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Independent System Operator

Reliability Planning Process: Challenges and Considerations

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TPAS/ESPWG

January 20, 2026

Agenda

- Objective
- Background
- Considerations
- Schedule and Next Steps
- Appendix: Previous presentations Related to RPP Changes

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Objective

Objective

- The purpose of this discussion is to gain stakeholder feedback on key considerations for revising the Reliability Planning Process (RPP) and to define an anticipated scope and schedule for such revisions.
- Past presentations on this topic are included in an appendix.

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Background

Implementing CRP Recommendations

- **NYISO is pursuing changes to the RPP for implementation in the 2026 Reliability Needs Assessment (RNA) to:**
  - Account for a wider range of plausible outcomes
  - Incorporate compounding risks over time
    - Drivers, such as economic development, energy policy implementation, climate, etc., have compounding effects to the potential variation in demand and supply forecast

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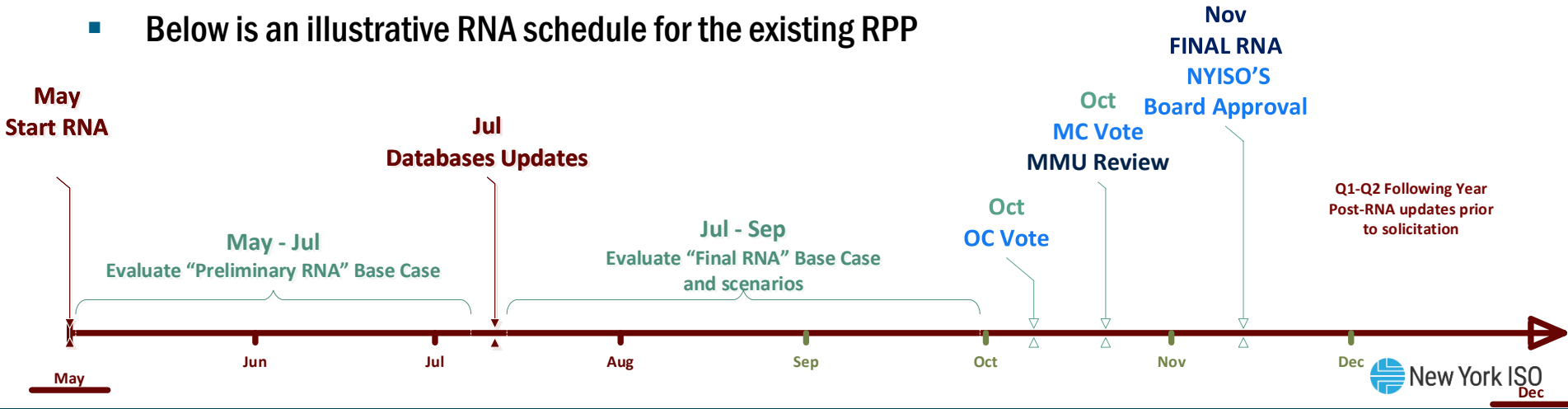
Existing RPP

- **Under the RPP, NYISO assesses a single base case to determine whether the Bulk Power Transmission Facilities meet all Reliability Criteria for the identification of Reliability Needs**
  - In accordance with ISO Procedures, the base case assumptions are identified in May timeframe, with opportunity for base case updates in the middle of the study
- **NYISO also assesses scenarios, but those results are only informational for which NYISO cannot identify additional Reliability Needs**
  - Scenarios are intended to consider variables from the base case to test the robustness of the assessment
- **Below is an illustrative RNA schedule for the existing RPP**



Limitations of Existing RPP

- To account for growing uncertainty through use of a single base case, NYISO would have to use the most conservative assumptions and, therefore, could overstate reliability risks and overbuild the system.
- The use of a single base case with small changes in the system conditions can result in study-by-study fluctuations in the identification of Reliability Needs when reliability margins are tight.

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Considerations

Key Considerations for Process Reform

- Reliability Needs must continue to be based on Reliability Criteria.
- Multiple credible combinations of system conditions can more accurately reflect the changing nature of the grid.
- Open and transparent with meaningful stakeholder involvement at key points in the process.
- Continue efforts to further improve alignment between capacity requirements in the markets and planning studies.

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Implementation Considerations

- **NYISO intends targeted OATT Attachment Y changes that will be discussed in phases.**
  - Initial focus will be on the process for identifying Reliability Needs that will be implemented in the 2026 RNA.
  - Further process changes to the RPP, such as enhancements to the identification of solutions and CRP, will be discussed later in the year.
- **Details on study procedures will be developed and implemented through RPP Manual revisions.**

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Key Study Assumptions

- **Related and in parallel to the RPP discussion, NYISO will be reviewing key study assumptions leading up to the kickoff of the 2026 RNA, with particular focus on:**
  - Load uncertainty
  - Aging generation
  - Emergency assistance
  - Generator outage rates

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Next Steps & Schedule

Preliminary Schedule

January – February	Discuss concepts and straw proposal
March	Stakeholder review and approval of tariff revisions
April – May	File tariff revisions with FERC; Discuss 2026 RNA assumptions
July	Tariff revisions become effective and implemented in 2026 RNA
October	Committee review and approval of 2026 RNA

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Next Steps

- NYISO encourages stakeholders to provide suggestions and questions
- Proactive feedback will help advance stakeholder process leading up to 2026 RNA
- Please send suggestions to Kirk Dixon, kdixon@nyiso.com

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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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Questions?

Appendix: Next Steps and Timeline to Act on CRP Recommendations, November 20, 2025 ESPWG Presentation

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Follow up to 2025-2034 Comprehensive Reliability Plan

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Senior Manager, Reliability Planning

ESPWG

November 20, 2025

Background

- The 2025-2034 Comprehensive Reliability Plan (CRP) identified 4 recommendations for NYISO to discuss and coordinate with stakeholders
- The CRP will be published following approval by the NYISO Board of Directors
- Purpose of this topic is to discuss next steps and timeline on those recommendations

Recommendation #1: Take action to account for a wider range of plausible outcomes in reliability planning

- **Action:**
  - Further investigate risk factors identified in CRP, particularly around demand forecast and aging generation
  - Propose process changes and discuss with stakeholders, including any corresponding OATT or RPP Manual revisions, as necessary
- **Timeline:**
  - NYISO will pursue process changes in advance of the 2026 RNA
  - RNA assumptions will be discussed with stakeholders in March-April 2026

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Considerations for Recommendation #1

- **Incorporation of compounding risks over time**
  - Drivers, such as economic development, energy policy implementation, climate, etc., have compounding effects to the potential variation in demand and supply forecast
  - Possibility of different assumptions in near term versus long term
- **Assessing additional credible system conditions under existing reliability requirements beyond what has previously been studied**
- **Different implications in probabilistic versus deterministic analysis**
- **Additional considerations raised by stakeholders**

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Recommendation #2: Strengthen reliability planning beyond emergency measures

- **Action:**
  - Further investigate different reliability metrics in probabilistic analysis to better capture reliability risks
  - Follow resource/energy adequacy efforts at the NERC level
  - Discuss potential modifications to reliability rules with NYSRC
- **Timeline:**
  - Review of Emergency Operating Procedure (EOP) assumptions prior to 2026 RNA
  - Discuss prudent revisions to reliability rules for application in long-term planning

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Recommendation #3: Structure a multifaceted approach to address resource shortfalls

- **Action:**
  - Review potential planning process changes to encourage new entry and repowering for resources necessary for reliability
  - Continue coordination with New York State agencies on policy alignment and streamlined approvals to complement NYISO's ongoing planning and market efforts
- **Timeline:**
  - Through 2026, discuss and present process concepts for stakeholder review to allow designation of supply-side solutions to timely address Reliability Needs where transmission alone is insufficient

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Recommendation #4: Comprehensive strategy for system voltage performance

- **Action:**
  - Coordinate voltage upgrades with Transmission Owners and DPS through various planning processes
  - 2026 RNA and load interconnection studies may identify voltage violations that will require mitigation
- **Timeline:**
  - 2026 and beyond

Planning Coordination with Markets and Operations

- **Leading up to 2026 RNA:**
  - Current efforts to further improve alignment between capacity requirements in the markets and planning studies
    - Investigate potential near-term enhancements to improve capacity market alignment
    - Efforts to provide for improved alignment with near-term market signals will continue as CRP recommendations are implemented
  - NYISO is continuing to investigate stressed system conditions experienced in real-time operations, including the June 2025 heatwave, which will inform the recommendations for refining future planning assumptions
- **Longer term:**
  - Market enhancements to encourage load flexibility and send price signals for emerging reliability risks

Next Steps

- NYISO encourages stakeholders to provide suggestions and questions
- Proactive feedback will help advance stakeholder process leading up to 2026 RNA, followed by preparation for the 2027-2036 CRP.
- Please send responses to Kirk Dixon, kdixon@nyiso.com

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Questions?

Appendix: Comprehensive Reliability Plan, October 16, 2025 MC Presentation

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2025-2034 Comprehensive Reliability Plan

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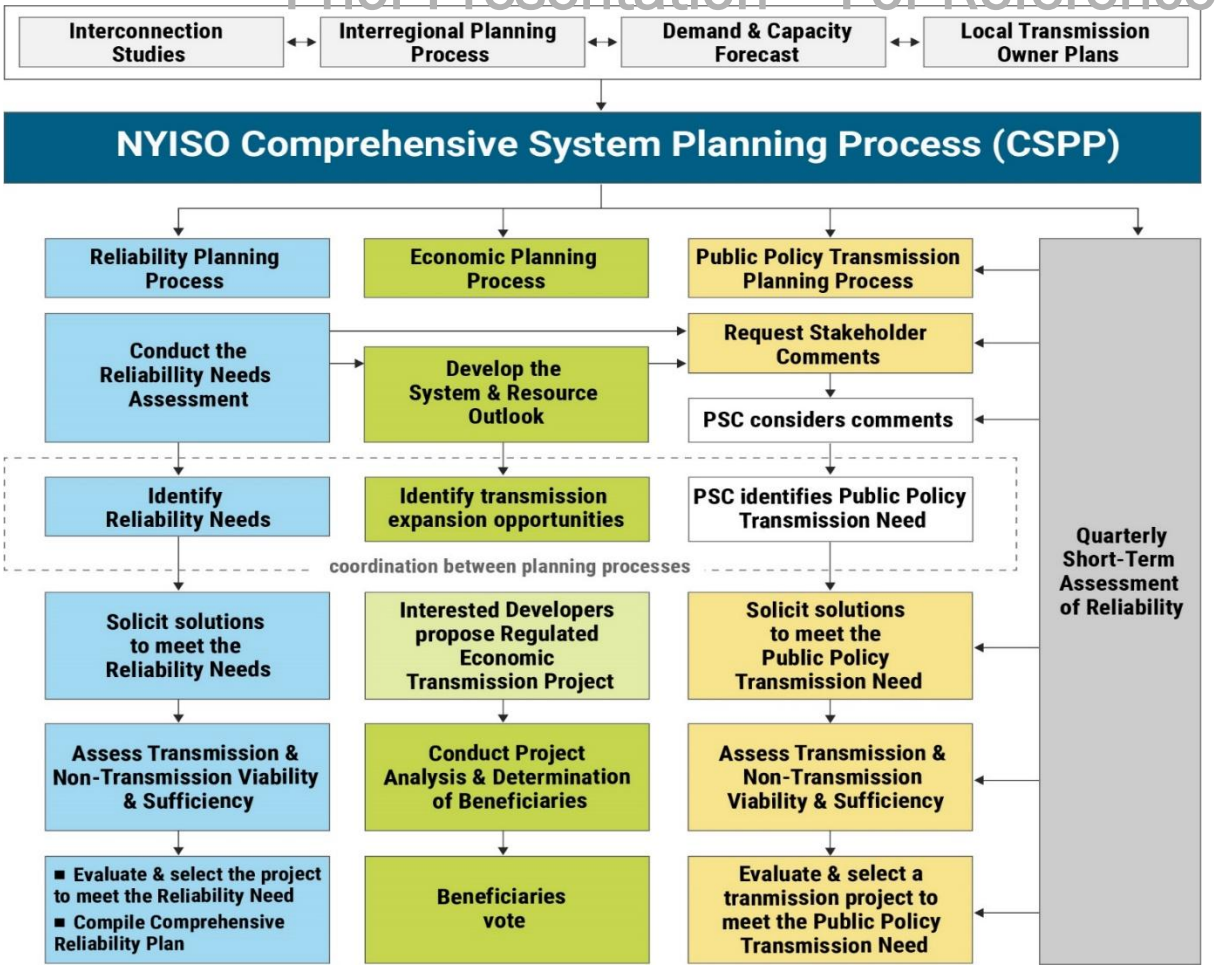
Operating Committee

October 16, 2025

Agenda

- Findings and Recommendations
- Planning for a Growing Range of Plausible Futures
- Aligning Reliability Planning with Operational Realities
- Next Steps



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2024-2025 Comprehensive Reliability Plan: Findings and Recommendations

Resolution of the Identified Reliability Need

- The 2024-2025 cycle of the Reliability Planning Process started in January 2024, with the 2024 Reliability Needs Assessment (2024 RNA)
  - Final 2024 RNA Report is available here: [Report] [Appendices]
- The 2024 RNA identified a Reliability Need driven by transmission security violations in NYC beginning in 2033, growing to a deficiency of 97 MW by 2034
- Post-RNA system updates, namely a 200 MW decrease in Zone J demand forecast, satisfied the identified Reliability Need and, therefore, a solicitation for solutions was not required

Key Risk Factors Shaping the Grid

- While New York's energy transition is accelerating, the pace and sequencing of change introduce risks that cannot be ignored
- The NYISO has identified a growing range of emerging risks across generation, demand, and transmission that could significantly affect system reliability:
  - Reliance on Aging Generation
  - Large Loads and the Impacts on Future Demand
  - Reliance on Imports
  - Extreme Weather and Seasonal Peaks
  - Delays in Planned Projects

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Planning for a Growing Range of Plausible Futures

- Future system conditions will be shaped by multiple interacting risk factors
- Plausible changes in forecasted demand, generation, or transmission can stack up to provide sufficient surpluses or significant deficiencies
- The next Reliability Planning Process cycle must implement a more proactive and expanded framework—one that better integrates a range of demand profiles, operational realities, and the accelerating pace of change in the resource mix

Planning and investment must begin now

- **This CRP highlights reliability challenges that can be addressed through timely, coordinated actions, such as:**
  - accelerating the entry of resources already in the development pipeline
  - preserving or replacing critical dispatchable capability
  - adding firm capacity

Recommendation #1: Take action to account for a wider range of plausible outcomes in reliability planning

- Evaluate a wider range of plausible emerging risks, rather than relying solely on a single deterministic base case
- Incorporate the probability of aging generation or catastrophic failures, recognizing that these risks grow significantly over time
- Use a range of plausible demand forecasts, accounting for economic trends, electrification, demand-side policy adoption, and technology-driven behavior changes

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Recommendation #2: Strengthen Reliability Planning Beyond Emergency Measures

- Current criteria measure resource adequacy only after assuming the full utilization of emergency operating procedures, effectively planning for operators to rely on extraordinary measures as routine practice
- This approach leaves fewer tools available when real-time conditions deteriorate
- The NYISO recommends that additional metrics, such as expected unserved energy (EUE), be utilized to determine statewide reliability with consideration of normal operating conditions

Recommendation #3: Structure a multifaceted approach to address resource shortfalls

- **Given that the CRP identifies scenarios where statewide deficiencies could exceed 4,000 MW by the early 2030s, the NYISO recommends:**
  - Encouraging resource development requires considerations beyond the scope of NYISO's planning process, including permitting timelines, siting restrictions, supply chain constraints, and financing hurdles
  - Aligning policy and streamlining approvals to complement NYISO's planning and market efforts

Recommendation #4: Comprehensive Strategy for System Voltage Performance

- With the rise of distributed energy resource (DER) growth and new investments in transmission, the historically expected flow patterns have become less predictable and, therefore, making voltage control more challenging.
- Development of a system-wide plan for dynamic voltage control devices would be more efficient and flexible than addressing each issue with separate upgrades

Planning for a Growing Range for Plausible Futures

Reliability Metrics

- **Resource Adequacy**
  - The ability of the electric systems to supply the aggregate electrical demand and energy requirements of their customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements.
- **Transmission Security**
  - The ability of the electric system to withstand disturbances such as electric short circuits or unanticipated loss of system elements. The ability of the power system to withstand the loss of one or more elements without involuntarily disconnecting firm load.
  - Transmission security analysis includes transmission security margin calculations that are performed using a deterministic approach through powerflow simulations combined with post-processing spreadsheet-based calculations.
  - This assessment identifies plausible changes in conditions or assumptions that might adversely impact the reliability of the system.

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Key Risk Factors to the CRP

- **Through scenarios, the CRP evaluated key system trends and their risks to reliability**
  - Reliance on aging generation, demand-side uncertainty, large loads, weather variability, nuclear relicensing, demand response, potential transmission and generation project delays, and additional resources
- **The CRP evaluated combinations of these factors to understand and highlight how different plausible configurations can benefit or harm system reliability margins beyond the assumed "baseline" condition**
  - Statewide system margin metric was used to assess the reliability impacts of the wide range of individual and combined risk factors
  - Resource adequacy was used to assess the reliability impacts of certain combinations of demand forecasts, aging generation risks, and solution sets

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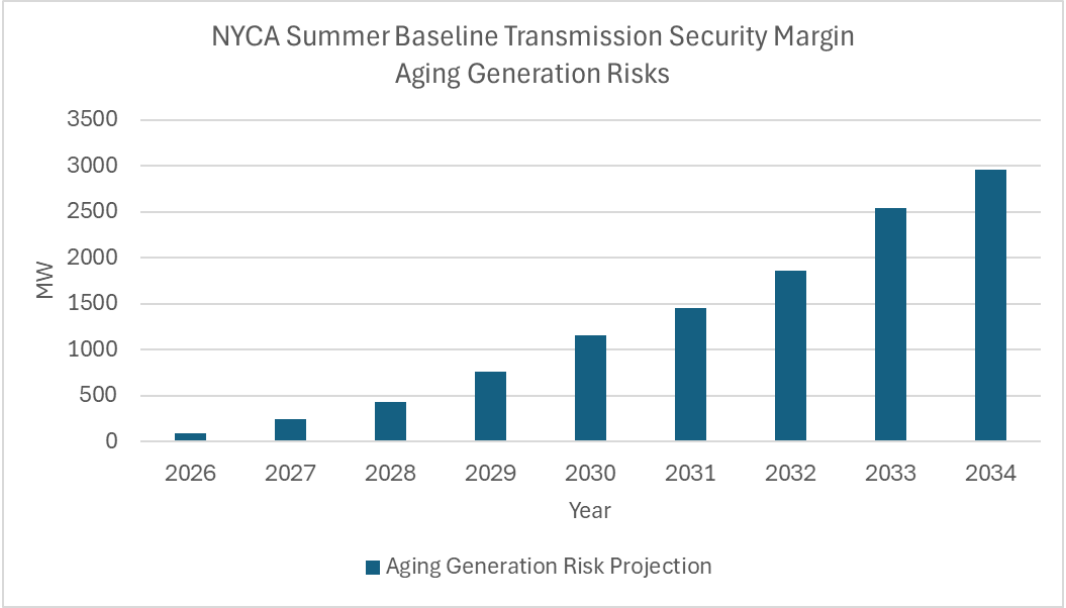
Risk of Aging Generation

- New York's generation fleet is among the oldest in the country
- Using a "statistical retirement risk model," NYISO projects up to ~3,000 MW of fossil generation could deactivate or suffer catastrophic failure by 2034



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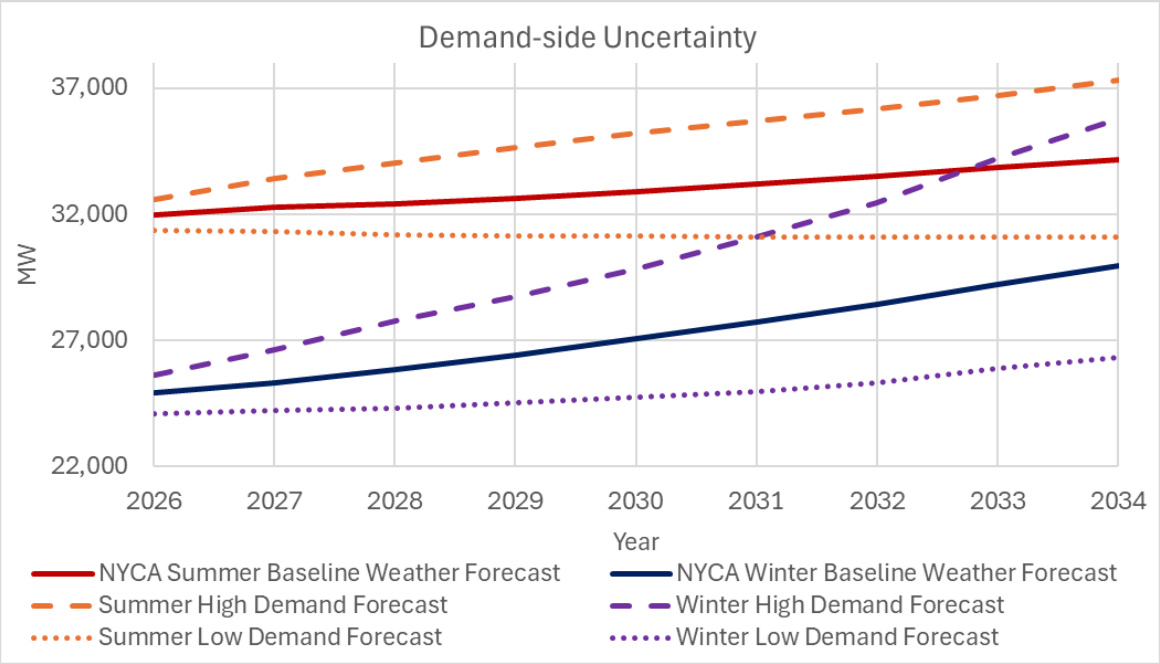
Demand Side Uncertainty



Uncertainty in demand forecasts driven by electrification, economic trends, and large load growth can significantly affect reliability margins

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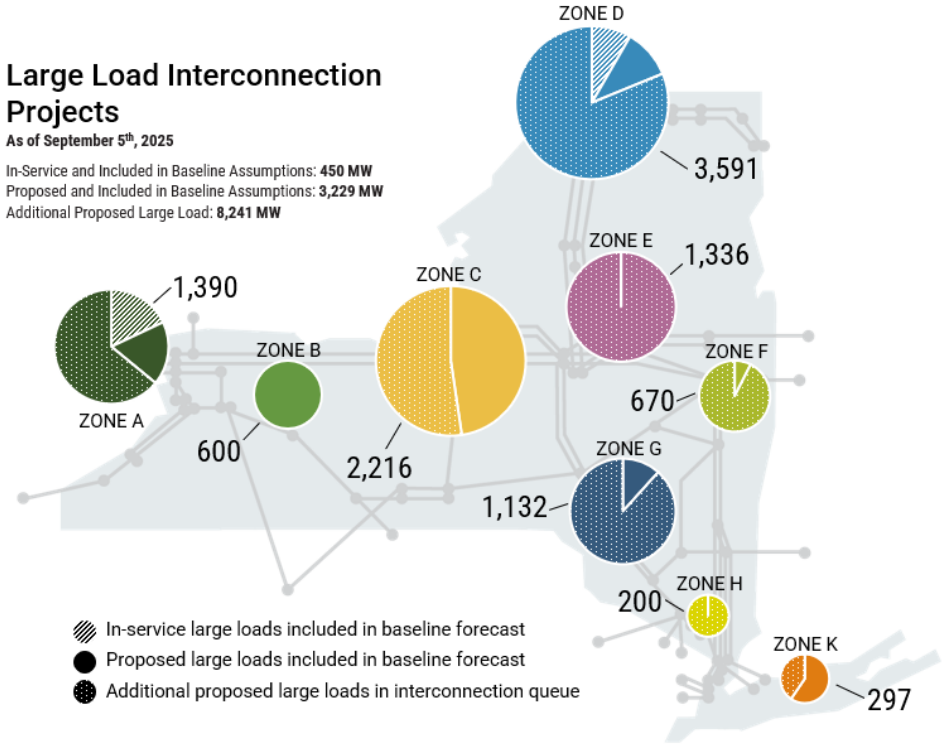
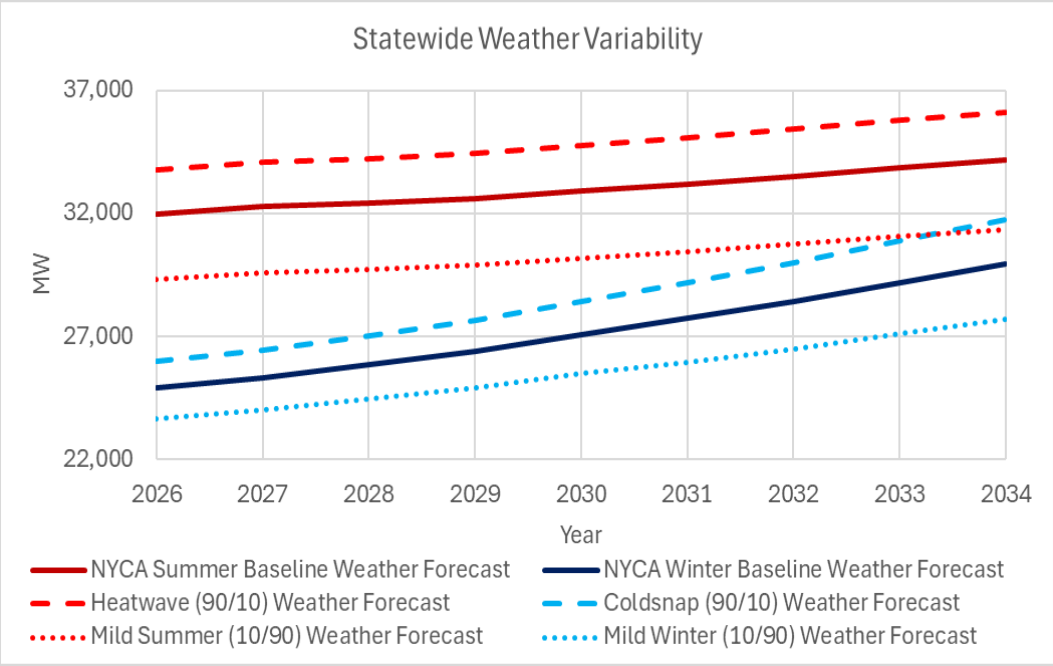
Large Load Development

- Interconnection queue contains over 8,000 MW of additional requested large load projects than were included in the baseline forecast for the 2024 RNA
- The speed and scale of these semiconductor manufacturing and data center loads can come online far outpace the development of new supply



Extreme Weather



Planning studies typically consider a baseline condition modeling "expected weather". However, NYISO has to operate the system throughout various weather variation that can go beyond the expected conditions, as experience during the January 2025 cold snap and June 2025 heat wave

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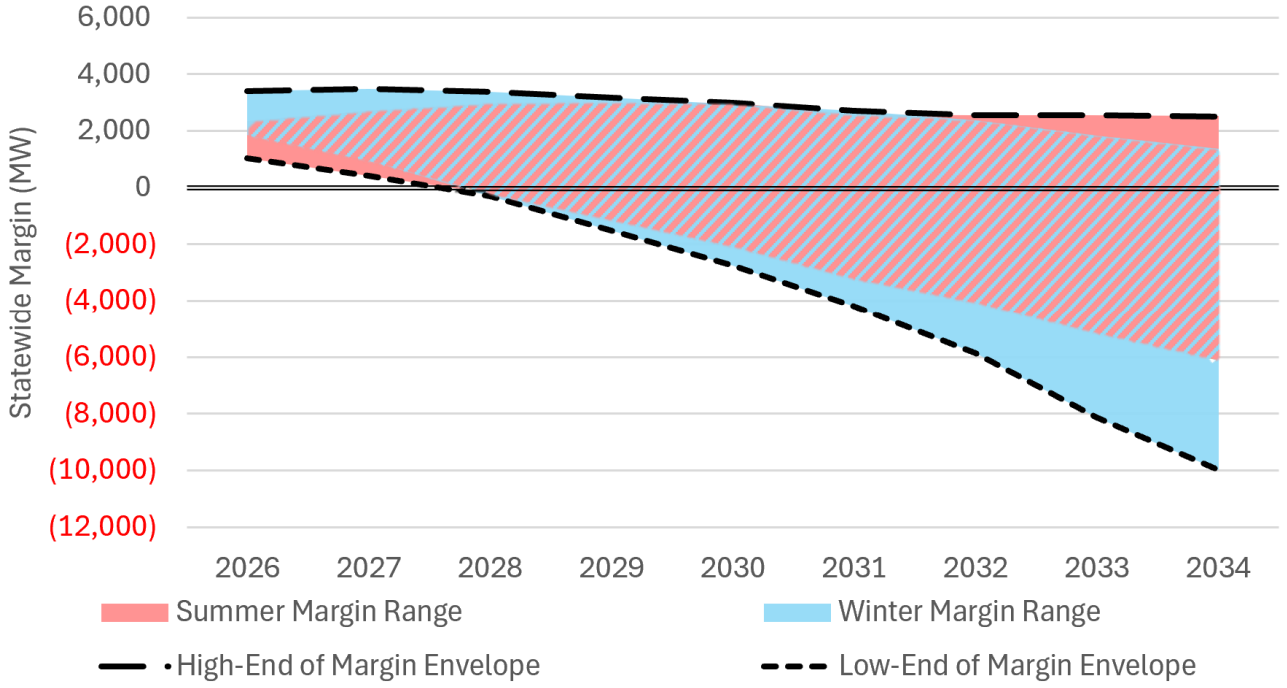
Plausible Combinations of System Risks Show Potential for Significant Reliability Deficiencies



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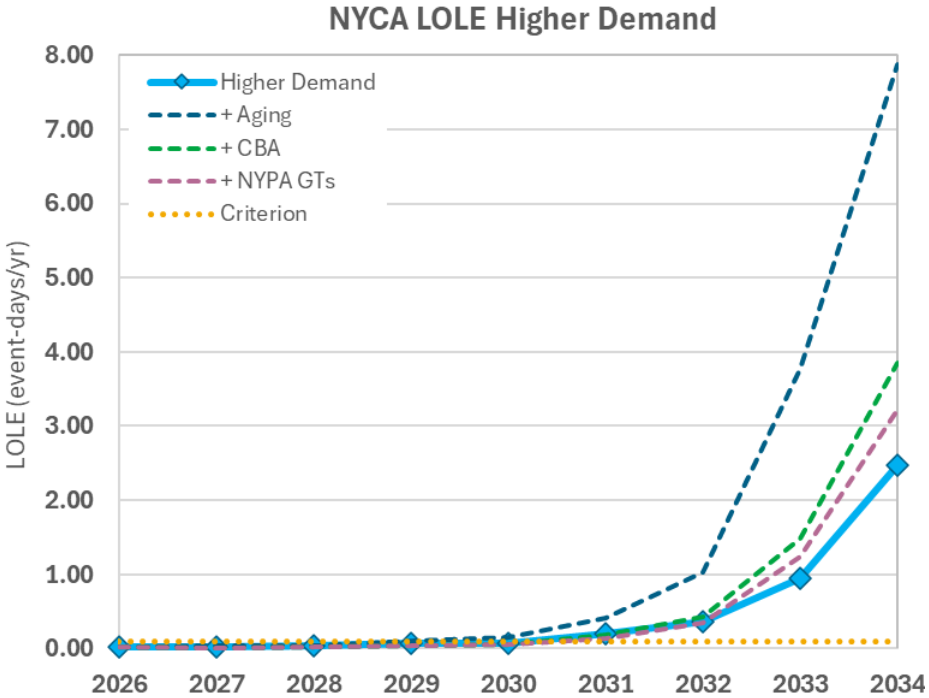
Demand and Aging Gen Impacts on Resource Adequacy

- **LOLE would far exceed 0.1 event-days per year criterion when accounting for higher demand forecast and aging generation**
- **To gauge type and magnitude of potential solutions, the CRP found that the following solution set would resolve the LOLE violation:**
  - addition of ~8,000 MW of storage and renewables advanced in the queue, plus
  - retaining 517 MW NYPA small plants, plus
  - over 4,000 MW of perfect capacity



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Aligning Reliability Planning with Operational Realities

Lessons Learned from June 2025 Heatwave

Category	Recommendation to Aligning Reliability Planning with Operational Realities
Load Conditions	Test load forecasting models for extreme weather; assess risks to operation due to under forecasting (see "Plausible Combinations of System Risks" Section of this CRP)
System-wide Impact	Further explore reliability impacts under wide-area extreme weather events
New York Resource Unavailability	Conduct root cause analysis to investigate resource unavailability (see "Plausible Combinations of System Risks" Section of this CRP)
System-wide Impact Demand Forecast	Further explore reliability impacts under wide-area extreme weather events (see "Plausible Combinations of System Risks" Section of this CRP)

The NYISO will further investigate the stressed system conditions from the June 2025 heatwave, which, in conjunction with the other factors highlighted in the CRP, will inform the recommendations for refining future planning assumptions.

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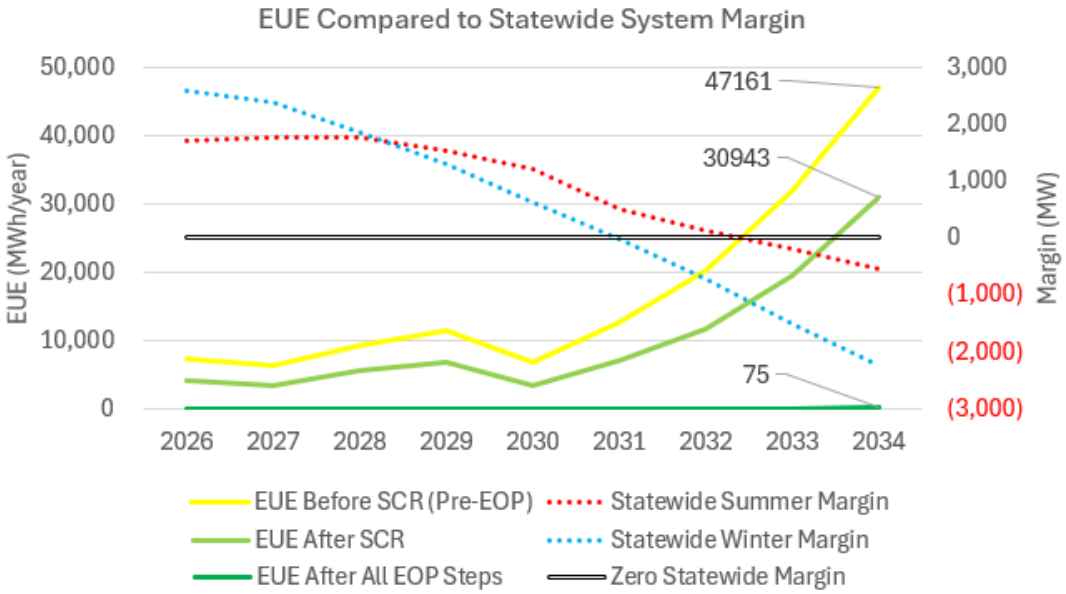
Resource Planning for Normal Conditions

- Traditional resource adequacy assessments evaluate Loss of Load Expectation (LOLE) after exhausting Emergency Operating Procedures (EOPs)
- Appling metrics, such as Expected Unserved Energy (EUE) or Loss of Load Hours (LOLH) before EOPs are invoked, can identify potential over reliance on emergency actions



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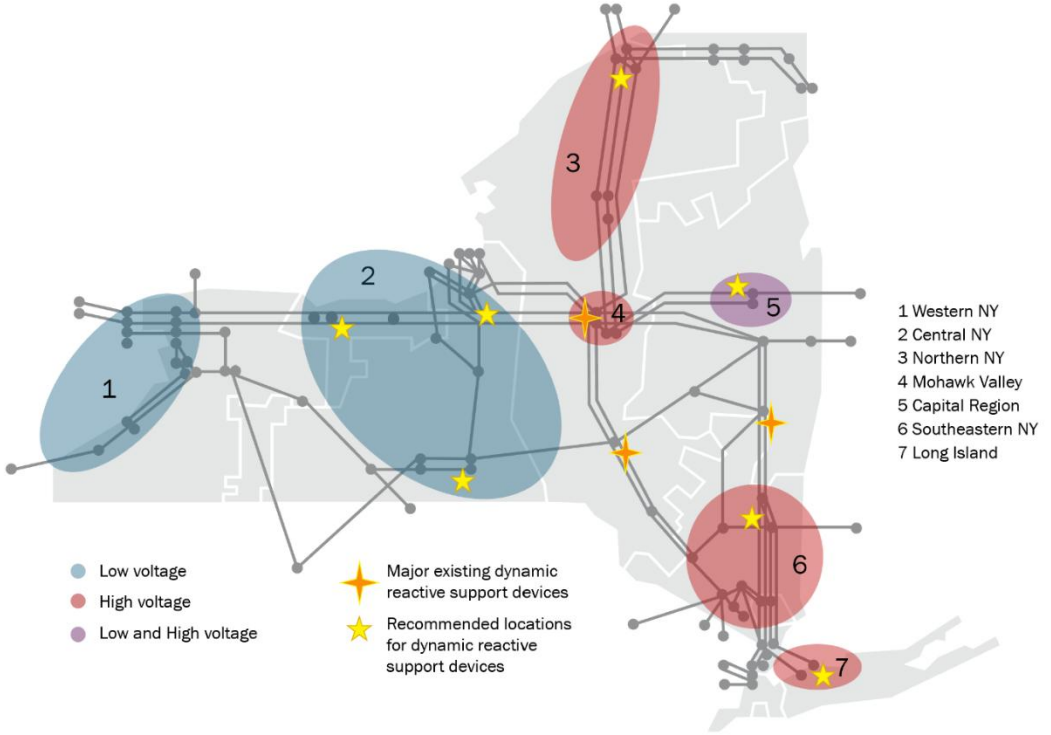
System Voltage Concerns



- New voltage issues are seen in operations and planning due to changes in real-time flow patterns and new generation and loads
- Dynamic voltage support offers many operability benefits over shunt capacitor and reactor banks

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Next Steps

2025-2034 Comprehensive Reliability Plan

- **The CRP is comprised of the following major sections:**
  - 2025-2034 Comprehensive Reliability Plan
  - Planning for a Growing Range of Plausible Futures
  - Potential Pathways to a Reliable Grid
  - Aligning Reliability Planning with Operational Reliability
  - The Role of the Competitive Wholesale Markets
  - Conclusion and Recommendations
  - Appendices with details supporting CRP analysis
- **Incremental CRP edits since the October 7 TPAS/ESPWG**
  - Summary of 2025 Q3 STAR findings
  - Additional detail from and reference to Summer 2025 Hot Weather Operations presentation
  - Minor edits to Executive Summary and body to address stakeholder comments
  - Figure caption and formatting corrections
  - Brief summary of Competitive Wholesale Markets section added to page 23
  - Additional description added to Additional Resources and Nuclear Relicensing subsection

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2025 Q3 STAR

- The NYISO identified Short-Term Reliability Process Needs in New York City, Lower Hudson Valley, and Long Island. For more information, see:
  - 2025 Q3 STAR Report [here]
  - Factsheet [here]
- The NYISO will discuss the STAR findings and identified needs with stakeholders at the October 20, 2025 ESPWG/TPAS

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CRP Schedule

- October 16 OC: Seeking OC's concurrence and recommendation for approval by the Management Committee (MC) at the October 29 meeting
- October 29 MC: Market Monitor Unit review and MC's action
- November: NYISO's Board of Directors' review and action; publishing of final CRP

Looking Ahead: 2026 RNA Preliminary Schedule

- December 2025-April 2026: Discuss proposed planning process changes with stakeholders, including potential modifications to the Reliability Planning Process Manual and/or OATT
- April-May 2026: RNA scope and specific assumptions
- July 2026: Preliminary RNA Results
- October-November 2026: Final RNA Needs Determination

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