

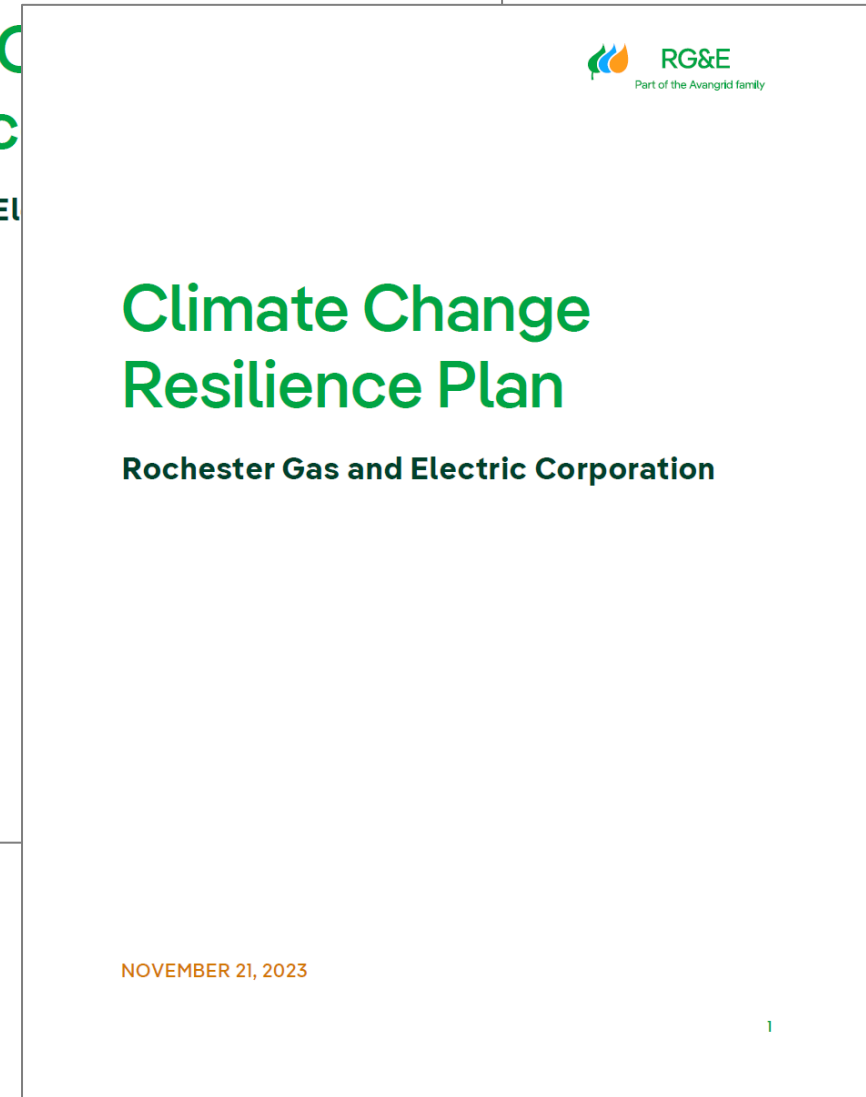
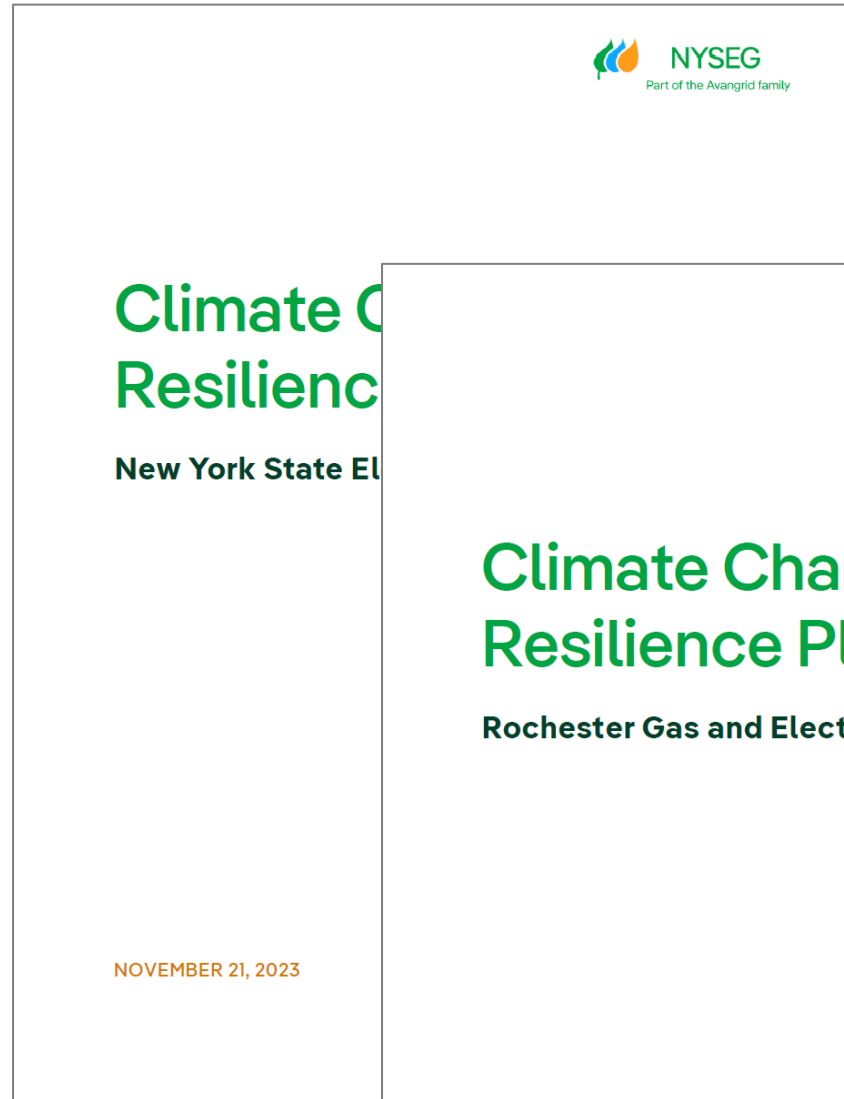


Climate Resilience Working Group Update

9/30/2024

Agenda

- 01 Background
- 02 Resilience Plan Reviews
- 03 On-Going Activities
- 04 Next Steps



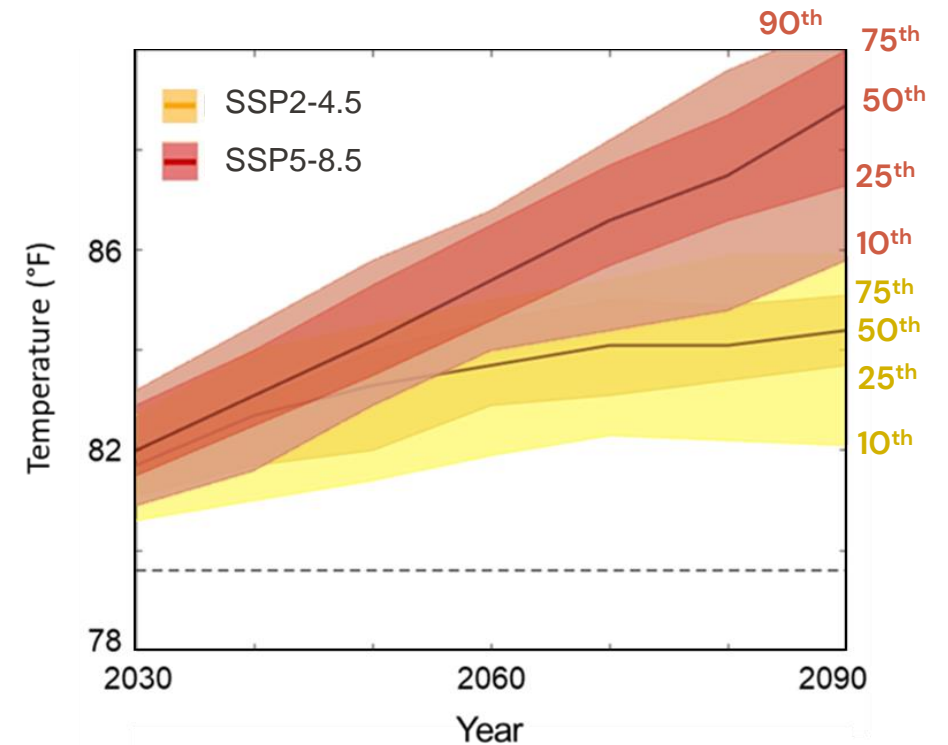
Background: Overview of PSC Order

- March 2022, PSC law became effective (Case 22-E-0222) to NY electric utilities
- Conduct a **Climate Change Vulnerability Study (Study)** and develop a **Climate Change Resilience Plan (Plan)**
- The Study must include an evaluation of the electric grid's vulnerability to climate-driven risks
- The Plan must address the findings of the Study for the next ten- and twenty-year periods
- Engage and collaborate with stakeholders
- The Study and Plan were filed in the fall of 2023, with updates at least every five years



Background : Climate Pathways






- **Climate change projections:** we considered a range of possible scenarios in terms of emissions scenarios and their effect on the climate of New York State.
- Future global emissions of greenhouse gases will determine which pathway the global climate takes.
- We used three combinations pathways and simulation percentiles to represent plausible lower bound, planning level, and upper bound of climate model projections:
 - **SSP2-4.5 50th percentile** as lower bound
 - **SSP5-8.5 50th percentile** as planning level ←
 - **SSP5-8.5 90th percentile** as a high-end “stress test”
- **Planning Level:** A conservative selection aimed to identify resilience measures that will enable NYSEG and RG&E to identify which climate change risks may interfere with the ability to serve our customers.



Summary of Key Findings

Priority vulnerabilities are those that represent the most significant risk to NYSEG and RG&E’s electrical assets, and the ability to serve our customers reliably.

- **Substation – High:** Study Team determined that vulnerability to flooding and extreme heat was found to be high for circuit breakers, regulators and transformers. For example, extreme heat in excess of design parameters can increase rate that equipment ages.
- **Transmission & Distribution – High:** Vulnerability to wind, and combined wind and ice events was found to be high. Extreme winds can exceed design parameters and increase risk of failure.
- **Transmission & Distribution - Medium:** Vulnerability to extreme temperature for transmission & distribution power delivery components. Extreme heat in excess of design parameters can increase rate that equipment ages.

					
Substations	High	Med.	High	Low	High
Transmission	Med.	High	Med.	Low	High
Distribution	Med.	High	Med.	Low	High

Resilience Plan Review

Wind/wind-and-Ice

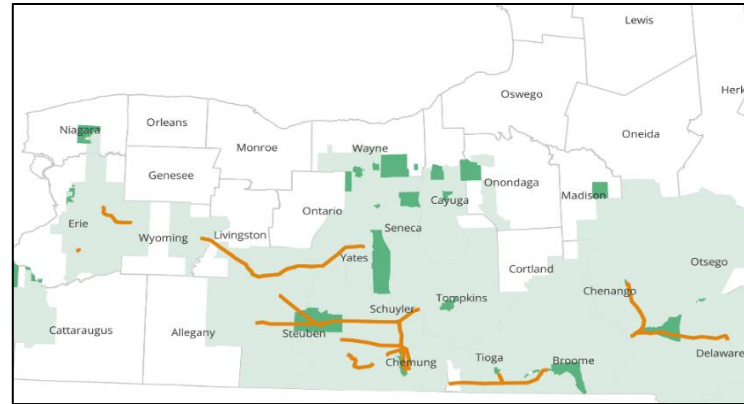
- Grid Modernization
- Resilient Infrastructure
- Transmission Line Upgrades

Flooding

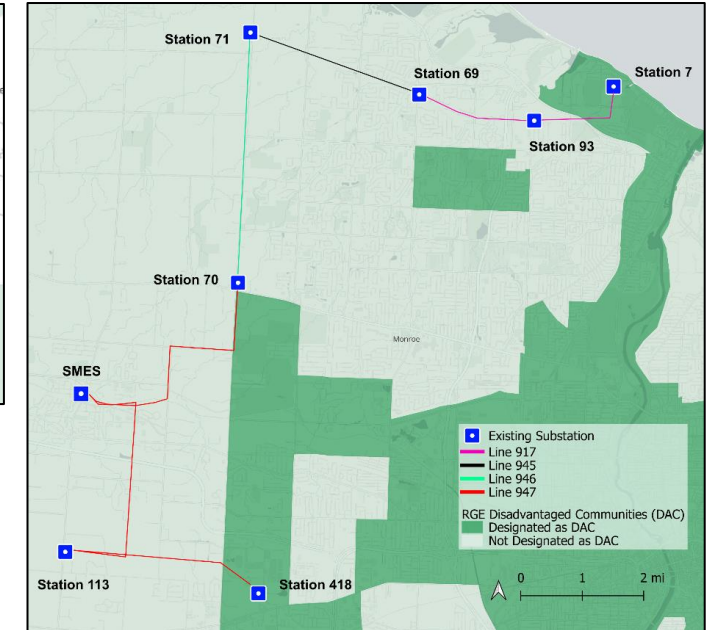
- Flood Mitigation Standards & Projects

Extreme Temperatures

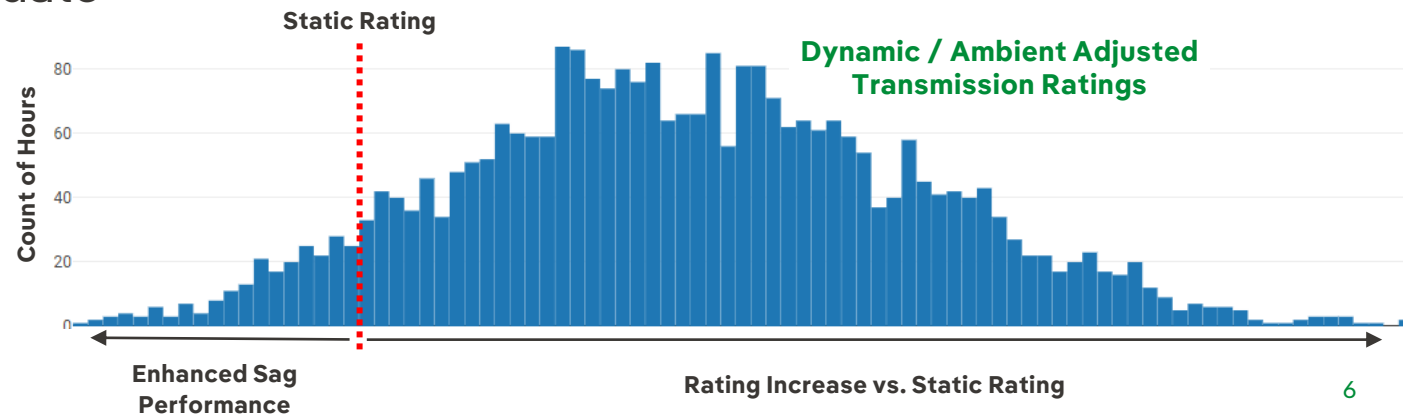
- Substation Transformer Specification Update
- Transmission Dynamic Line Ratings / Ambient Adjusted Ratings



NYSEG: CLCPA

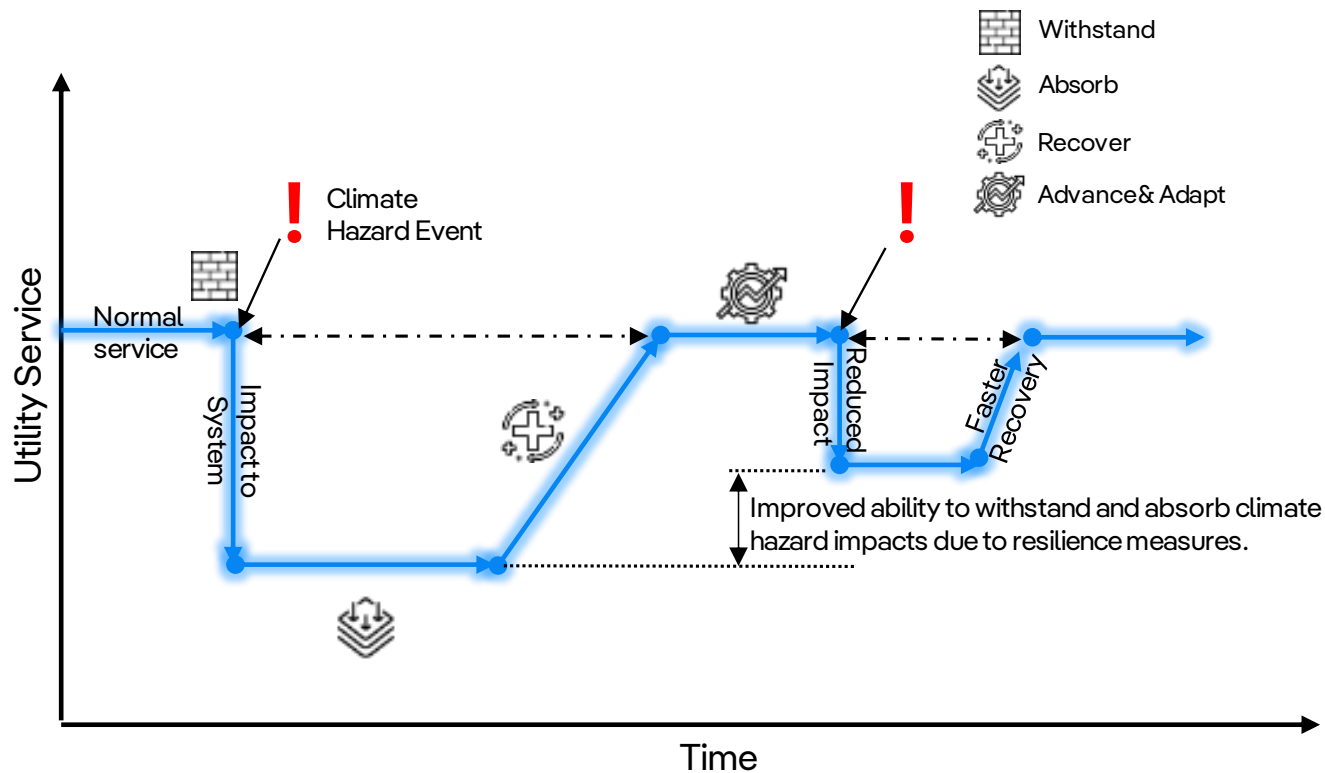


RG&E: MCRP



Resilience Framework

The Company used a multi-pronged approach to resilience, which benefits four dimensions of physical and operational aspects of the system.



Withstand: Strengthen assets and processes to resist a climate hazard event and avoid adverse impacts.

Absorb: Increase the ability to reduce the adverse impacts of climate hazards when the ability to withstand is exceeded.

Recover: Bolster the ability to reduce outage time in the aftermath of a climate hazard event.

Advance: continuous improvement and feedback loops to adjust and adapt to climate change.

On-Going Resilience Overview

Transmission Line Upgrades

- Rebuilding of existing lines as part of identified asset condition and/or capacity needs

Substation Flooding Projects

- Relocation of substations in the 100-year floodplain

Substation Transformer Replacements

- Replacement of transformers due to asset health or capacity needs

Distribution Resiliency

- Activities to harden distribution circuits to major storms



*“In 2024, NYSEG and RG&E will invest **\$38 million** in resiliency projects which include rebuilding circuits in Brewster, Elmira, Lancaster, Liberty, Oneonta and Rochester Central; **\$35 million** in automation, which add an additional 294 locations where they can remotely control equipment from the Energy Control Center; and more than **\$250 million** on replacing aging substation and overhead line equipment.”*

On-Going Distribution Resilience Activity Example

WHAT IS HARDENING? (Withstand)

Improvement of system infrastructure by using more robust construction practices and materials

Hardening focuses on:

- Use of stronger, contact-resistant conductor
- Use of tree wire in all areas where tree encroachment is possible
- Replacement of failure-prone poles within the scope of a resiliency project
- Selective undergrounding of wires and other assets
- Enhanced design standards for increased resiliency and reliability

WHAT IS AUTOMATION? (Absorb)

Installation of SCADA devices to segment long circuits and increase speed of power restoration

Automation focuses on:

- Deployment of distribution reclosers and SCADA devices
- Segmentation of circuits into pockets of 500 customers
 - 500 customers is a general rule of thumb; however, this is to be analyzed on a case-by-case basis
- Creation of new circuit ties utilizing automation technology
- Sequential Reclosing Schemes

WHAT IS TOPOLOGY? (Advance/Recover)

Circuit-specific combination of actions including upgrading lines, increasing feeder ties and switching capabilities (with Automation), and enabling further segmentation of circuits to limit the number of customers that are impacted by an outage

Topology focuses on:

- Line upgrades, voltage conversions, load transfers, and construction of new circuit segments
- Installation of devices including step-transformers, voltage regulators, SCADA devices, and disconnect switches

WHAT IS EVM? (Adv./Recover)

A program working to maintain clearance between vegetation and distribution system infrastructure that is more aggressive than standard trimming

EVM focuses on:

- Historically trees have been a leading cause of outages, particularly during major storms
- Enhanced vegetation management's "ground-to-sky" approach can effectively reduce the probability of tree-caused outages.

Next Steps

Climate Resilience Working Group Meetings

- Will be held twice per calendar year
- Next meeting will be scheduled after PSC review is complete

Approval / Modification

- Per the legislation the PSC must approve or modify the plans with 11 months.
- Plans were submitted at the end of November 2023, 11 months later would be end of October 2024

Next Steps

- Once approved or modified, NYSEG and RG&E will share the final approved plans with county executives

Questions & Discussion



