2026-2030 Resource Adequacy Modeling Improvements Strategic Plan

Update and Whitepaper Scopes for approval

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Background

- **Since 2022, the NYISO has worked with the NYSRC to develop a 5-year Resource Adequacy (RA) Modeling Improvement Strategic Plan with the following objectives:**
  1. Prioritize modeling improvement initiatives, as reflected in a 5-year plan (Strategic Plan)
  2. Align the strategic priorities with other NYSRC or NYISO initiatives affecting the RA model (e.g., Extreme Weather Working Group, market design improvements, capacity accreditation, etc.)
  3. Guide the whitepaper development and resource allocation for the Installed Capacity Subcommittee (ICS)

- **Strategic Plan is revisited regularly to consider updates to priorities and timelines**

- **The NYISO aims to align the updated Strategic Plan with the latest goals of the NYSRC Executive Committee (EC)**
  - The previous 2026-2030 Strategic Plan was presented to the ICS and EC in October 2025

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Strategic Priorities for 2026-2030

- As part of the 2026-2030 RA Modeling Improvement Strategic Plan,[1] the NYISO recommends the following strategic priorities:
  - Continued assessment of winter modeling improvements to facilitate proper accounting of winter risks in meeting resource adequacy
  - Continued evaluation of load modeling to capture winter load characteristics, large loads, and energy limited resource (ELR) modeling improvements to properly reflect the changing characteristics of the power system and resource fleet
  - Addition of "Maintenance Outage and Derates" and "Parametric Process Improvements" initiatives for improved generation modeling and improvement of parametric analysis better align with expected Tan45 IRM outcomes.
  - Continued collaboration with the Extreme Weather Working Group to improve accounting of regional weather impacts and correlated outages, as well as refinements to intermittent resource modeling
    - This initiative is expected to be led by the NYSRC and supported by the ICS and NYISO

1. October 1 ICS Presentation on Strategic Plan

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Previous RA Model Improvements Strategic Priorities (2026-2030)

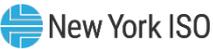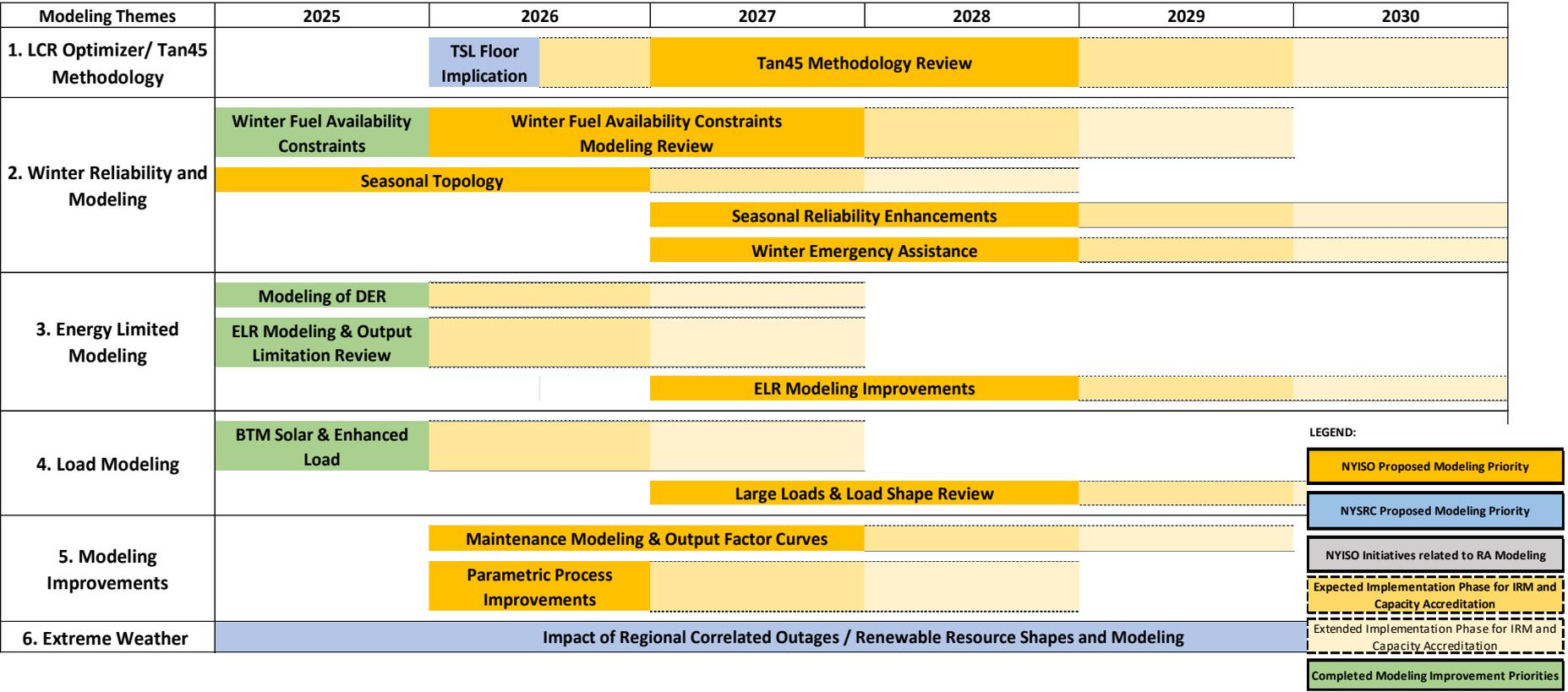| Modeling Themes	2025	2026	2027	2028	2029	2030
1. LCR Optimizer/ Tan45 Methodology	Tan45 Methodology Review					
2. Winter Reliability and Modeling	Winter Fuel Availability Constraints	Winter Fuel Availability Constraints Modeling Review				
	Seasonal Topology					
			Seasonal Reliability Enhancements			
			Winter Emergency Assistance			
3. Energy Limited Modeling	Modeling of DER					
	ELR Modeling & Output Limitation Review					
		ELR Modeling Improvements				
4. Load Modeling	BTM Solar & Enhanced Load					
			Large Loads & Load Shape Review			
5. Modeling Improvements		Maintenance Modeling & Output Factor Curves				
		Parametric Process Improvements				
6. Extreme Weather	Impact of Regional Correlated Outages / Renewable Resource Shapes and Modeling					

LEGEND:
- NYISO Proposed Modeling Priority
- NYSRC Proposed Modeling Priority
- NYISO Initiatives related to RA Modeling
- Expected Implementation Phase for IRM and Capacity Accreditation
- Extended Implementation Phase for IRM and Capacity Accreditation
- Completed Modeling Improvement Priorities

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Recommended Strategic Plan Updates

- **Since the development of the previous 2026-2030 Strategic Plan, the following changes had occurred**
  - During the final voting of the 2026-2027 IRM, NYSRC EC reinstated the Reliability Resource Evaluation working group to coordinate with the NYISO on timely development and assessment of implications for the transmission security limit (TSL) floor values used in the NYISO's annual Locational Minimum Installed Capacity Requirements (LCRs) study
  - The NYISO's Resource Adequacy team is currently operating under constrained capacity due to staff turnover

- **Given the complexity of research needed for the near term, the NYISO recommends deferring two whitepapers previously planned for 2026 to 2027(i.e., the Tan45 Methodology Review and the ELR Modeling Improvement)**
  - The Tan45 Methodology Review is already planned to have a longer-term research phase due to its complexity and impact.
  - A number of improvements have been made to the ELR functionality during the last few years. Further enhancements likely require more in-depth review of the underlying GE MARS logic. Due to the relatively low penetration of ELR units at present, the NYISO does not anticipate that deferring this effort is likely the adversely impact study outcomes in the near-term.

- **The NYISO recommends continued effort on the following for 2026: Parametric Process Improvements, Winter Fuel Availability Constraints Modeling Review, Seasonal Topology, as well as the Maintenance Modeling Review**

- **In addition, the NYISO recommends including the coordination with the NYSRC Reliability Resource Evaluation working group on TSL floor impact as a strategic priority under the LCR Optimizer/Tan45 Methodology modeling theme**
  - This strategic priority will also consider the NYISO's current effort on improving reliability planning assessments on transmission security and resource adequacy, as well as its alignment with how capacity requirements are established

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Updated RA Model Improvements Strategic Priorities (2026-2030)

Modeling Themes	2025	2026	2027	2028	2029	2030
1. LCR Optimizer/ Tan45 Methodology		TSL Floor Implication	Tan45 Methodology Review			
2. Winter Reliability and Modeling	Winter Fuel Availability Constraints	Winter Fuel Availability Constraints Modeling Review				
	Seasonal Topology					
			Seasonal Reliability Enhancements			
			Winter Emergency Assistance			
3. Energy Limited Modeling	Modeling of DER					
	ELR Modeling & Output Limitation Review					
			ELR Modeling Improvements			
4. Load Modeling	BTM Solar & Enhanced Load					
			Large Loads & Load Shape Review			
5. Modeling Improvements		Maintenance Modeling & Output Factor Curves				
		Parametric Process Improvements				
6. Extreme Weather	Impact of Regional Correlated Outages / Renewable Resource Shapes and Modeling					

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2026 Project Backgrounds, Proposed Scopes and Timelines

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Parametric Process Improvements

- **Background**
  - The parametric process is a methodology used in the preliminary base case and final base case study timeframe to assess the potential impact of individual changes to the IRM study assumptions on the IRM and locational requirements.
  - Since the parametric results occur prior to the execution of the Tan45 procedure and under different capacity removal/shifting procedures, significant differences have been observed between parametric and Tan45 results.

- **Objective**
  - Identify potential improvements to the parametric assessment process to provide for better alignment with expected Tan45 outcomes.

- **Recommended scope and timeline:**
  - Q1/Q2 2026: Review and discuss differences between the parametric and Tan45 methodologies
  - Q2 2026: Identify main drivers for significant gaps between parametric and Tan45 results and potential improvements to the parametric process to better align with the expected outcomes of the Tan45 process
  - Q3/Q4 2026: Provide recommendations and development of a whitepaper

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Winter Fuel Availability Constraints Modeling Review

- **Background**
  - The implementation of winter fuel availability constraints in the 2026-2027 IRM study helps to account for the reliability impacts of fuel availability constraints during peak winter periods (December-February).
  - Key information and analysis will be completed in the near term related to generator "firm fuel" characteristic elections for capacity accreditation along with the NYISO's 2025 Fuel Constraints Study. Information from these ongoing initiatives can be taken into consideration for future IRM study modeling assumptions.
- **Objective:**
  - Introduce additional information from the NYISO's 2025 Fuel Constraints Study and generator "firm fuel" elections, and consider potential modeling refinements to fuel availability constraints for future IRM studies
- **Recommended scope and timeline:**
  - Q1/Q2 2026: Provide analysis and summary of generator "firm fuel" elections received by thermal generation resources for the 2026-2027 Capability Year
  - Q2 2026: Review findings of the NYISO's 2025 Fuel Constraints Study and potential implications for the fuel availability constraints modeling in the IRM study
  - Q3/Q4 2026: Consider modeling updates to fuel availability assumptions for 2027-2028 IRM study
    - Updates may include exploring zonal specific derates, derates to oil-only units, consideration of generator "firm fuel" election information, and assessing the presence of fuel constraints in regions beyond Load Zones F-K
  - Q2 2027: Consider winter 2026-2027 operational performance data from "firm fuel" resources
  - Q2/Q3 2027: Identify and provide recommendations for potential improvements to IRM modeling assumptions

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Seasonal Topology

- **Background**
  - Currently, the IRM study interface limits are developed from summer system conditions and are applied for both the summer and winter periods. Leveraging planned research efforts in 2026, such as NYISO 2026 Reliability Needs Assessment and other NYISO planning studies to identify candidate winter specific interface limits for more accurate representation of winter topology.

- **Objective**
  - Identify potential updates to IRM study assumptions to capture winter interface limits.

- **Recommended scope and timeline:**
  - Q1 2026: Provide background on current topology update process for the IRM study
  - Q2 2026: Identify candidate studies and data sources for winter topology and special considerations for studied interfaces
  - Q2 2026: Identify a methodology/sources for determining winter interface limits for potential IRM study consideration
  - Q3/Q4 2026: Recommendation for incorporation and development of a whitepaper

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Maintenance Modeling & Output Factor Curves

- **Background**
  - Currently, only forced outages and 50 MW of planned summer maintenance (allocated equally between Load Zones J and K) are assumed to occur in the IRM study. With the increasing winter risks, renewable penetration and thermal resource deactivations, accurate planned maintenance modeling is critical to understand reliability risks in both the peak and shoulder seasons.
  - With the introduction of winter fuel availability constraints modeling in December-February, prevention of duplicate derates of non-firm resources will be critical to ensure accurate modeling assumptions.

- **Objective**
  - Introduce planned maintenance derates and outages into the IRM study.

- **Recommended scope and timeline:**
  - Q1 2026: Provide overview of NYISO's maintenance outage management practice and comparison with outage modeling in GE MARS simulation
  - Q2/Q3 2026: Introduce potential options for improvements and special considerations for periods when winter fuel availability constraints apply
  - Q3/Q4 2026: Identify recommendations and development of a whitepaper
  - Q1/Q2 2027: Extended timeline for potential implementation of any approved enhancements

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Questions?

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Our Mission and 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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2025-2029 RA Model Improvements Strategic Priorities

Modeling Themes	2024	2025	2026	2027	2028	2029
1. LCR Optimizer/Tan45 Methodology for Capacity Requirement	LCR Optimizer Improvement					
	Tan45 Methodology Review					
			Comprehensive IRM/LCR Stability Review			
2. Winter Reliability and Modeling	Winter Gas Constraint					
		Winter Fuel Constraints and Load Modeling				
		Seasonal Topology				
			Winter Emergency Assistance			
				Winter Reliability Capacity Enhancements		
3. Energy Limited Modeling	SCR Modeling					
	Modeling of DER					
		ELR Modeling and Output Limitation Review				
4. Load Modeling	BTM Solar Modeling					
		Season specific load / Synthetic load shapes				
5. Extreme Weather	Impact of Regional Correlated Outages					

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