New York ISO
Independent System Operator

Attachment #7.1.1
Return to Agenda

2025-2034 Comprehensive Reliability Plan

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Key Findings

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

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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

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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

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Planning for a Growing Range for Plausible Futures

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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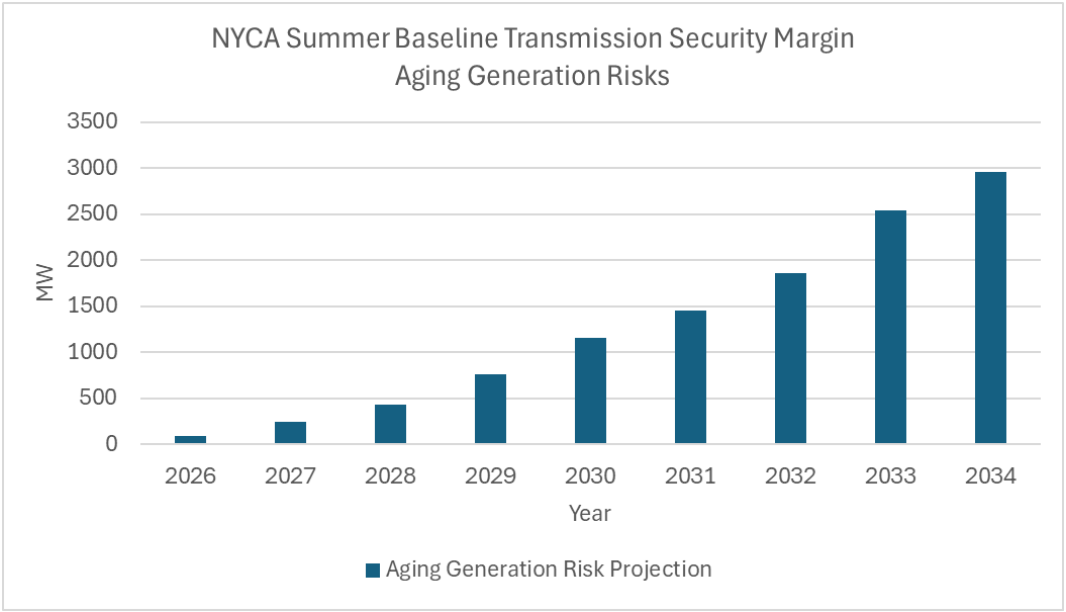
Risk of Aging Generation

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



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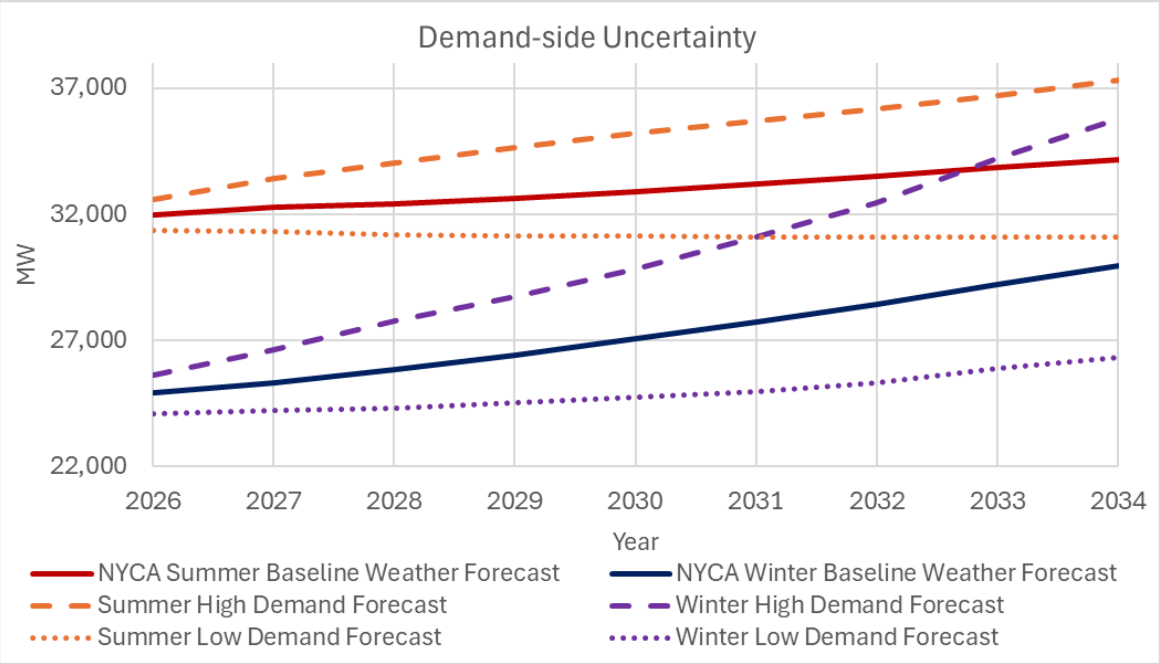
Demand Side Uncertainty



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

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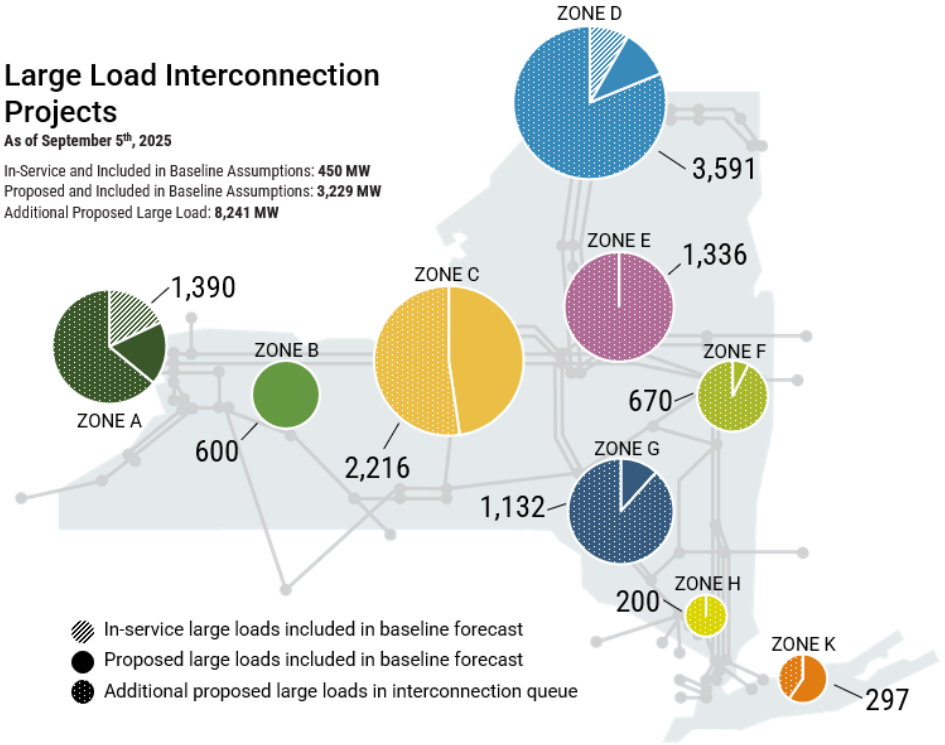
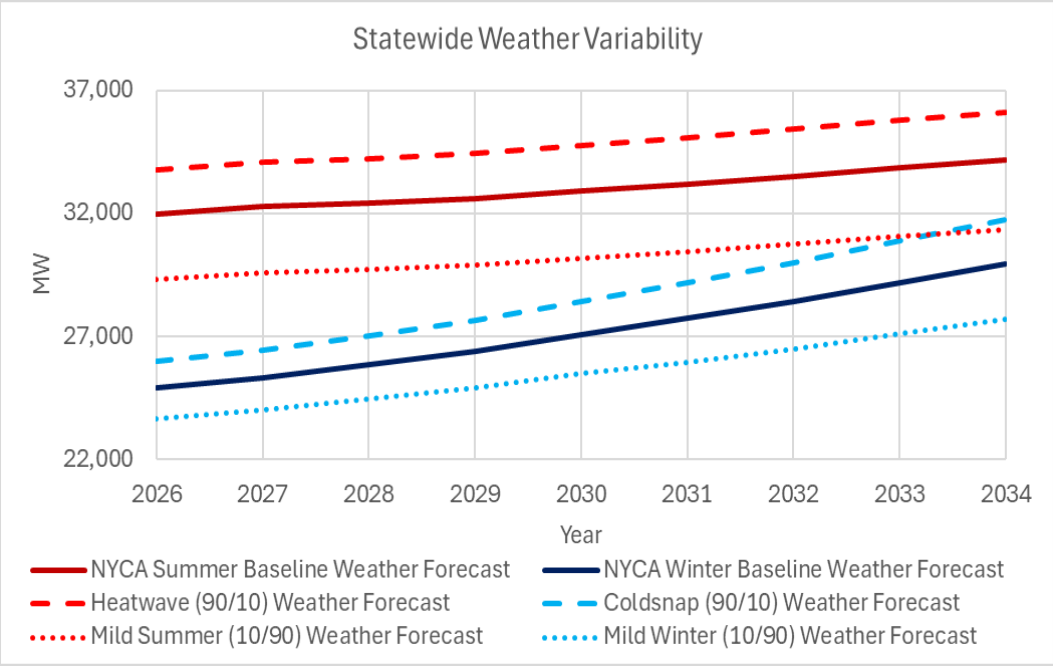
Large Load Development

- Interconnection queue contains over 8,000 MW of additional requested large load projects not included in the baseline forecast for the 2024 RNA
- The speed and scale of these semiconductor manufacturing and data center loads can 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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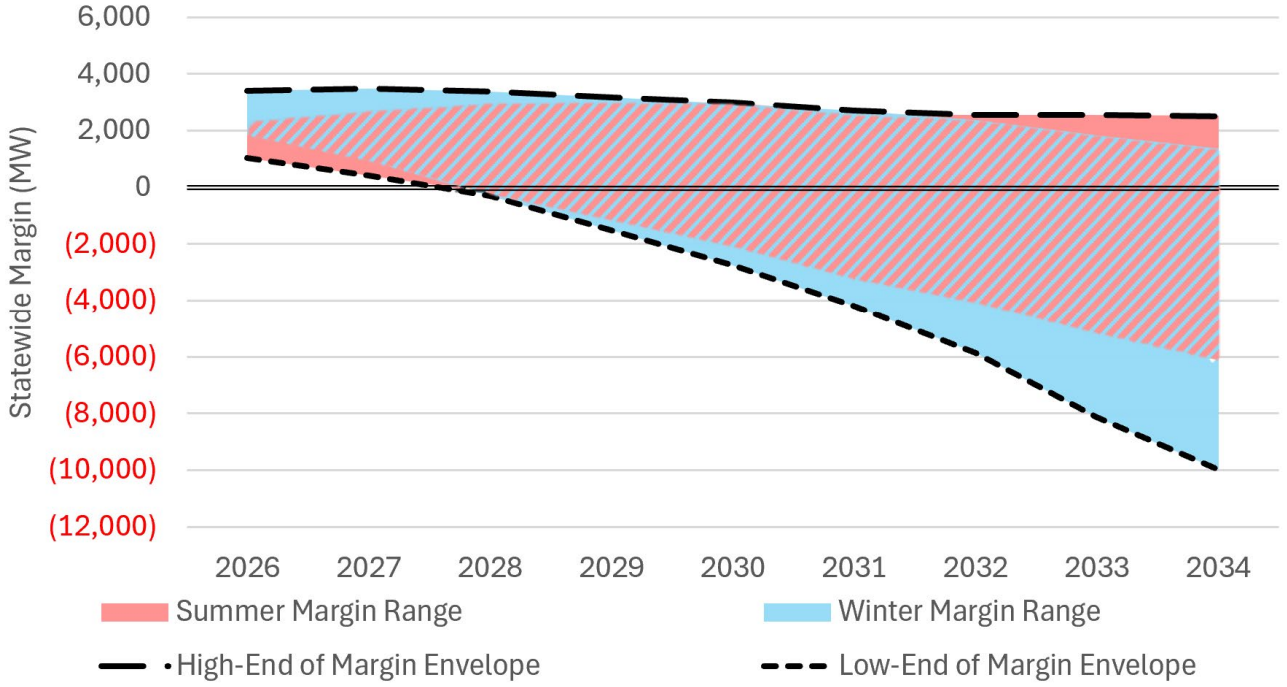
Plausible Combinations of System Risks Show Potential for Significant Reliability Deficiencies



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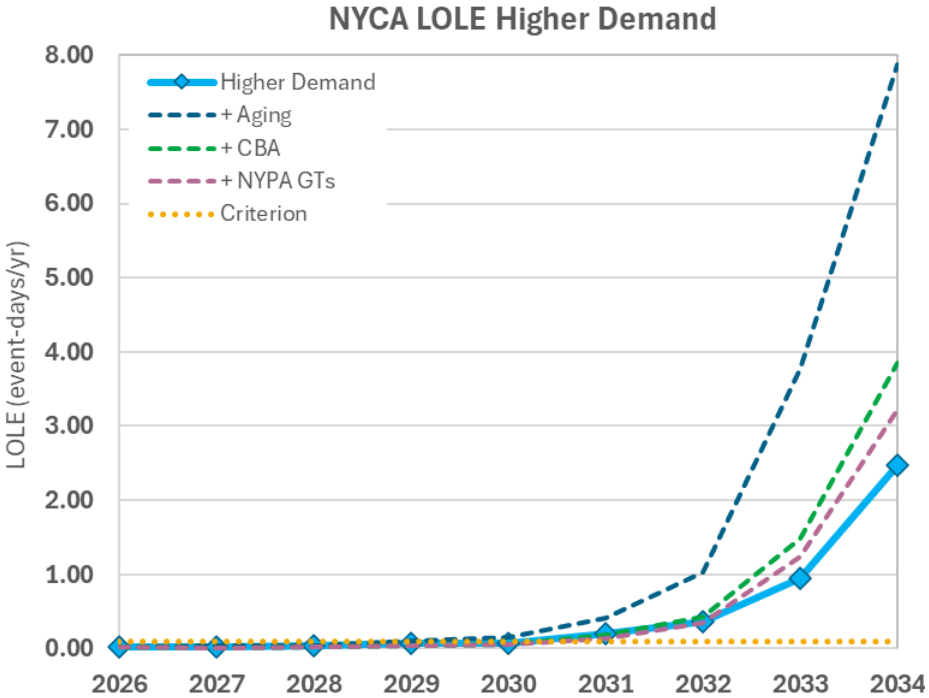
Demand and Aging Gen Impacts on Resource Adequacy

- **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 ("CBA"), plus
  - retaining 517 MW NYPA small plants, plus
  - over 4,000 MW of perfect capacity



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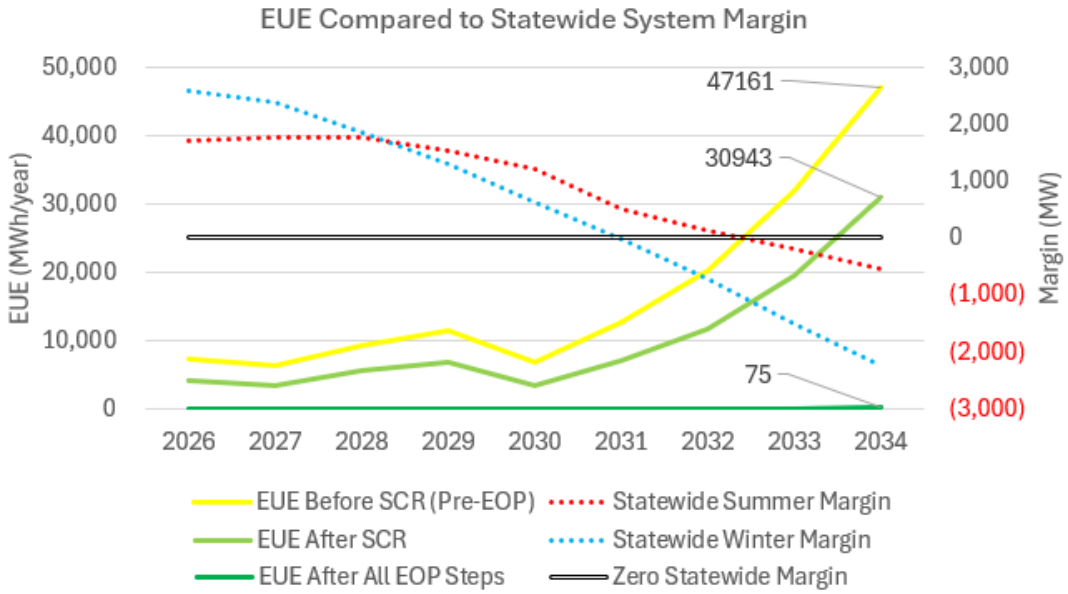
Aligning Reliability Planning with Operational Realities

Resource Planning for Normal Conditions

- Traditional resource adequacy assessments evaluate Loss of Load Expectation (LOLE) after exhausting Emergency Operating Procedures (EOPs)
- Applying 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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Resource Planning for Normal Conditions (EUE results)

Statewide System Reliability Results	2026	2027	2028	2029	2030	2031	2032	2033	2034
System Security Margin (MW)									
Statewide Summer Margin	1,704	1,759	1,764	1,529	1,213	500	144	**-206**	**-531**
Statewide Winter Margin	2,607	2,382	1,862	1,302	633	**-17**	**-727**	**-1,497**	**-2,257**
NYCA EUE (MWh/year)									
Pre EOP support	7,391	6,264	9,284	11,457	6,669	12,747	20,337	31,955	47,161
Special Case Resources (SCRs)	4,185	3,372	5,652	6,872	3,347	7,112	11,737	19,537	30,943
Manual Voltage Reduction	3,957	3,151	5,321	6,455	3,099	6,655	10,997	18,395	29,383
30-Minute Operating Reserve	1,652	1,631	3,376	4,064	1,583	3,727	6,244	10,882	18,910
Voluntary Load Curtailment	1,214	1,217	2,660	3,182	1,187	2,930	4,907	8,705	15,689
Public Appeals	1,089	1,153	2,593	3,099	1,102	2,751	4,620	8,253	15,008
5% Remote Controlled Vol. Reduction	656	723	1,788	2,095	675	1,826	3,074	5,754	11,069
Emergency Assistance (External)	56	31	31	38	45	104	132	164	287
Part of the 10-Minute Op. Reserve	8	4	5	7	6	22	32	43	75

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Resource Planning for Normal Conditions (LOLE results)

Statewide System Reliability Results	2026	2027	2028	2029	2030	2031	2032	2033	2034
System Security Margin (MW)									
Statewide Summer Margin	1,704	1,759	1,764	1,529	1,213	500	144	**-206**	**-531**
Statewide Winter Margin	2,607	2,382	1,862	1,302	633	**-17**	**-727**	**-1,497**	**-2,257**
NYCA LOLE (event-days/year)									
Pre EOP support	**2.630**	**2.466**	**2.870**	**3.394**	**2.073**	**3.195**	**4.981**	**7.653**	**9.789**
Special Case Resources (SCRs)	**1.912**	**1.642**	**2.014**	**2.480**	**1.107**	**1.896**	**3.154**	**5.030**	**6.612**
Manual Voltage Reduction	**1.867**	**1.580**	**1.945**	**2.401**	**1.036**	**1.794**	**2.998**	**4.808**	**6.346**
30-Minute Operating Reserve	**0.759**	**0.806**	**1.139**	**1.503**	**0.568**	**1.037**	**1.810**	**3.025**	**4.268**
Voluntary Load Curtailment	**0.616**	**0.644**	**0.944**	**1.259**	**0.447**	**0.840**	**1.471**	**2.487**	**3.653**
Public Appeals	**0.546**	**0.609**	**0.905**	**1.212**	**0.421**	**0.794**	**1.401**	**2.371**	**3.518**
5% Remote Controlled Vol. Reduction	**0.396**	**0.432**	**0.692**	**0.927**	**0.285**	**0.570**	**1.006**	**1.733**	**2.757**
Emergency Assistance (External)	0.066	0.038	0.041	0.046	0.046	0.075	0.085	**0.105**	**0.167**
Part of the 10-Minute Op. Reserve	0.015	0.007	0.009	0.010	0.008	0.019	0.024	0.029	0.052

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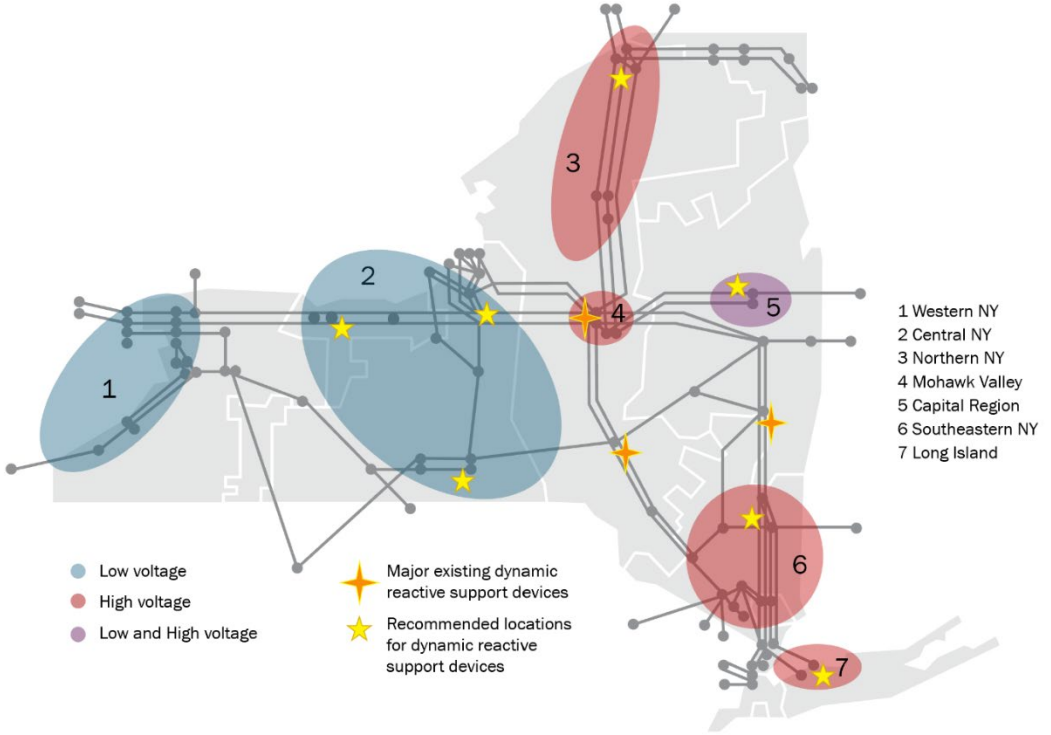
System Voltage Concerns



- 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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Recommendations

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

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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

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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

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Next Steps

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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Questions?

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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