

WHITE PAPER SCOPE

PROPOSED NYSRC RELIABILITY RULE: EXTREME WEATHER EVENT AND OTHER EXTREME SYSTEM CONDITION REQUIREMENT

1/25/22--7th draft

1. Purpose of White Paper

Background: Extreme weather events are low-probability and high-impact events that may increase in frequency and intensity as a result of climate change.

- One step of the extreme weather event development 2022 goal is for the NYSRC RRS to prepare a white paper examining the need for new NYSRC Resource Adequacy, Transmission Planning, and other Reliability Rule(s) requiring assessment and mitigation of extreme weather events and other extreme system conditions.
- The white paper will examine the *need* for the above NYSRC Reliability Rules, which will require the NYISO to conduct both extreme weather resource and transmission assessments.
- The white paper will provide proposed language for Requirements associated with the above extreme weather reliability Rule that will be the subject of new PRR(s).
- The white paper will also review rule needs covering other extreme system conditions, including recommendations to modify, as needed, existing rules that cover certain extreme system conditions.
- The NYISO staff will be consulted during preparation of the white paper.

2. Need for a New NYSRC Reliability Rule(s) for Addressing Extreme Weather Events

- Extreme weather events will be bringing new and unexpected challenges to NYCA power system planning and operation. Many types of extreme weather events are occurring more frequently.
- The white paper will provide more details of recent extreme weather examples and their economic impacts. Extreme weather events include extreme heat, high winds, wind lulls, floods, drought, wildfire, and ice.
- Systems with large amounts of renewable resources are more sensitive and vulnerable to extreme weather.
- Recent major loss of load disturbances in California¹ and Texas² caused by extreme weather have demonstrated that in the future weather will be the most important driver of resource adequacy, and highlights the need to plan for such events.

¹ CAISO, CPUC, CEC Issue Final Report on Causes of August 2020 Rotating Outages. January 2021.

² NERC Final Report on ERCOT February 2021 Freeze Underscores Winterization Recommendations. November 2021.

- The impacts of extreme weather on electric power systems have been recently expressed by EPRI³, NERC⁴ and FERC^{5,6} as a top issue.
- The NYSRC and NYISO need to anticipate and prepare for potential high impact events resulting from extreme weather.
- The winter capability period, with higher future peak and energy forecast loads, will become more vulnerable to extreme weather impacts, particularly with a NYCA system having high levels of renewable resource capacity.
- The white paper will provide more details on the above with respect to the need for rules requiring extreme weather assessments.

3. Extreme Weather Reliability Rule Requirements to be Considered in White Paper

The white paper will consider three Extreme Weather Event Reliability Rule Requirements, as follows:

Requirement #1: NYISO Extreme Weather Resilience Plan

A Requirement for the NYISO to develop an *Extreme Weather Resilience*⁷ Plan for withstanding and recovering rapidly from disruptions. The plan will include measures or solutions for mitigating reliability impacts. These mitigating measures will cover both planning and operating measures.

Issues to be considered as part of this Requirement:

- It is unrealistic to plan or operate the system to completely withstand or avoid being impacted by every type of extreme event. Instead, the NYISO must have a current and forward looking strategy to mitigate and minimize recovery time for such types of events.
- The NYISO will need to continue to collect historic NYS weather data as well as develop predictions of future extreme weather trends.
- Emergency operating procedure changes.
- The manner for which the *Extreme Weather Resilience Plan* will be implemented.
- Improved operating practices for reducing risk and recovery times.
- Should NYSRC's system restoration rules be modified to address extreme weather events?
- Should the NYISO's Market Participant procedures include new extreme weather mitigation requirements?
- Greater use of demand management.
- Training requirements.
- Operating requirements for reducing risk and recovery times.

³ EPRI Project - Resource Adequacy for a Decarbonized Future. July 2021.

⁴ NERC 2021 Reliability Risk Priorities Report. August 2021.

⁵ FERC Technical Conference to Discuss Climate Change, Extreme Weather, and Electric System Reliability. June 2021.

⁶ NERC Post Technical Conference Comments on Climate Change, Extreme Weather, and Electric System Reliability. September 2021.

⁷ "Resilience" is defined as: the ability to prepare for and adapt to changing conditions and to withstand and recover rapidly from disruptions.

- Expanded application of microgrids.

Requirement #2: Extreme Weather Resource Adequacy Assessment

A Requirement for the NYISO to periodically conduct probabilistic resource adequacy assessments of the reliability impacts (LOLE, LOLH, and EUE metrics) of a range of types of extreme weather events⁸, including options for mitigating reliability impacts, similar to that conducted in Appendix E of the NYISO 2021-30 CRP report.

Issues to be considered as part of this requirement:

- Assessment frequency and study period.
- It is recognized that the NYISO will need to develop improved probabilistic models for extreme weather analyses.
- The NYISO shall identify the types of intra and inter-regional extreme weather events to be considered and modeled, including an estimate of the relative likelihood of occurrence.
- The white paper will consider whether the NYSRC should adopt a supplemental criterion (such as the 1-in-10-year criterion or a new extreme weather criterion) for determining additional resource requirements (over and above existing IRM requirements) for eliminating or minimizing LOLE impacts of extreme weather events. As in Requirement #1, it may be decided that it may not be necessary to adopt an extreme weather criterion that would completely eliminate extreme weather LOLE impacts, only reduce these impacts.
- The emergency assistance model in GE-MARS studies should recognize that the same extreme weather event impacting NY could be impacting NYCA's neighboring systems.

Requirement #3: Extreme Weather Transmission Assessment

A Requirement for the NYISO to perform extreme weather transmission assessments. Current NYSRC Reliability Rules require the NYISO to perform a transmission assessment assuming a 90th percentile load forecast for Extreme System Condition Assessments. The white paper will recommend this or other operating and planning criteria for reinforcing the transmission in order to reduce extreme weather reliability impacts on the transmission system.

4. Other Extreme System Conditions

- Current NYSRC Reliability Rules require the NYISO to perform an analysis of loss of gas supply. The white paper will recommend any modifications to this required assessment.
- The white paper will list other types of extreme system conditions such as a 90/10 load forecast with loss of intermittent resources, and recommend how the NYSRC should deal with them.

5. Anticipated White Paper Completion Date: July, 2022

⁸ Sometimes referred to as "tail risk" events occurring at both ends of a normal probabilistic distribution.