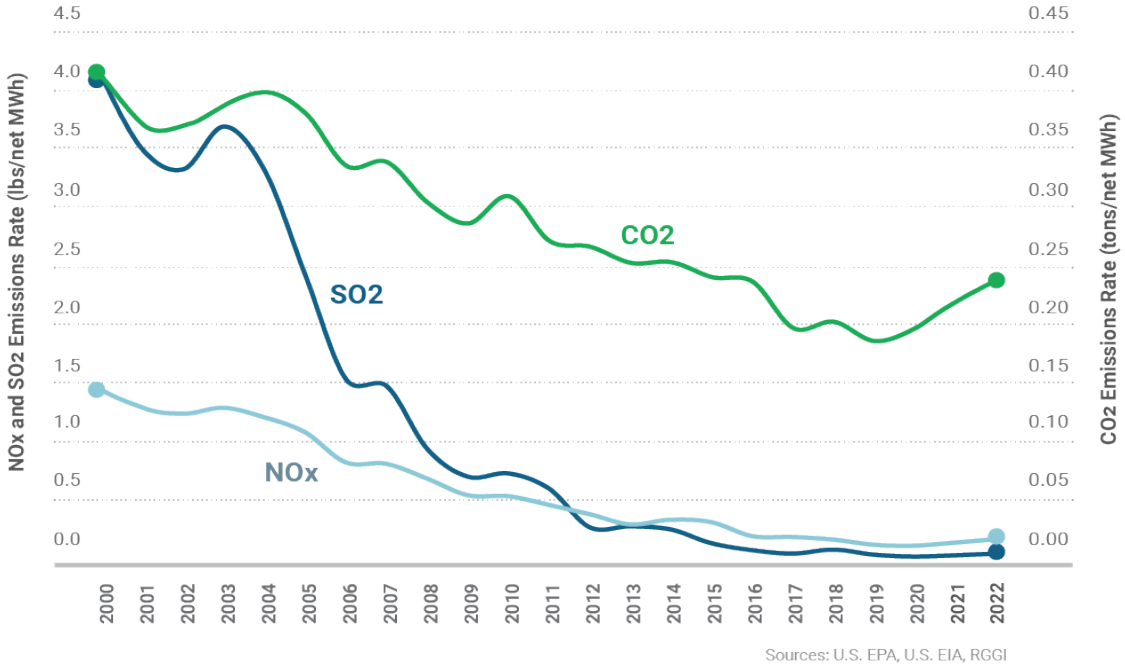
New York ISO

Cleaner Generation

Emissions Rates from Electric Generation in New York: 2000-2022

From 2000 through 2022:

- Sulfur dioxide (SO_2) dropped 99%
- Nitrogen oxides (NO_x) dropped 91%
- Carbon dioxide (CO_2) dropped 42%
- Recent CO_2 increases coincident with closure of Indian Point



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

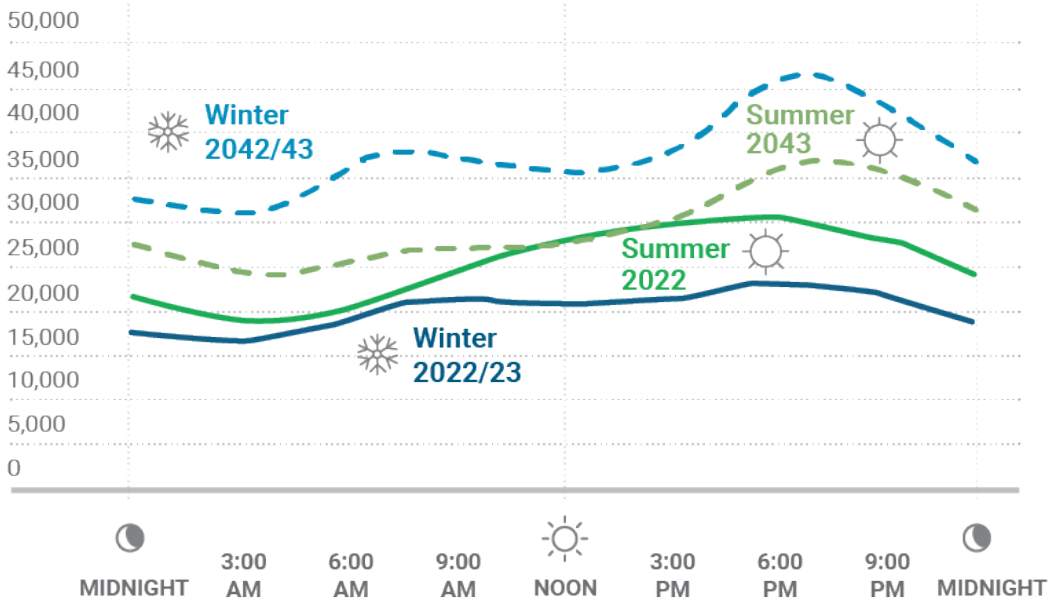
New York ISO

High-Demand Patterns: Current & Forecast

Load shapes for high-demand days are expected to shift in the future.

- Electrification will lead to increased overall demand
- BTM solar resources will likely push peak demand to later in the day

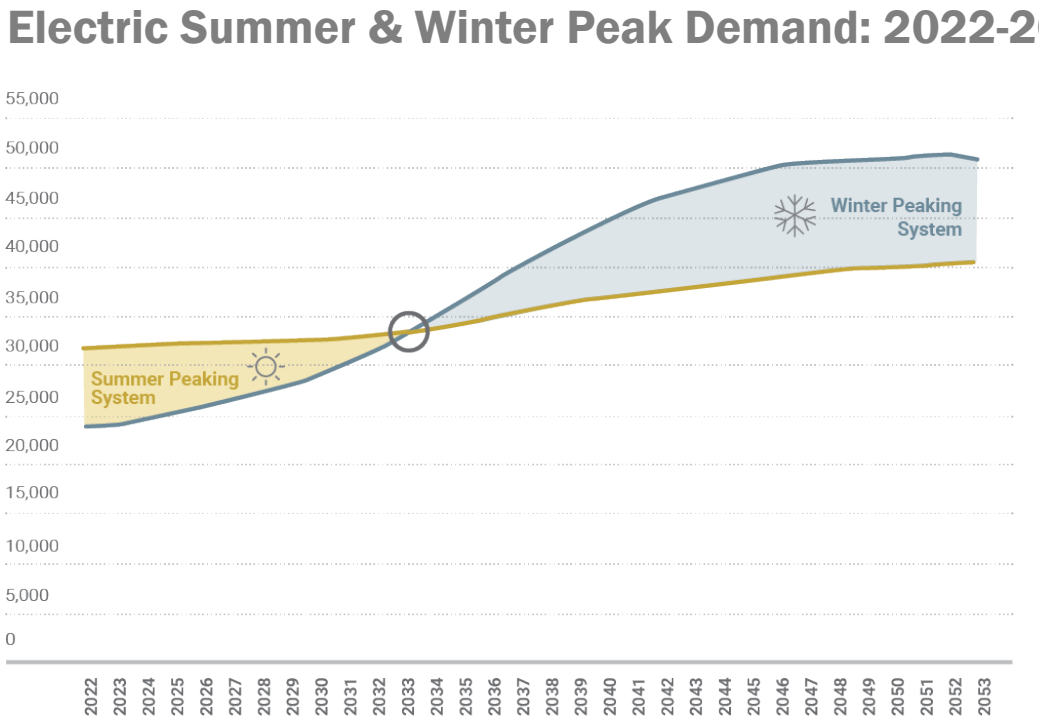
Actual & Projected Hourly Demand: Winter-Summer



New York ISO

Demand Trends: Peak Demand Forecast

- The NYISO winter and summer peak load forecasts suggest that electrification will drive a shift in NY from a summer-peaking system to a winter-peaking system.
- The timing and degree of this shift will be influenced by EV and heat pump technology adoption.

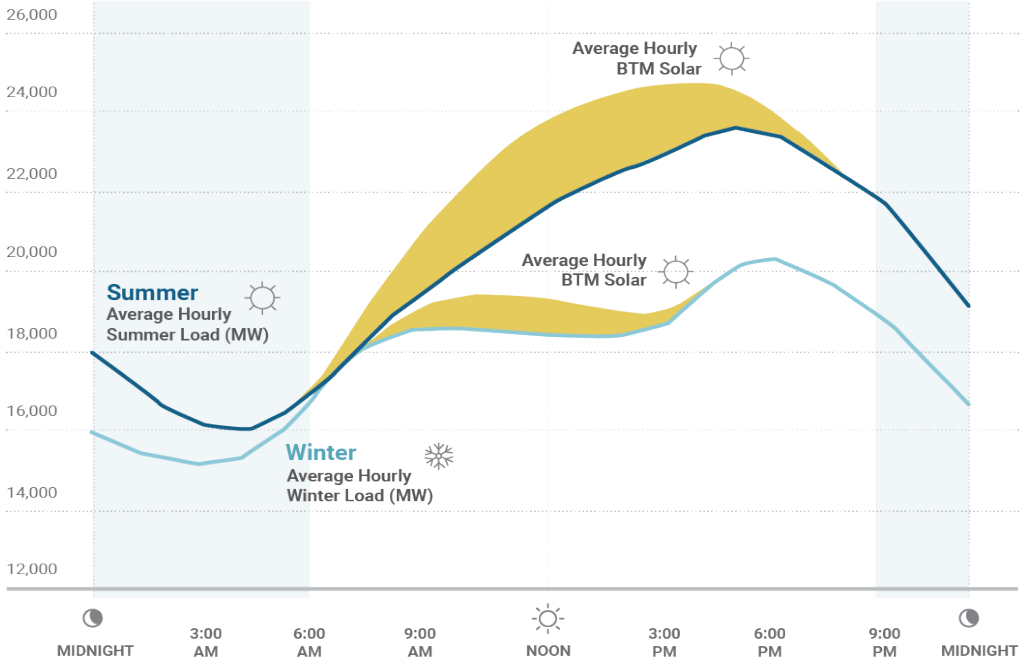


New York ISO

Integrating Behind-the-Meter Solar

- More than 4,200 MW of BTM solar installed by 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: Summer

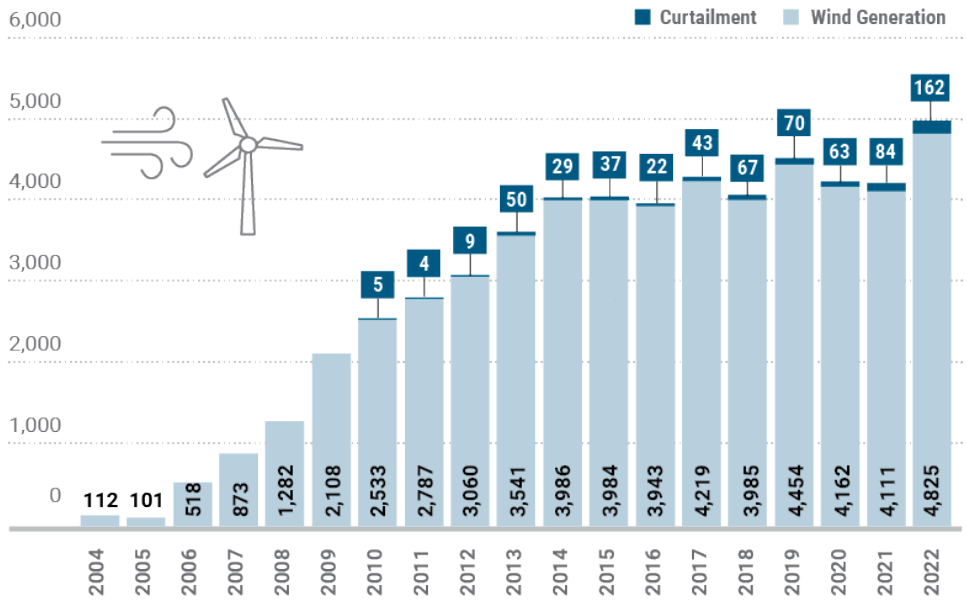


New York ISO

Wind Energy Generation & Curtailment

- NYISO began tracking wind curtailment in 2010
- Curtailed GWh – Difference between real-time wind forecast and wind output limit
- Additional transmission capability necessary to alleviate constraints that lead to curtailments

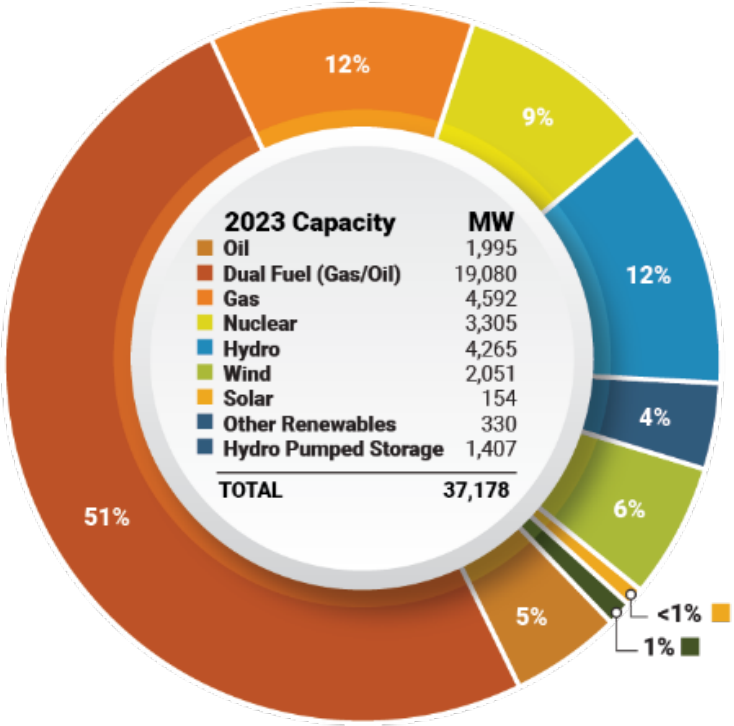
Wind Generation and Curtailment in New York – Energy Produced: 2003-2022



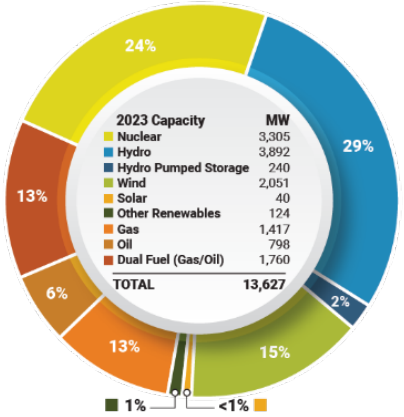
New York ISO

Generating Capacity by Fuel Source: 2023

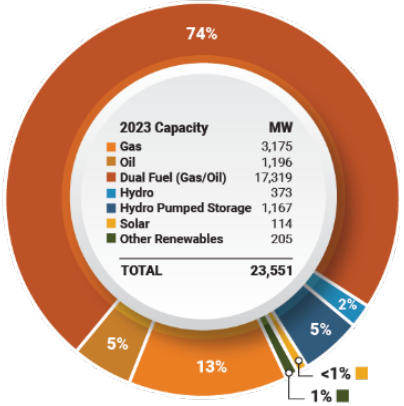
NYCA Generating Capacity by Fuel Source: 2023



Generating Capacity is the maximum electric output a generator can produce



Upstate (Zones A-E) Generating Capacity by Fuel Source: 2023

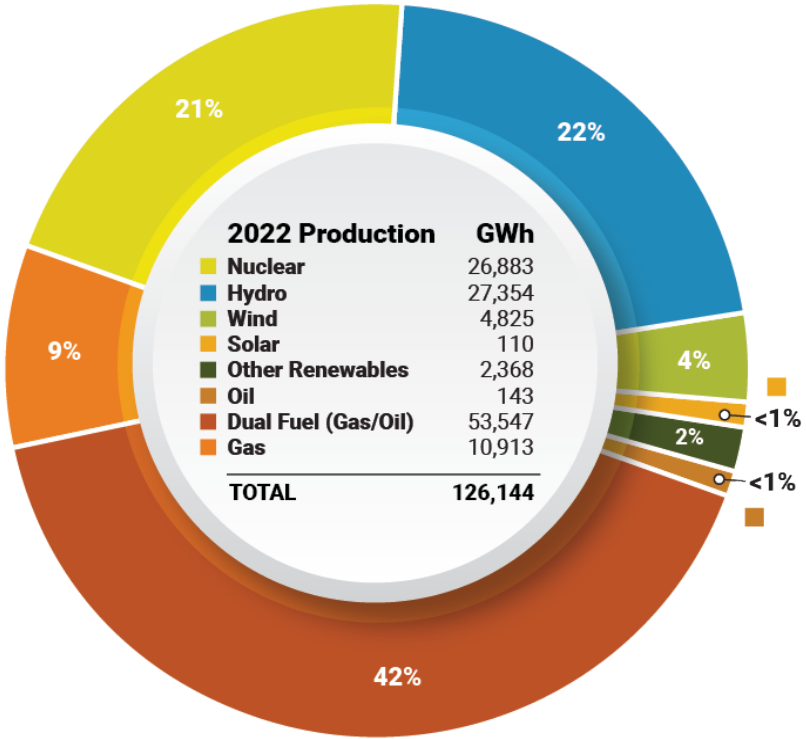


Downstate (Zones F-K) Generating Capacity by Fuel Source: 2023

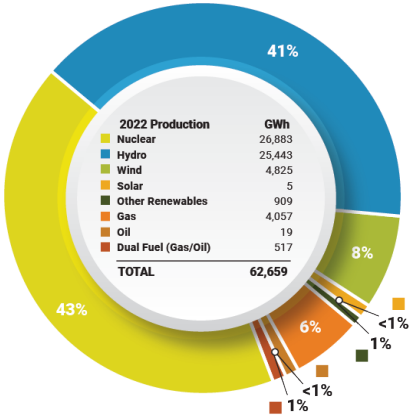
New York ISO

Energy Production by Fuel Source: 2022

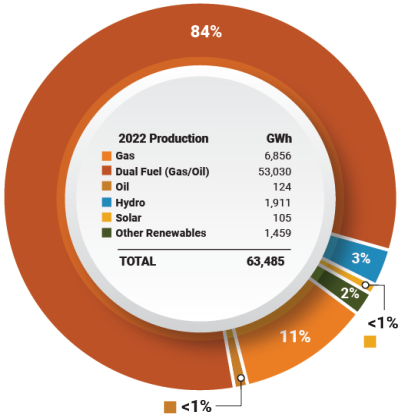
NYCA Energy Production by Fuel Source: 2022



Energy is the amount of electricity a generator produces over time



Upstate (Zones A-E) Energy Production by Fuel Source: 2022



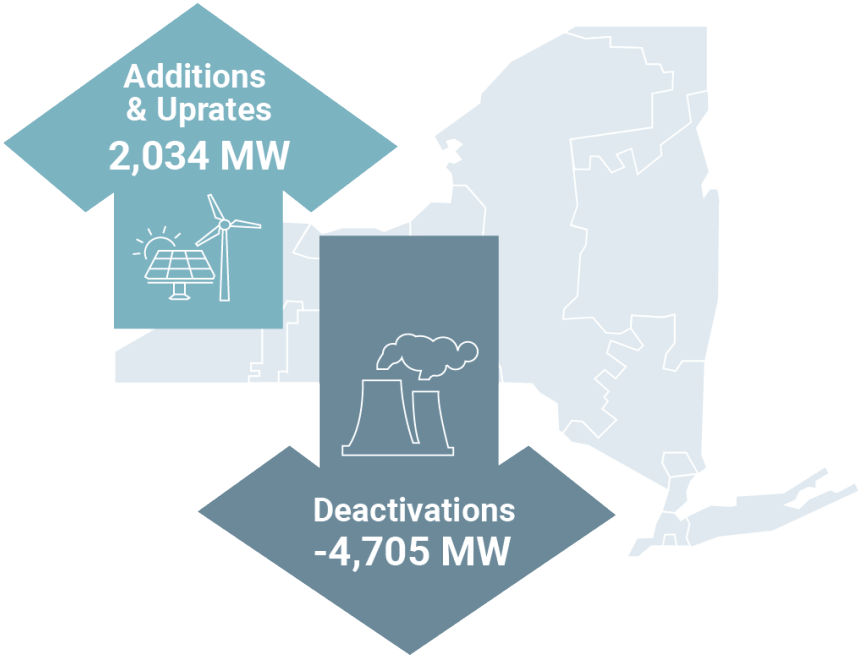
Downstate (Zones F-K) Energy Production by Fuel Source: 2022

New York ISO

Additions, Uprates & Retirements

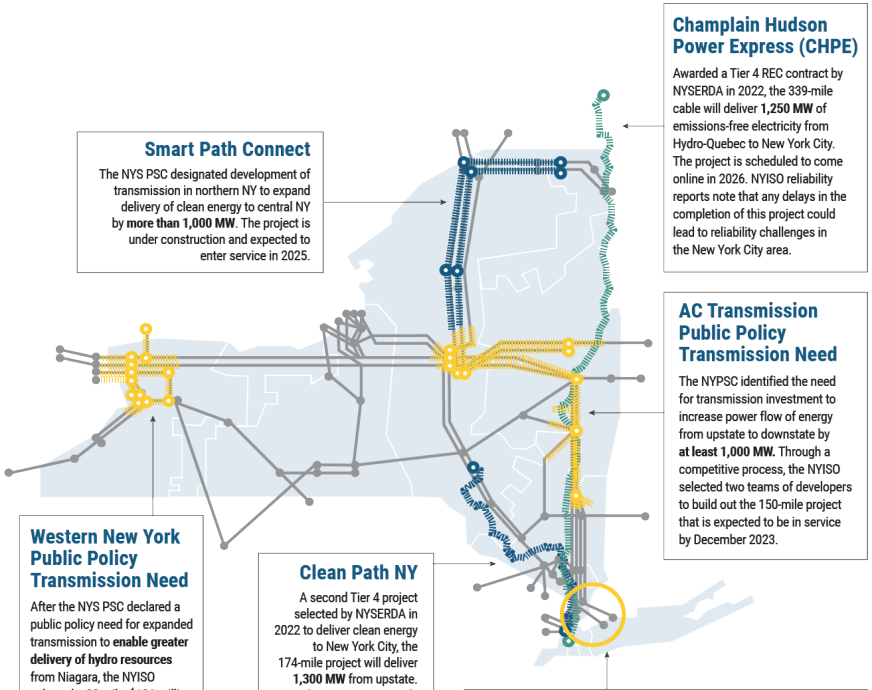
- Growing imbalance between generator deactivations and additions is contributing to shrinking reliability margins
  - Deactivating resources tend to be dispatchable and located downstate
  - Generator additions are largely renewable resources located upstate
  - New resources do not provide the same reliability services as exiting resources
- Since the CLCPA was approved in 2019, interconnection requests have quadrupled
- NYISO and stakeholders working to enhance process efficiency while maintaining reliability benefits

Nameplate Capacity: 2019-2022



New York ISO

Ongoing Transmission Planning and Construction

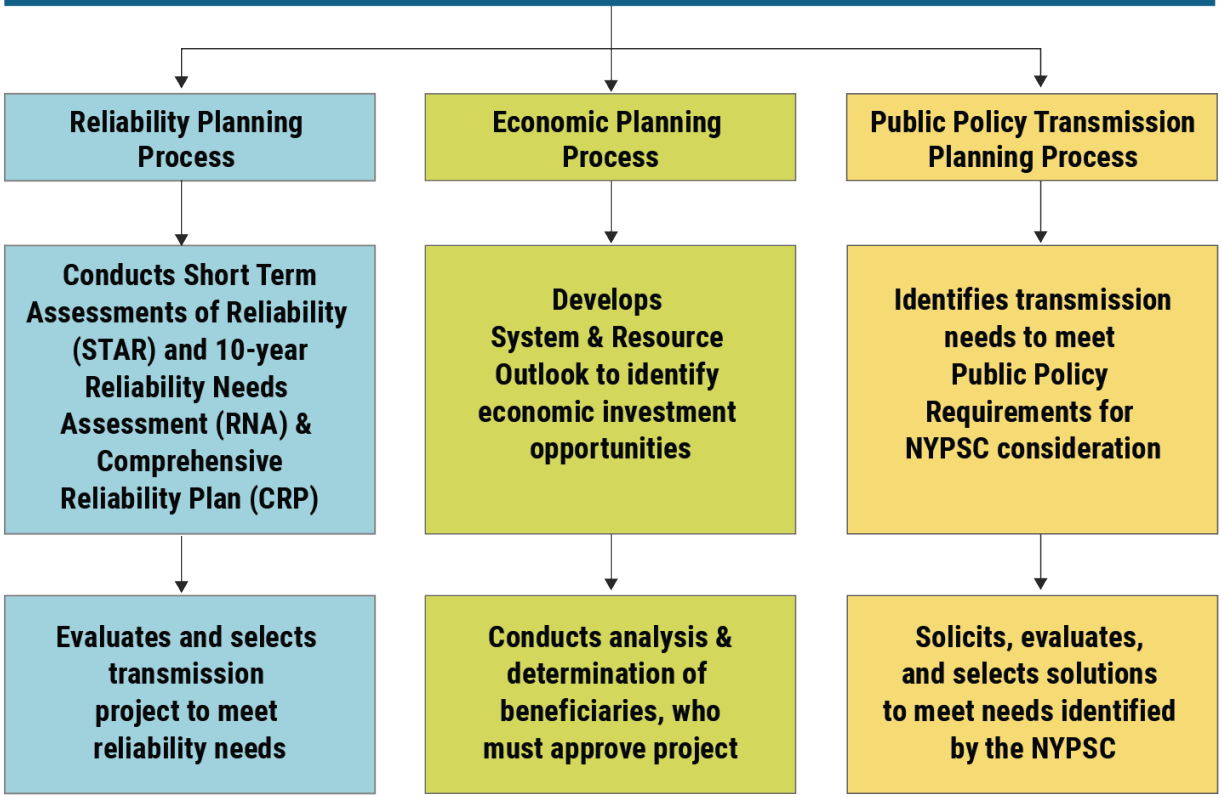


Transmission investment needs driven by public policy requirements:

- Needs are identified by the NYS Public Service Commission (PSC)
- Solutions are solicited and evaluated by the NYISO
- NYPA designated for priority transmission projects by the PSC in some instances
- Tier 4 RECs support delivery into NYC

New York ISO

NYISO Comprehensive System Planning Process



New York ISO

What to Expect: Next Steps

For the NYISO, our stakeholders, developers, and policymakers, there are key milestones as the grid transitions which will both influence and reflect the policy, economic, and technological landscape before us. These include:

- **July 2023:** NYISO issues second quarter Short-Term Assessment of Reliability (STAR) Report which will evaluate the changing mix of supply, transmission capability, and forecasted demand.
- **Summer 2023:** Long Island Public Policy Transmission Need selection process is expected to be completed.
- **Fourth quarter 2023:** NYISO issues the *2023-2032 Comprehensive Reliability Plan (CRP)*, which will account for the findings of the 2022 RNA and 2023 STAR evaluations.
- **Throughout 2023:** NYISO to continue engagement with stakeholders and policymakers on key wholesale electricity market enhancements to maintain the alignment between emerging reliability needs and market incentives.

New York ISO

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

New York ISO

Questions?

New York ISO

New York ISO
Independent System Operator

Review 2023-Q2 STAR Reliability Findings

July 14, 2023

Q2 STAR Reliability Findings

- Beginning in summer 2025, the transmission security margin within New York City is deficient.
  - The New York City zone (Zone J) is deficient by as much as 446 MW for a duration of nine hours on the peak day during expected weather conditions when accounting for forecasted economic growth and policy-driven increases in demand
- Beyond 2025, the reliability margins within New York City may not be sufficient if:
  - The CHPE project experiences a delay from Spring 2026;
  - There are additional generator deactivations beyond what is already planned; or
  - Demand significantly exceeds current forecasts.
- The statewide system margin may be deficient by nearly 150 MW in 2025 when accounting for large economic development projects.

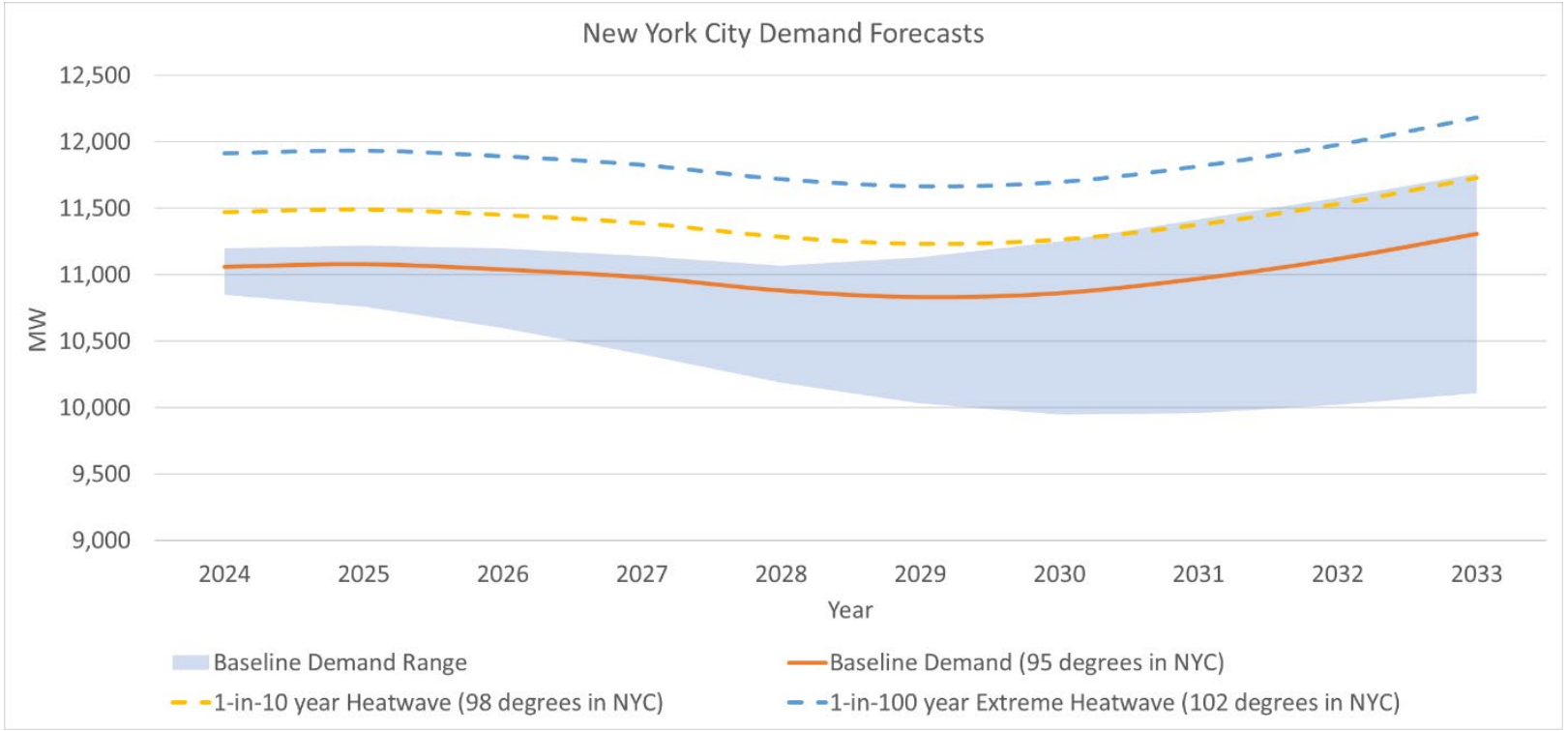
New York ISO

Overview: DEC's Peaker Rule

- The DEC's peaker rule limits emissions from simple cycle combustion turbines.
- As of May 1, 2023, 1,027 MW of affected peakers have deactivated or limited operations.
- An additional 590 MW of peakers are expected to be impacted beginning May 1, 2025, all of which are in New York City.
- The DEC's Peaker Rule anticipated this scenario when it authorized the NYISO to designate certain units to remain in operation beyond 2025 on an as needed basis for reliability.
- The rule allows the NYISO to designate a two-year extension (through 2027) and a potential additional two-year extension (through 2029) if needed for reliability.

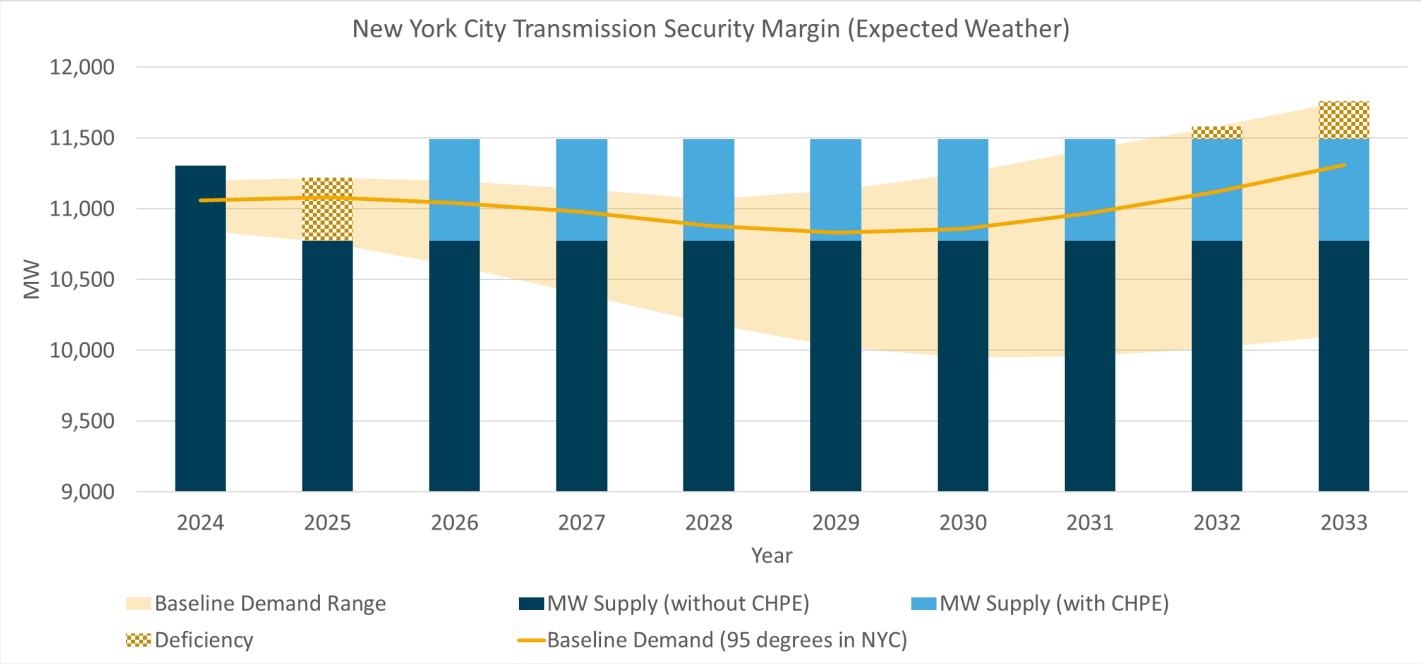
New York ISO

New York City Demand Forecasts



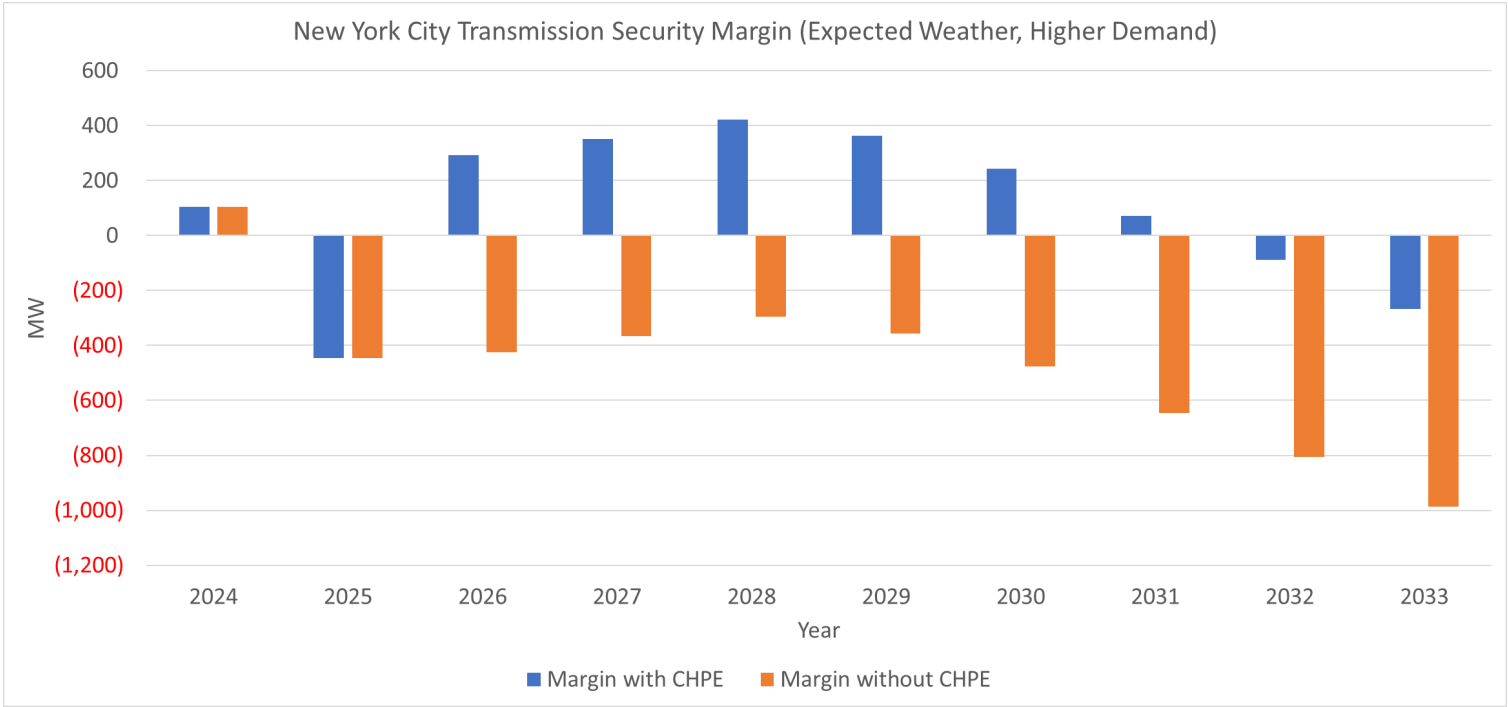
New York ISO

NYC Supply vs. Demand



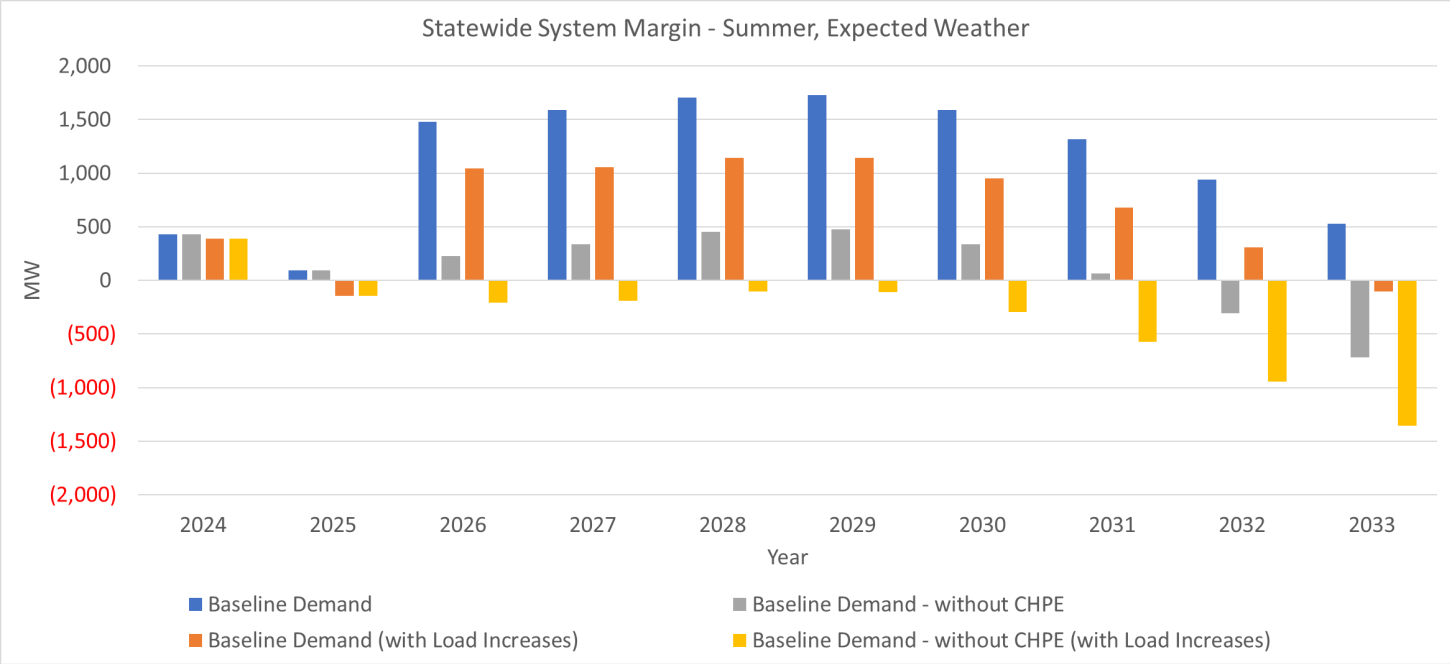
New York ISO

New York City Transmission Security Margin



New York ISO

Statewide Margins with New Demand Driven by Economic Development



New York ISO

The NYISO Identifies a Reliability Need

Next Steps Timeline

1

July 14, 2023

NYISO RELEASES Q2 "STAR" REPORT; DECLARES A RELIABILITY NEED

The NYISO's report identifies a reliability need for New York City beginning in summer 2025 driven by forecasted increases in peak demand and the expected retirement of generation units in response to NYS DEC's "Peaker Rule."

2

August - October 2023

NYISO CALLS FOR BACKSTOP SOLUTION FROM CON EDISON

In response to the NYISO's declaration, the local utility (Con Edison) will be called upon to propose a backstop solution. The NYISO will work closely with the local utility to evaluate proposals.

3

August - October 2023

NYISO SOLICITS MARKET-BASED SOLUTIONS

Solutions proposed by developers may include generation and demand response offerings. Parties will have 60 days to submit proposals in response to the solicitation.

4

October – November 2023

NYISO REVIEWS PROPOSED SOLUTIONS

The NYISO reviews Con Edison's backstop solution and proposed market-based solutions to determine if any are viable and sufficient to meet the need within the required timeframe.

5

November 2023

NYISO DETERMINES SOLUTIONS

The NYISO selects viable and sufficient solution(s). If solutions are not sufficient to address the need within the necessary timeframe, the NYISO would submit a letter to the NYS DEC designating which "peaker" generators may be needed to maintain reliability until permanent solutions are in place.

LEARN MORE > visit www.nyiso.com

New York ISO

Questions?

New York ISO