New York ISO
Independent System Operator

2022 RNA Key Findings

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Management Committee

October 26, 2022, KCC

DRAFT – FOR DISCUSSION PURPOSES ONLY

Agenda

- 2022-2023 Reliability Planning Process (RPP) Background
- 2022 RNA Key Findings
- Next Steps

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2022-2023 RPP Background

2022-2023 RPP Background

- The RPP is part of the Comprehensive System Planning Process and is performed pursuant to the Attachment Y of the NYISO OATT and the Reliability Planning Process Manual
- The 2022-2023 RPP started with the 2022 Reliability Needs Assessment (2022 RNA) and will be followed by the 2023-2032 Comprehensive Reliability Plan (CRP)
- The 2022 RNA evaluates transmission security and resource adequacy of the Bulk Power Transmission Facilities (BPTF) using the 2022 RNA Base Case during the Study Period
  - The reliability evaluations apply the NERC, NPCC, and NYSRC reliability rules
  - The 2022 RNA Study Period looks at year 4 (2026) through year 10 (2032) of the 10-year period, while year 1 through year 5 are assessed quarterly in the Short-Term Reliability Process
- The 2022 RNA is based on the information from the Gold Book 2022, the 2022 FERC 715 filing (power flow cases and auxiliary files), historical data, and market participant data

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2022 RNA: Scenarios Background

- **In addition to evaluating the reliability criteria on the RNA Base Case, the RNA also identified, through the development of appropriate scenarios, factors and issues that might adversely impact the reliability of the BPTF over the course of the Study Period**
  - Scenario results are for information only
  - Generally, the scenarios are built off the preliminary ("1st pass") RNA Base Case, unless identified otherwise

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2022 RNA: Steps to Date

- NYISO presented key assumptions at working groups and subcommittees (*e.g.*, ESPWG and TPAS) starting in February 2022
- Starting on July 1, 2022, the NYISO presented and discussed the results with stakeholders at working groups and subcommittees
- Obtained Operating Committee's concurrence and recommendation for approval by the Management Committee at the October 13 meeting
- Seeking Management Committee's concurrence and recommendation to the Board of Directors at the October 26 meeting

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2022 RNA Key Findings – Base Case

Overview

- The 2022 Reliability Needs Assessment (RNA) concludes that the New York State Bulk Power Transmission Facilities as planned will meet all currently applicable reliability criteria from 2026 through 2032 for the assumed future system demand and with the assumed planned projects meeting their proposed in-service dates.
- While this RNA does not identify any long-term actionable Reliability Needs, the resource adequacy and transmission security margins are tightening across the New York grid through time.
  - New York will likely experience even smaller margins if additional power plants become unavailable or if demand is greater than forecasted.
  - If the margins are totally depleted, the risk of a reliability violation is increased.
  - The margins for transmission security are narrower than the margins for resource adequacy
- Additional risk factors beyond what is assumed in the 2022 RNA (*e.g.*, climate, economic, regulatory, and policy drivers) may accelerate the narrowing or depletion of these reliability margins.

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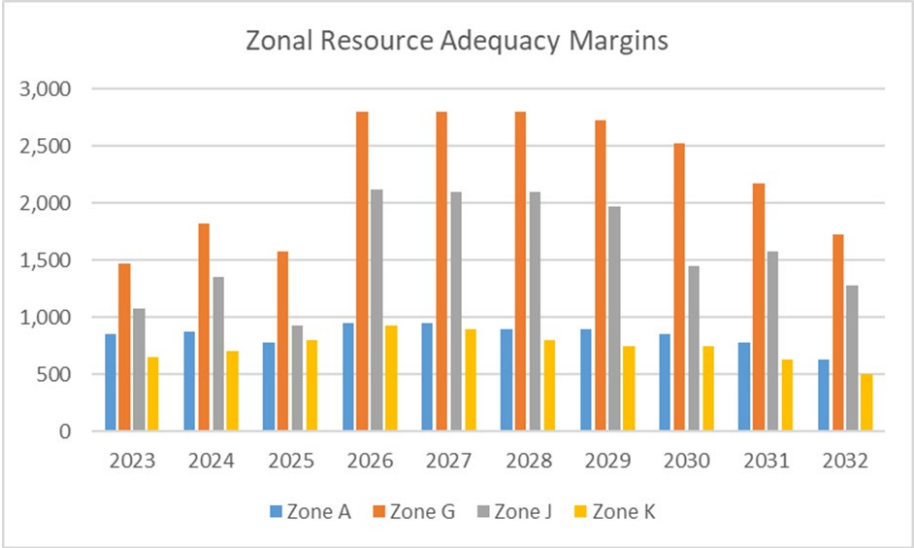
Key Findings – Resource Adequacy Margins

- **Resource adequacy margins are tightening across the New York grid over time.**
  - The Long Island margin is likely to increase as a result of the Long Island Offshore Wind Export Public Policy Transmission Need.
- **A growing reliance on assistance from neighboring regions outside New York increases the risk of loss of load.**
  - Without emergency assistance from neighboring regions, there would not be sufficient resources to serve demand within New York throughout the planning horizon.



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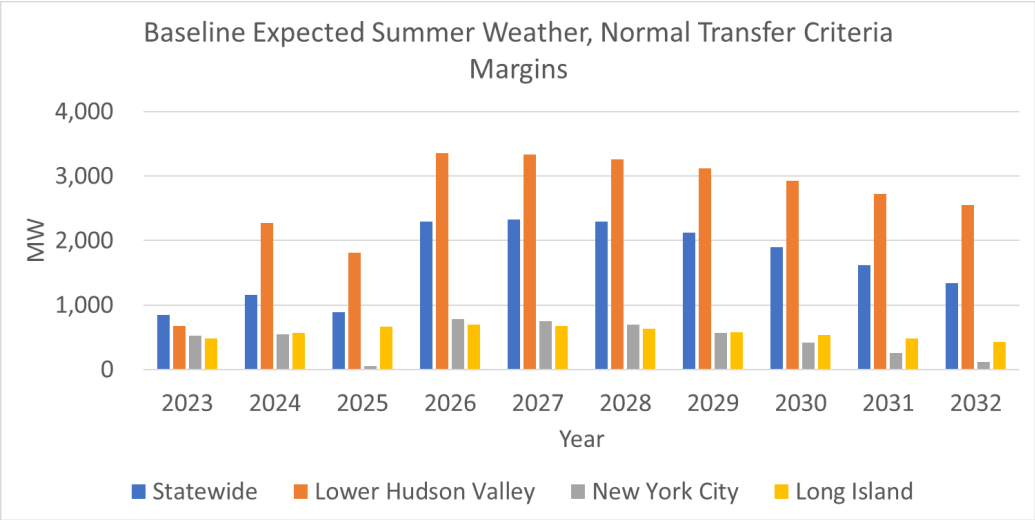
Key Findings – Security Margins

- **Transmission security margins are tightening across the New York grid over time.**
- **The summer margin improves in 2026 with the scheduled addition of the Champlain Hudson Power Express (CHPE) connection from Hydro Quebec to New York City but reduces through time as demand grows within New York City.**
  - Potential heatwaves of various degrees pose risks throughout the next ten years, especially in 2025.
  - While CHPE will contribute to reliability in the summer, the facility is not expected to provide any capacity in the winter.



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Key Findings – NYC Security Margin

- While transmission security within New York City is maintained through the ten-year period in accordance with current design criteria, the margins are very tight and decrease to approximately 50 MW by 2025.
- With the addition of Champlain Hudson Power Express (CHPE) project in 2026, the margin improves but reduces to near 100 MW by 2032.
- The reliability margins within New York City may not be sufficient even for expected weather if:
  - (i) the CHPE project experiences a significant delay,
  - (ii) forecasted demand in New York City increases by as little as 60 MW in 2025, or
  - (iii) there are additional generator deactivations beyond what is already planned.
- Some generation affected by the DEC Peaker Rule may need to remain in service until CHPE or other permanent solutions are completed to maintain a reliable grid.

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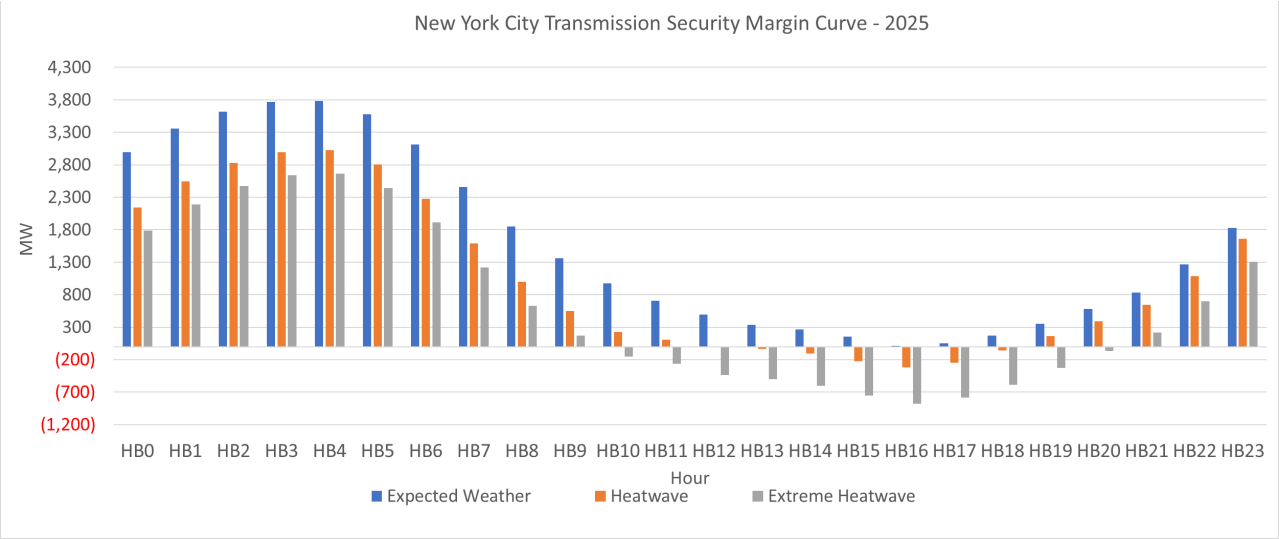
Key Findings – Security Margins

- Within New York City, the margins are very narrow for several hours of the mid-afternoon under expected weather conditions
- For heatwaves, the New York City transmission security margin is deficient and may last for nearly half of the day



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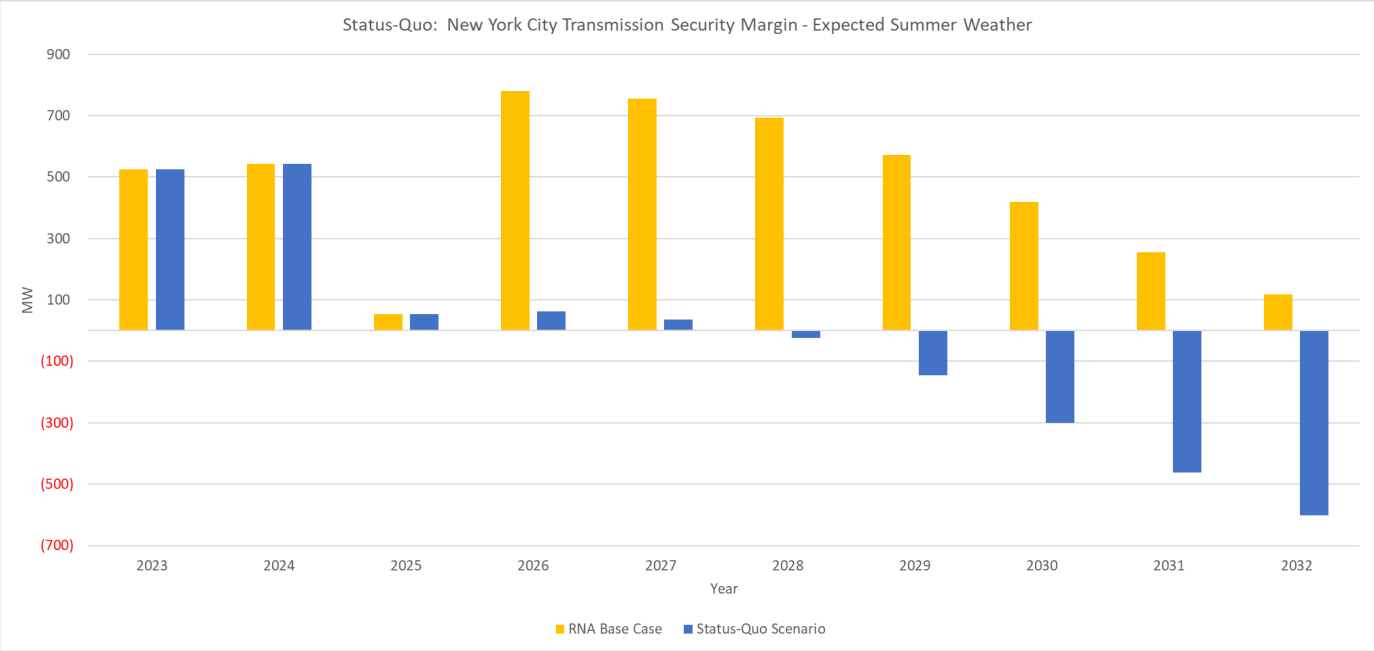
NYC Security Margin without CHPE

- Margins increase in 2026 with the planned addition of Champlain Hudson Power Express (CHPE) project
- Without CHPE, razor-thin margins would become a deficiency in 2028



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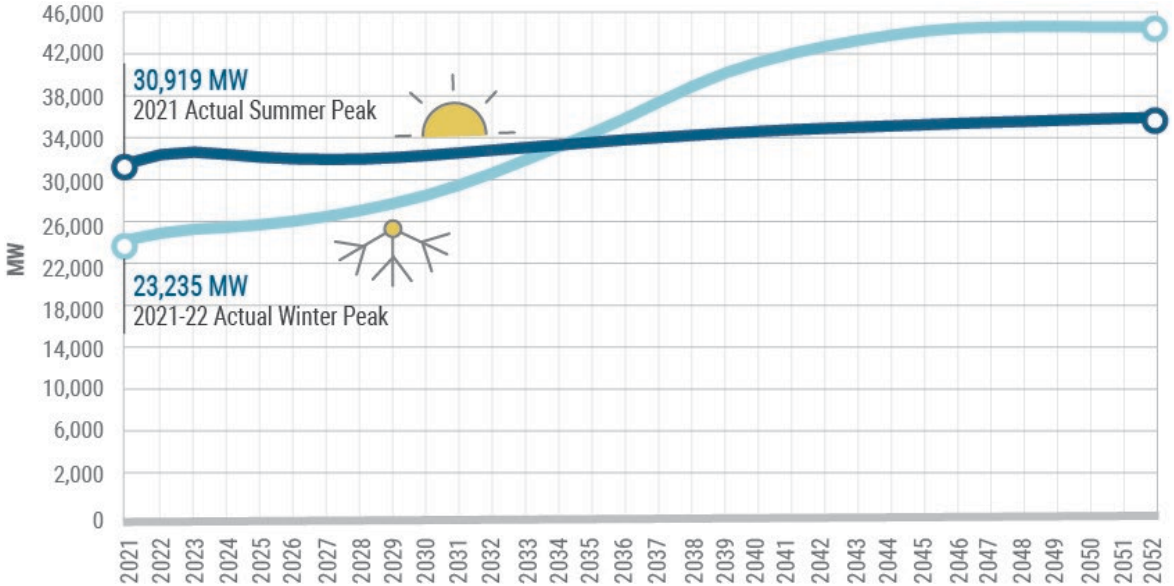
Key Findings – Winter Demand

- The NYCA is projected to become a winter-peaking system in the mid-2030s, primarily driven by electrification of space heating systems (*e.g.*, installation of heat pumps and other potential electric heating systems).
- While no reliability violations were found, it is important to note several upstate zones are projected to become winter peaking within the 10-year period.



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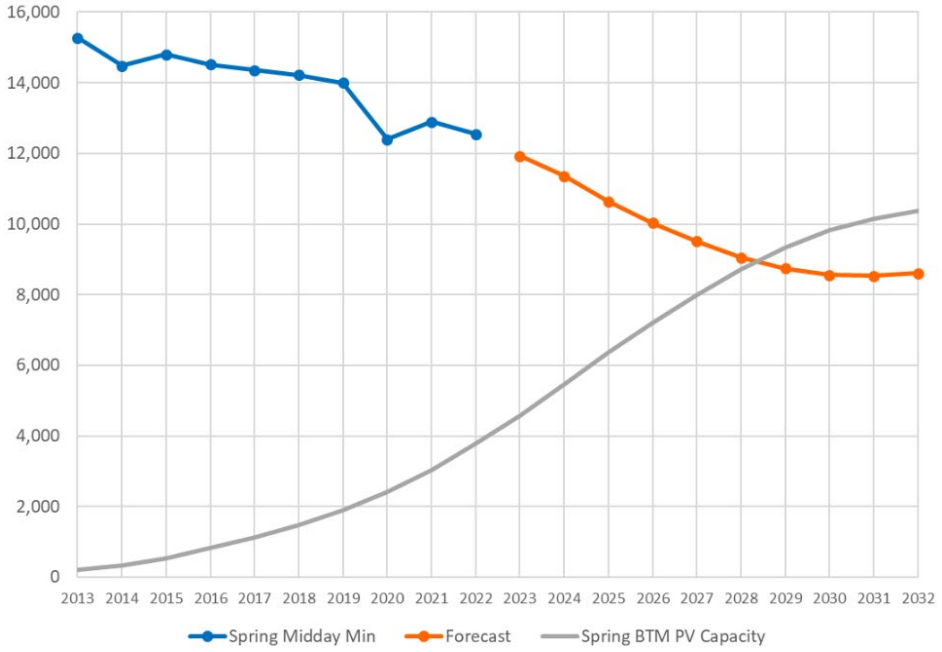
Key Findings – Light Load Demand

- During spring daytime conditions when the load is very light and behind-the-meter solar output could be near its maximum output capability, the amount of other generating resources needed to serve load in these hours may be significantly reduced.
- While no reliability violations were found, the stability of the grid under light load conditions will be important to assess as the amount of behind-the-meter resources increasingly serve a significant amount of the load.



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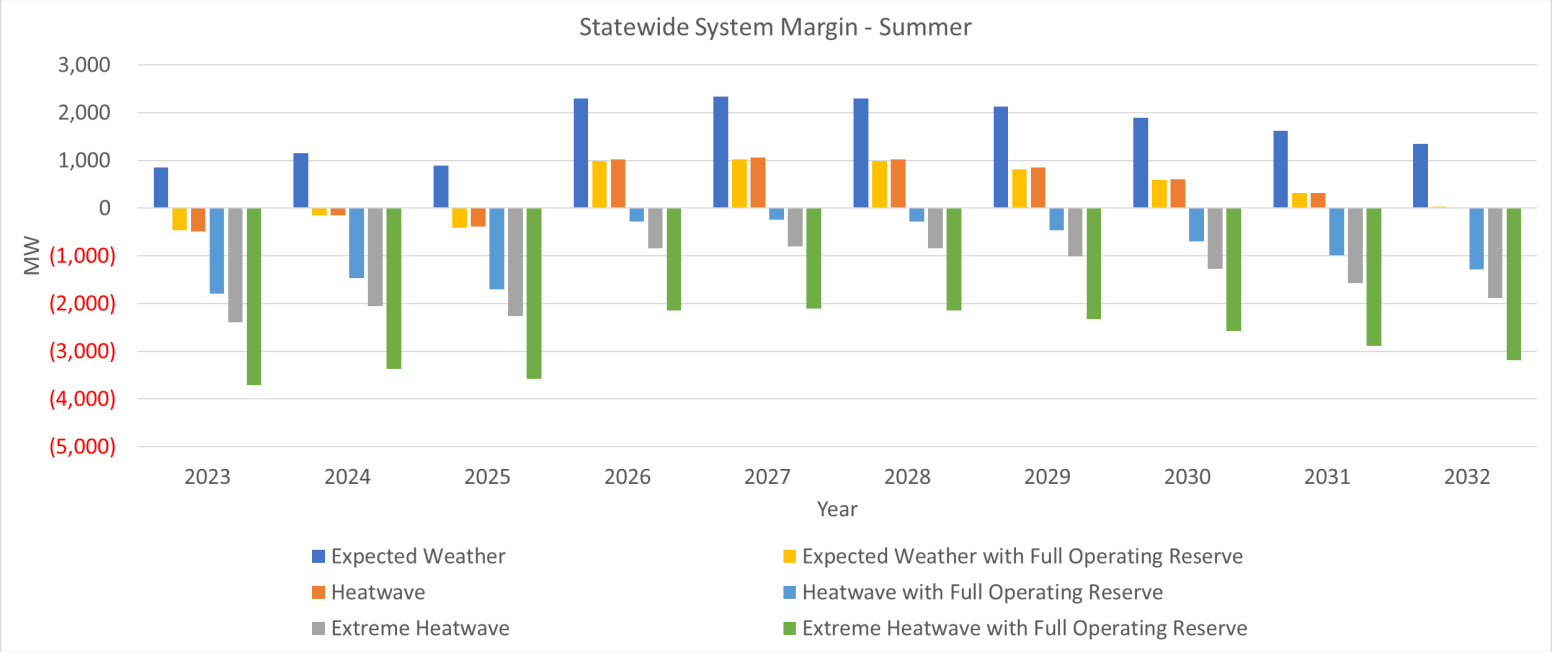
2022 RNA Key Findings – Scenarios

Key Findings – Extreme Conditions

(For Information Only – Beyond Design Criteria)

- Extreme conditions like heat waves could result in deficiencies to serve demand statewide



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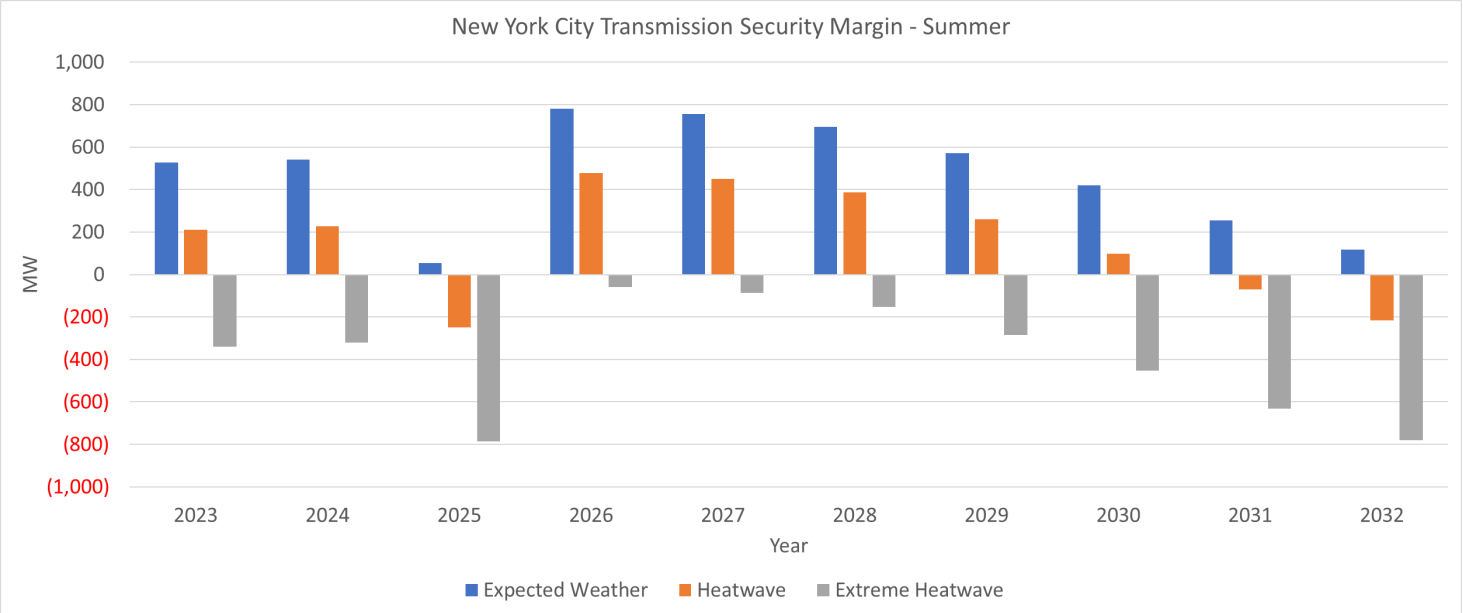
Key Findings – NYC Extreme Conditions

(For Information Only – Beyond Design Criteria)

- Extreme conditions, such as heatwaves or storms, could result in transmission security deficiencies in New York City



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Key Findings – Gas Supply Shortage

- With input from NYISO's ongoing Fuel & Energy Security initiatives, approximately 6,300 MW of existing gas-fueled generation was identified as potentially at-risk under gas shortage conditions during winter peak conditions. This is classified as a beyond-design-criteria "extreme condition" by the New York State Reliability Council.
- If that at-risk generation is unavailable for December through February in the winter of 2031-2032, reliability would be diminished but still within loss of load expectation (LOLE) criterion.
- However, this gas shortage condition would not meet statewide system reliability margins based on deterministic design criteria (N-1-1).

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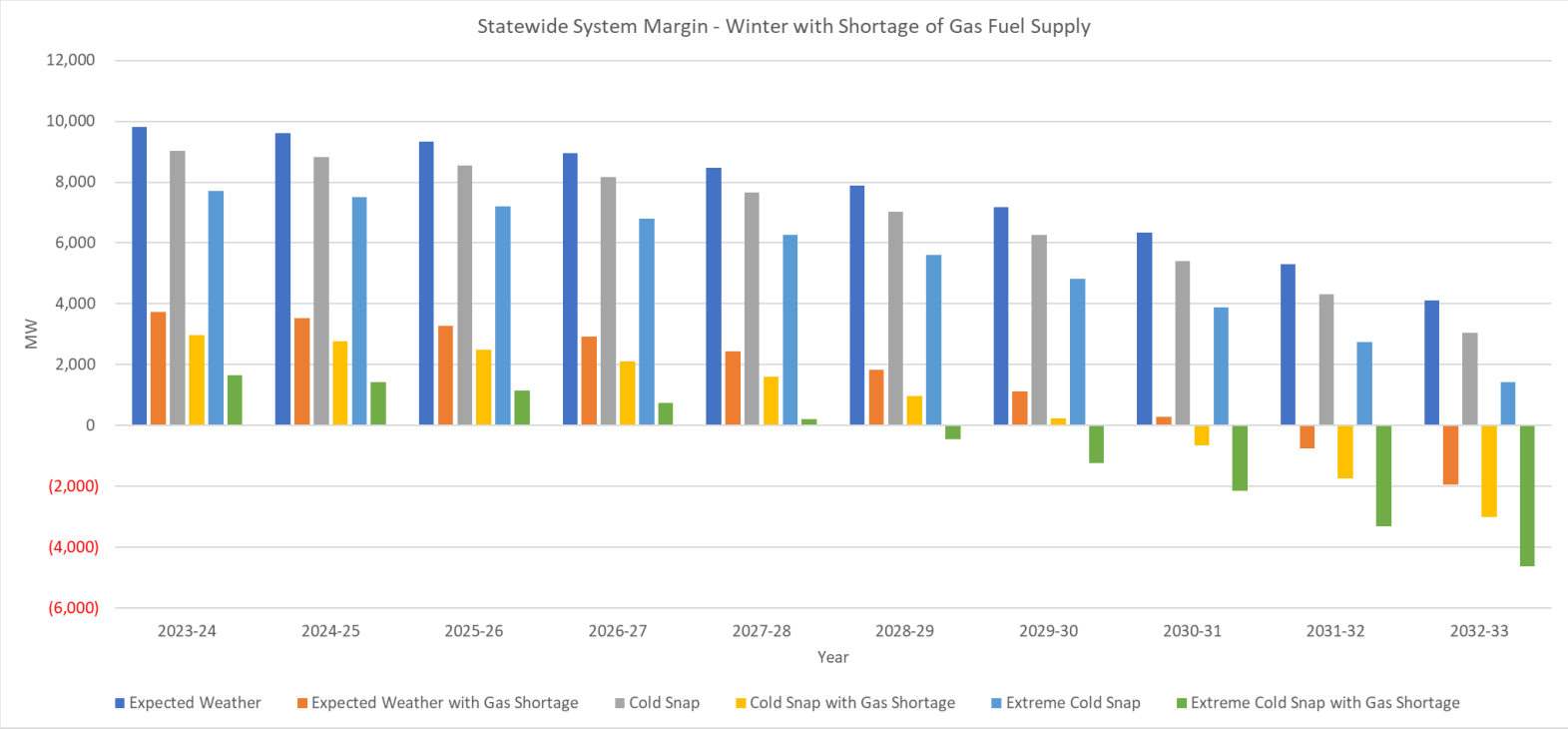
Key Findings – Winter Gas Supply (con't)

(For Information Only – Beyond Design Criteria)



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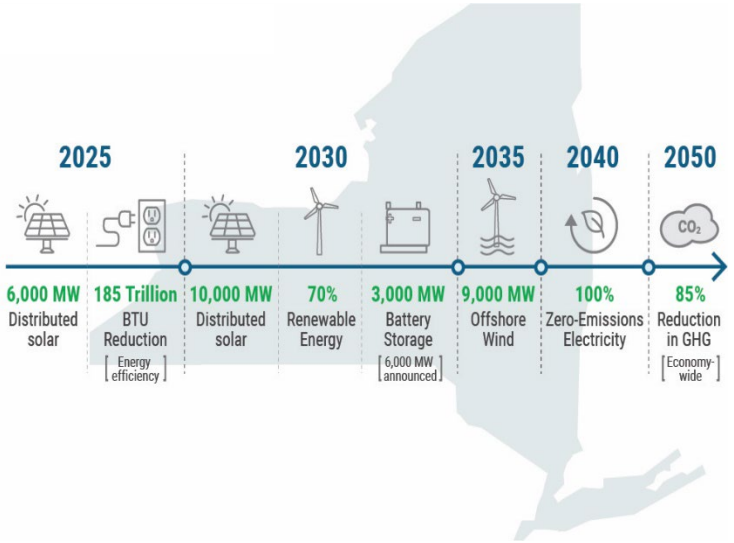
Road to 2040 – Reliability and Resiliency Challenges

- The Climate Leadership and Community Protection Act (CLCPA) establishes resource targets driving a major transition in the New York grid.
- As part of the *2021-2040 System & Resource Outlook* (the "Outlook"), the NYISO assessed several policy-driven futures. This 2022 RNA builds upon the findings with an analysis of the postulated 2030 system conditions and provides further insight focusing on system reliability aspects, such as resource adequacy.



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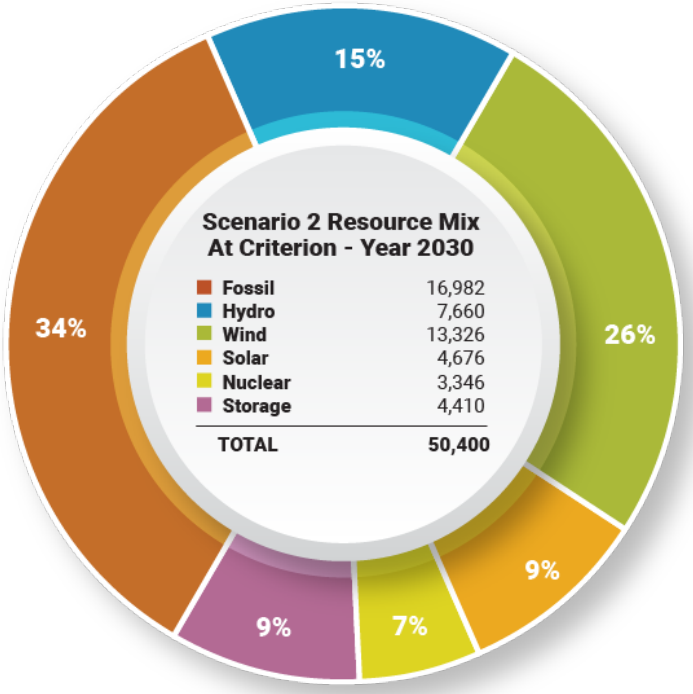
Key Findings – 70x30 Policy Case

- The Policy Scenario shows that approximately 17,000 MW of existing fossil generation must be retained to reliably serve a net peak demand of 26,700 MW and to have an adequate system in 2030.
  - The necessary amount of fossil generation will be greater if the net peak demand approaches the NYISO's forecast of 31,700 MW.
- The resulting total capacity-to-load ratio in 2030 would be 188.5%, equivalent to an unforced capacity-to-load ratio of 135.8%.
- With high penetration of renewable intermittent resources, dispatchable emissions-free resources (DEFRs) will be needed beyond 2030 to balance intermittent supply with demand.



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Next Steps

Next Steps

- February through October ESPWG/TPAS: 2022 RNA major assumptions, results, draft reports
- October 3 TPAS/ESPWG: Complete Draft Report
- October 13 OC: Vote
- October 26 MC: Market Monitoring Review and MC's vote
- November: NYISO's Board of Directors' approval and publishing of Final RNA Report
- 2023: Preparation of 2023-2032 Comprehensive Reliability Plan (CRP)

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Questions?

Roles of the NYISO

- **Reliable operation of the bulk electricity grid**
  - Managing the flow of power on 11,000 circuit-miles of transmission lines from hundreds of generating units
- **Administration of open and competitive wholesale electricity markets**
  - Bringing together buyers and sellers of energy and related products and services
- **Planning for New York's energy future**
  - Assessing needs over a 10-year horizon and evaluating projects proposed to meet those needs
- **Advancing the technological infrastructure of the electric system**
  - Developing and deploying information technology and tools to make the grid smarter

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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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