

NYSRC IRM Model Proposed Whitepaper Scopes 2025

NYISO

NYSRC Installed Capacity Subcommittee Meeting #300

February 5, 2025

NYSRC Strategic Plan and Whitepaper Planning

- In 2022, the NYISO 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 and 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 updated Strategic Plan for the 2025-2029 period was presented to the ICS and EC during September 2024¹
- Further updates to the Strategic Plan and whitepaper scopes and timelines have been made, incorporating feedback from the January 8, 2025 ICS and January 15, 2025 EC meetings

¹ *RA Modeling Improvements Strategic Plan 2025*

The RA Model Improvements Strategic Priorities (2025-2029) – Updated

Modeling Themes	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 Fuel Constraints & Maintenance Modeling				
	Seasonal Topology				
		Winter Emergency Assistance			
			Winter Reliability Capacity Enhancements		
3. Energy Limited Modeling	Modeling of DER				
	ELR Modeling and Output Limitation Review				
4. Load Modeling	BTM Solar + Enhanced Load Modeling				
		Season specific load / Synthetic load shapes			
5. Extreme Weather	Impact of Regional Correlated Outages				

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



Tan45 Methodology Review (Phase 2)

■ Background

- NYSRC Tan45 Methodology Review Whitepaper¹ demonstrated an inability of the current Tan45 process to determine an installed reserve margin (IRM) under certain future scenarios, along with challenges to the fundamentals behind the process, identifying the need to further assess the results and evaluate potential methodology improvements

■ Objective

- Identify potential alternative methodologies and/or enhancements for determination of the IRM along with any potential revisions necessary for Policy 5
- Given the complexity and the significant impact of potential revisions to the current Tan45 methodology, the Phase 2 whitepaper is expected to require effort in 2025 and 2026

■ Scope

- 2025 - Test the existing Tan45 process based on thermal Unforced Capacity (UCAP) and Equivalent Forced Outage Rate on Demand (EFORd)
- 2025 - Identify guiding principles from the current Tan45 process that should be maintained when exploring alternative methodologies and enhancements, considering changing system dynamics
- 2025 - Propose potential alternative methodologies and/or enhancements to the current Tan45 process
- 2025/2026 - Develop test cases for assessing impacts of incorporating Long Island Public Policy Transmission project and scheduled supply resource deactivations
- 2026 - Test alternative methodologies/enhancements
- 2026 - Present findings and key insights, prepare final report

¹ [Tan45 Methodology Review Whitepaper - 2024 Phase](#)

Tan45 Methodology Review (Phase 2)

Proposed Timeline

Milestone	Anticipated Timeline
Present draft scope to the ICS for approval	January 8, 2025
Test Thermal Shifting Methodology	Q1 2025
Identify and establish core principles for calculating the IRM	Q2 2025
Identify potential alternative shifting methodologies based on core principles	Q2 – Q3 2025
Identify potential test cases for methodology testing	Q3 - Q4 2025
Interim Progress Report	
Conduct testing of alternative methodologies, enhancements, present results and insights	Q1 - Q2 2026
Finalize findings and formulate preliminary recommendations	Q3 2026
Prepare and finalize whitepaper report	Q4 2026

New York ISO

Winter Modeling Improvements

- Historically, New York has been a summer peaking system and primary reliability risks occurred in the summer months. Increased winter reliability risks are expected due to electrification, fuel availability constraints, and changes to the generation fleet. Additionally, the grid is projected to evolve from a summer peaking system to winter peaking system in the mid-2030s.
- Efforts are ongoing in the NYISO stakeholder process to identify potential Capacity Market design changes needed to accommodate increasing winter risks and a winter-peaking system
- Given the scope and variety of modeling improvements to better represent winter risks, the NYISO recommends splitting the Winter Modeling Improvements whitepaper into two separate efforts:
 - 1) *Behind-the-Meter (BTM) Solar and Enhanced Load Modeling*
 - 2) *Fuel Availability Constraints and Maintenance Modeling*

Track 1: BTM Solar and Enhanced Load Modeling (ELM)

■ Background

- NYSRC completed the BTM Solar Modeling Whitepaper in 2024¹ and concluded that enhancement of the load shape adjustment process is recommended before (or in conjunction with) modeling BTM solar as a supply resource in the IRM base case
- Modeling BTM solar as a supply resource and enhancing the load shape adjustment process should be considered as a complete package to be implemented with the explicit modeling of BTM solar as a supply resource

■ Objective

- Winter load modeling improvements – modeling winter peak forecasts
- Modeling annual energy requirements
- Improve the modeling of BTM solar availability consistent with the findings in the BTM Solar Modeling Whitepaper

■ Scope

- Review existing load modeling and potential enhancements consistent with the improvements discussed in the BTM Solar Modeling Whitepaper
- Finalize assumptions and methodology for enhanced load modeling
- Conduct impact analyses and recommendations for adoption
- Prepare final whitepaper

¹ *BTM Solar Modeling Whitepaper*

BTM Solar and ELM

Proposed Timeline

Milestone	Anticipated Timeline
Present draft scope to the ICS for approval	January 8, 2025
Overview of load modeling and BTM solar modeling improvements	Q1 2025
Propose potential methodologies for enhanced load modeling and conduct impact assessments	Q1 2025
Finalize assumptions and recommendations for adoption	Q2 2025
Prepare and finalize whitepaper report	Q3/Q4 2025

Track 2: Fuel Availability Constraints and Maintenance Modeling

■ Background

- NYSRC completed the Gas Constraints Modeling Whitepaper¹ in 2024 which developed a six-tiered fuel availability constraint model grouped by NYCA winter load conditions
- The modeling assumptions were developed in consideration of the proposed firm fuel requirements within NYISO market design effort for “Modeling Improvements for Capacity Accreditation.” The NYISO continues to review the market design with its stakeholders; the fuel availability constraints modeling should be reviewed if modifications/updates to the market design are developed.

■ Objective

- Implement winter modeling improvements to incorporate risks in fuel availability and account for scheduled maintenance

■ Scope

- Review current proposal for fuel availability constraints modeling and maintenance modeling logic within the GE Multi-Area Reliability Simulation software program (MARS)
- Finalize assumptions for fuel availability constraint modeling, and considerations for scheduled maintenance modeling
- Conduct impact analyses and recommendations for adoption
- Prepare final whitepaper

¹ [Gas Constraints Whitepaper](#)

Fuel Constraints and Maintenance Modeling

Proposed Timeline

Milestone	Anticipated Timeline
Present draft scope to the ICS for approval	January 8, 2025
Review current proposal for fuel availability constraints modeling and maintenance modeling logic within GE MARS	Q1 2025
Propose initial fuel availability constraint modeling assumptions, process for updating assumptions and utilization of annual fuel availability elections	Q1 – Q2 2025
Conduct impact assessments, review interactions with maintenance modeling	Q1 – Q2 2025
Finalize assumptions and recommendations for fuel availability constraints modeling	Q2 2025
Finalize assumptions and recommendations for maintenance modeling	Q3 2025
Prepare and finalize whitepaper report	Q4 2025

Energy Limited Resource (ELR) Modeling and Output

Limitation Review

■ Background

- Currently, ELRs are utilized by GE MARS “as-needed” when loss of load events occur without consideration of future shortage hours or the potential to hold energy for more critical intervals. Therefore, the current utilization of ELRs could lead to sub-optimal outcomes with the potential to distort the resulting system loss of load expectation (LOLE)

■ Objective

- Refine modeling of Energy Limited Resources and Energy Storage Resources in the IRM model in response to the anticipated increased development of energy limited resources such as battery storage, Distributed Energy Resources (DERs), and flexible load assets such as Special Case Resources (SCRs)
- A longer-term solution to optimize energy limited scheduling should be continually pursued as software improvements are available and should continue in 2026

■ Scope

- Review current GE MARS logic, existing software limitations, and recent software improvements
- Review the utilization of ELRs within the IRM model and impacts thereof on LOLE
- Consider historical availability and operations of energy limited resources, optimal scheduling, and potential improvements to the modeling
- 2025 - Recommend interim improvements
- 2025/2026 - Test alternative ELR scheduling strategies and continue to Phase 2

ELR Modeling and Output Limitation

Proposed Timeline

Milestone	Anticipated Timeline
Present draft scope to the ICS for approval	January 8, 2025
Review current GE MARS logic, existing software limitations, and recent software improvements	Q1 2025
Review the utilization of ELRs within the IRM model and LOLE relationship	Q1 2025
Discuss historical availability and operations of energy limited resources, optimal scheduling, and potential improvements to the modeling	Q1 – Q3 2025
Recommend interim modeling improvements	Q3 2025
Prepare whitepaper report on interim improvements (Phase 1)	Q4 2025
Test alternative ELR scheduling strategies and continue to Phase 2	2025/2026

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



Questions?

The RA Model Improvements Strategic Priorities (2024-2029) –

(1/8/2025 ICS Meeting #299)

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	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					
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