Climate Change Vulnerability Study and Resilience Plan

Community Leader Update

August, 2023

nationalgrid

Community Leader Update

Agenda:

- Review approach and overview
- Criteria for projects
- Disadvantaged communities
- Climate Change Impact concerns
- Climate Change Study
- Study Results
- Recommendations
- Study result inform Plan
- Climate Change Resilience Plan

Background

National Grid, together with the other electric utilities in New York and in consultation with NYSERDA and the New York State Department of Public Service Staff, has launched a climate vulnerability study to help prepare for the increase in severe weather expected from climate change. The study will provide a new way for us to evaluate the Company's electric infrastructure, design specifications, and procedures to better understand our electric system's vulnerability to climate-driven risks. Based on the study results, we will be creating a "Resilience Plan" which will be submitted to the New York Public Service Commission.

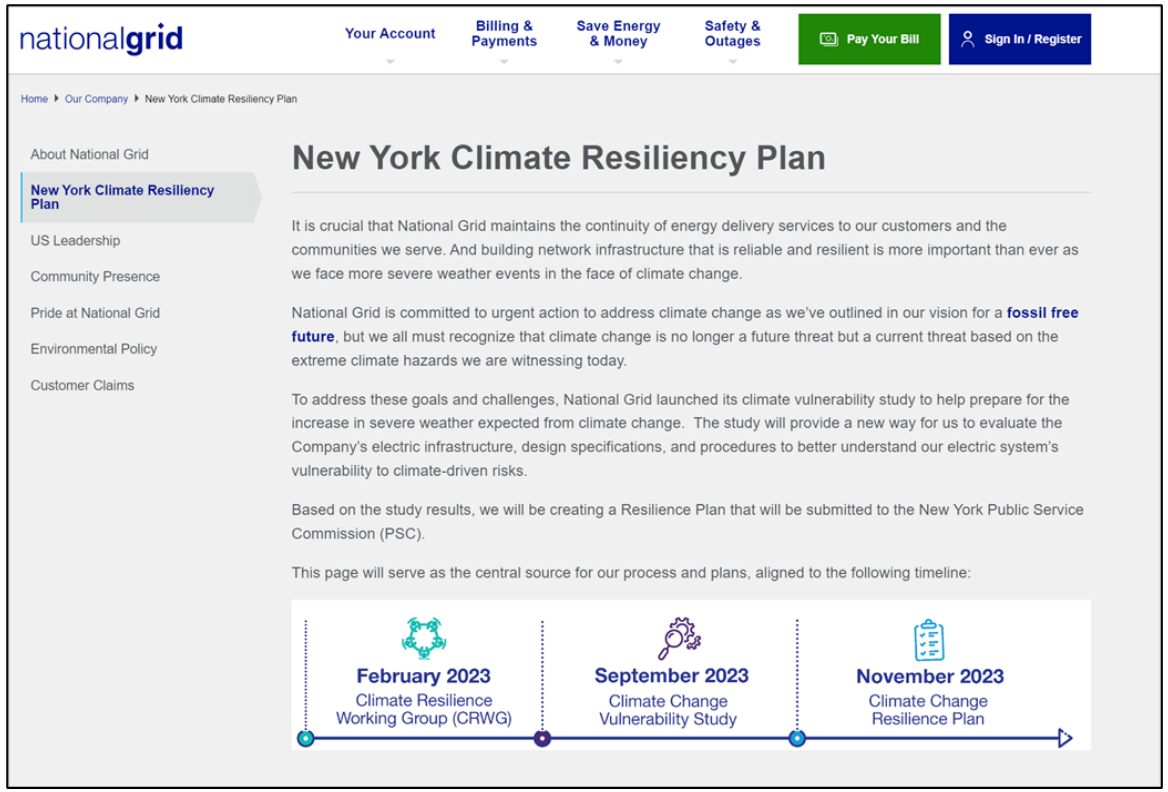
Introductions: National Grid Team

If you have any questions, please reach out to your National Grid Regional Managers

West	East	Central
Deborah Sullivan	Rebecca Atwell	Diane Benedetto
Patrick Uhteg	Bob Shevy	Christopher Gorman
Marc Gschwend	Susanne Collins	Richard Fox
Paul Kazmierczak	Scott Gresens	Gerald Haenlin
Paul Gister	Thomas Iwinski	Travis Glazier
Gwen Sanders	Michael DiAcetis	Ryan Burns
		Richard Burns
Project Manager	Technical Lead	Stakeholder Lead
Peter Haswell	Katie Meyer	Rachel Stowell

Visit our website

https://www.nationalgridus.com/Our-Company/New-York-Climate-Resiliency-Plan



Climate Change Vulnerability Study and Resilience Plan – Approach Overview

Climate Data

Columbia/NYSERDA; MIT Study, National Grid's Climate Change Risk Tool

Exposure Analysis

Identify relevant design thresholds for assets and operations and conduct exposure analysis for different asset-hazard combinations.

Potential Impact Analysis

Evaluate assets and operations for climate **sensitivities** and identify potential **consequences** of exposure to understand vulnerability.

Identify Priority Vulnerabilities

Assets and operations with highest vulnerability will be prioritized for inclusion in National Grid's Resilience Plan.

Identify Resilience Measures

For priority assets & operations identify resilience measures for next 5, 10 and 20 years.

Prioritize Resilience Measures

Based on quantification of risk mitigation **benefits** and risk mitigation **costs** of resilience measures.

Develop Resilience Plan

Develop portfolio of prioritized resilience measures with implementation timeframes, rate impact estimates etc.

Climate Change Vulnerability Study (CCVS)

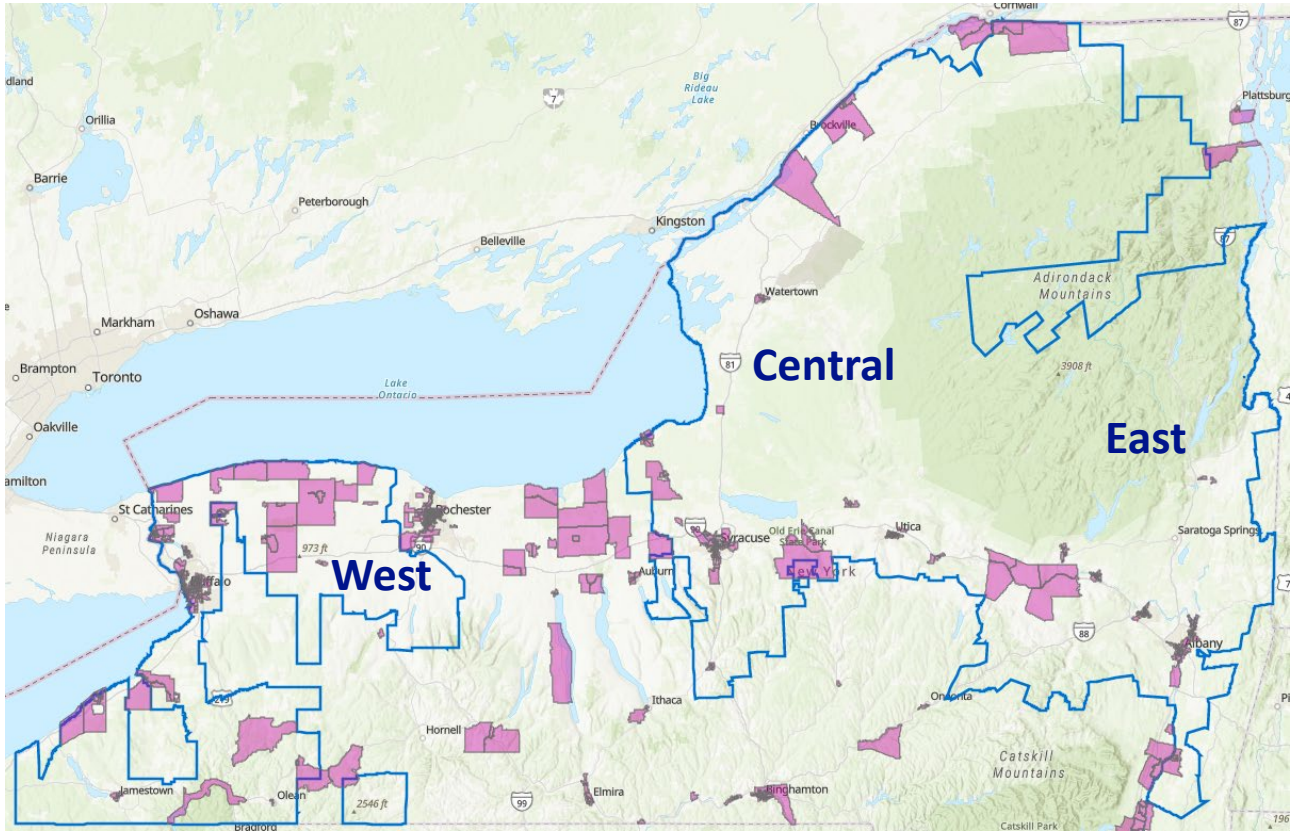
Climate Change Resilience Plan (CCRP)

Stakeholder Engagement

Equity Considerations in Resilience Planning

- National Grid recognizes that some communities may be disproportionately impacted by climate change, and distributional and procedural inequities are often associated with differential vulnerability of communities to climate change. Extreme climate events can exacerbate existing inequities.
- As part of developing the CCRP, National Grid will leverage the findings of the CJWG on DACs to integrate inclusion and equity considerations into resilience planning. The PSC order requiring this CCVS also calls for equity considerations to be included in the Resilience Plan as part evaluating costs and benefits of recommended resilience measures. The information from disadvantaged communities mapping will provide important information, which along with the vulnerabilities identified from this Study, will inform the process by which National Grid will prioritize resilience projects. Please see map pf CJWG-designated disadvantaged communities overlaid on National Grid service territory. The prioritization approach is currently under development and will be elaborated in the CCRP.
- National Grid's intent is to make equity an integral part of project planning to appropriately prioritize the interests of . We do not want to further unduly burden disadvantaged communities and avoid unduly burdening any affected community , nor be unjustly discriminatory or unduly preferential to any community in our territory.

For more information on Disadvantaged Communities Criteria - New York's Climate Leadership & Community Protection Act (ny.gov) https://climate.ny.gov/resources/disadvantaged-communities-criteria/



Overlay of Disadvantaged Communities in National Grid service territories

Please share any equity related data or considerations you would like National Grid to be aware of in developing this Study and Resilience Plan

Criteria

- **Evaluate**
  - The impacts of climate hazards on our assets and operations to determining where and under what conditions we will need to build resilience.
- **Prioritize**
  - Customer count
  - Numbers of critical customers, commercial, residential customers on impacted feeders
  - Disadvantaged Communities
  - Worst performing feeders
  - SAIFI, CAIDI indices
  - Vegetation Management (Environmental Impacts and Trends)
  - Asset Condition
  - Criticality (i.e., 5 Year, 10 Year, 15 Year Plan)
- **Consider**
  - Considerations for rate recovery to prudently manage financial impacts on rates to our customers

Your concerns match ours

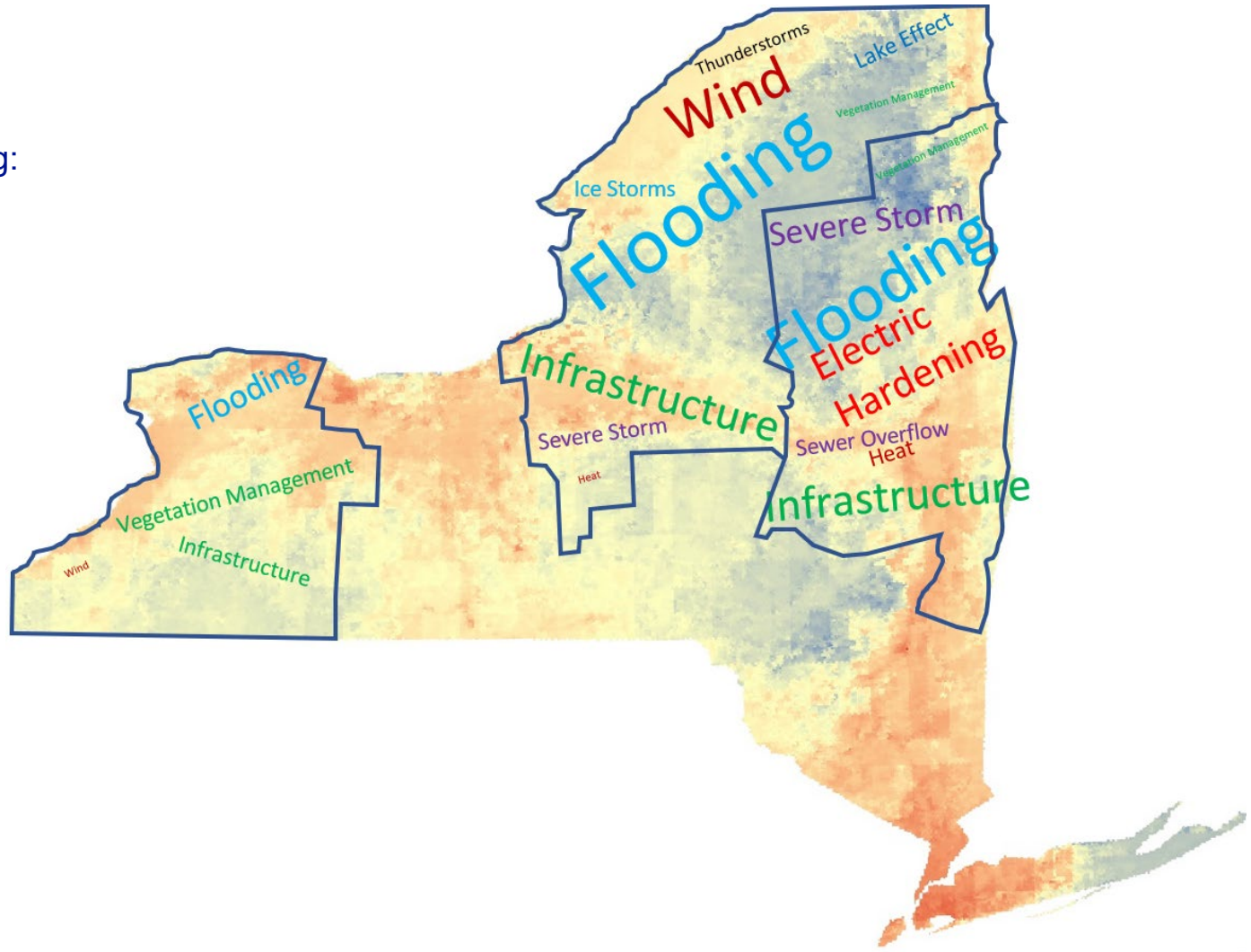
The map was results map was created from the Aug 2022 survey you responded to.

Since then, we have heard your additional concerns including:

- **Christmas Buffalo Blizzard**,
- Canadian wildfires,
- July's heat and humidity.
- Flooding continues to be a challenge especially among the thruway corridor.

ASSET GROUP	High Temperature	High Winds	Inland Flooding	Ice
Transmission	✓	✓		✓
Distribution	✓	✓		✓
Substation	✓		✓	

OPERATIONS AND PLANNING FUNCTION	High Temperature	High Winds	Heavy Precipitation & Flooding	Ice
Emergency Response	✓	✓	✓	✓
Vegetation Management		✓	✓	✓
Workforce Safety and Methods	✓	✓	✓	✓
Reliability Planning	✓	✓		
Load Forecasting	✓			
Capacity Planning	✓			



Climate Change Vulnerability Study

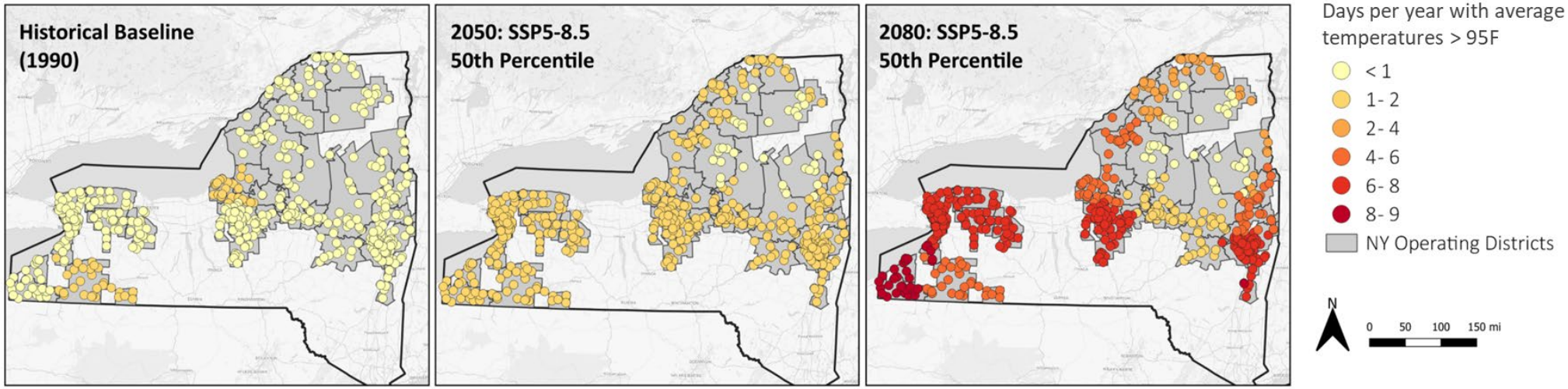
Evaluates assets and systems and identifies vulnerabilities to future climate hazards

Report - Outline

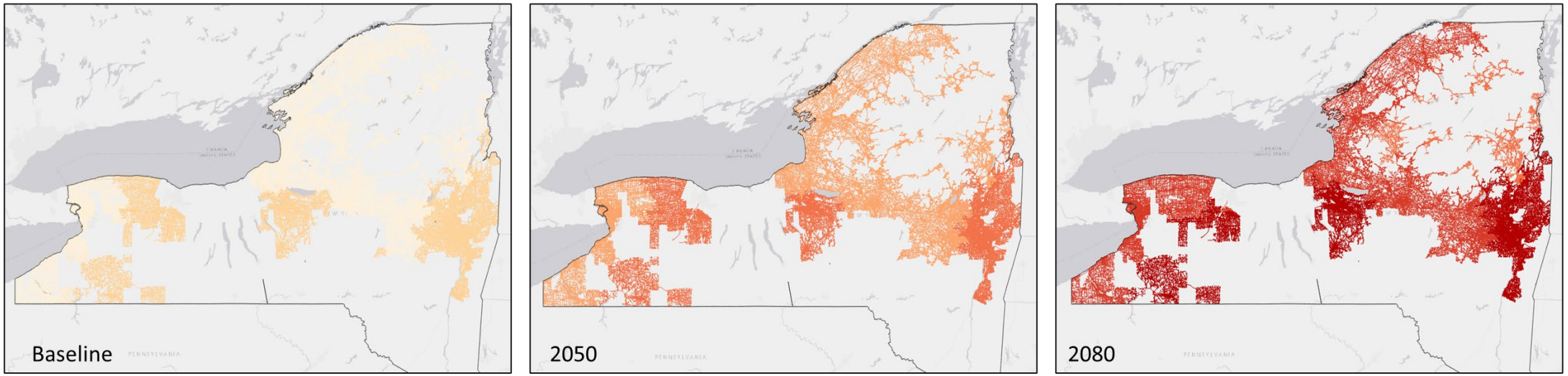
- **Executive Summary**
  - Key takeaways
- **Introduction**
  - Background
  - Broad baseline assumptions
  - Summary of Priority Vulnerabilities (to be addressed in Resilience Plan)
  - Importance of equity
    - Principles for Plan and considerations moving forward
- **Historical Climate Data and Future Projections**
  - Methods (more detailed in Appendix)
  - Results/Output
- **Vulnerability Assessment**
  - Methods (more detailed in Appendix)
  - Identified Vulnerabilities
- **Potential Adaptation Measures**
  - High-level categories for considerations in the Resilience Plan
- **Conclusion and Next Steps**
  - Knowledge gaps and anticipated needs
- **References**
- **Appendices**

Examples of our study

Exposure: High Temperature and Substations

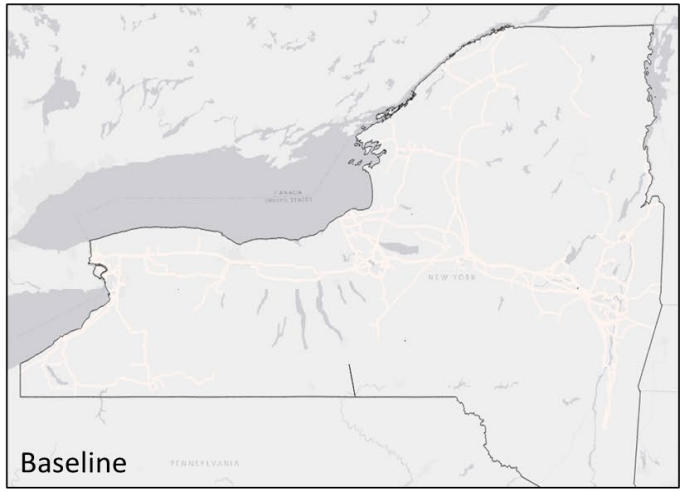


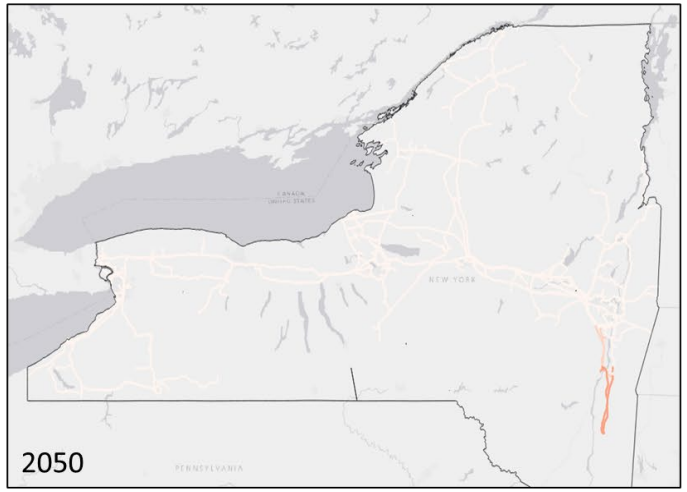
Exposure: High Temperature and Distribution OH Conductors

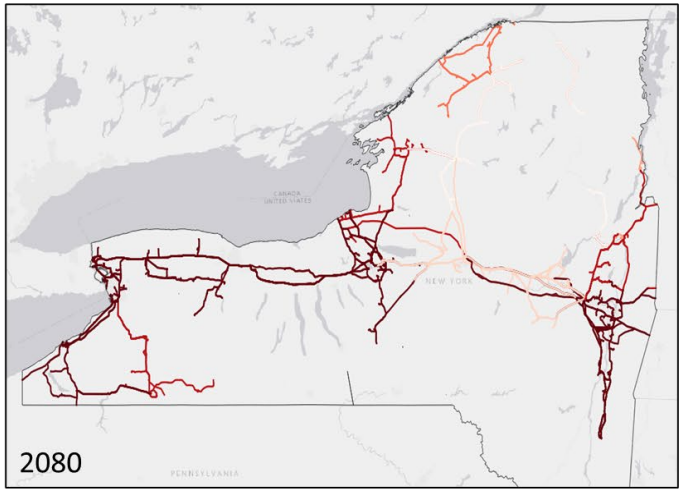


Examples of our study

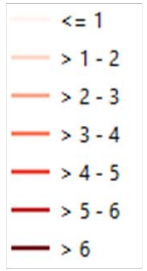
Exposure: High Temperature and Transmission OH Conductors



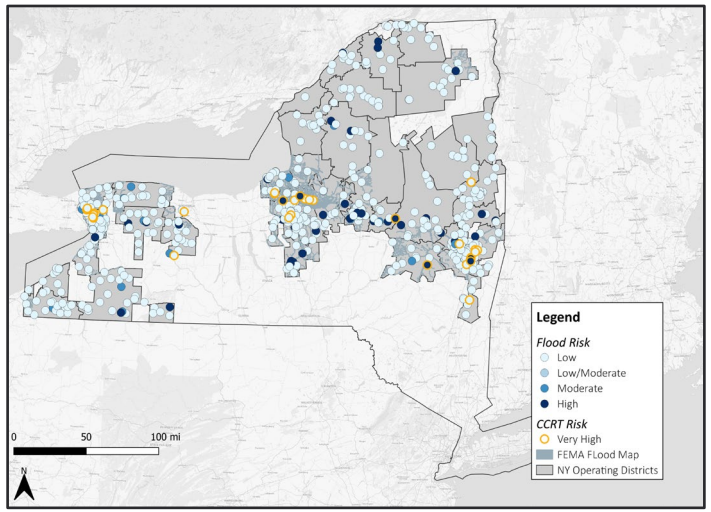




Days per year with average temperatures over 95˚F at transmission lines

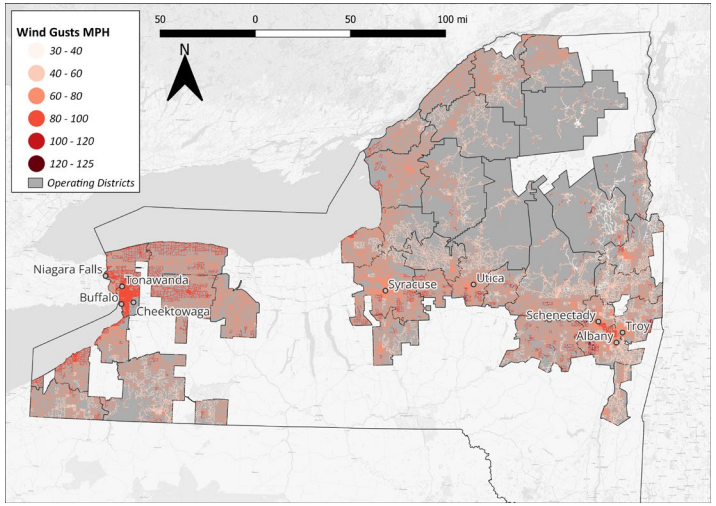


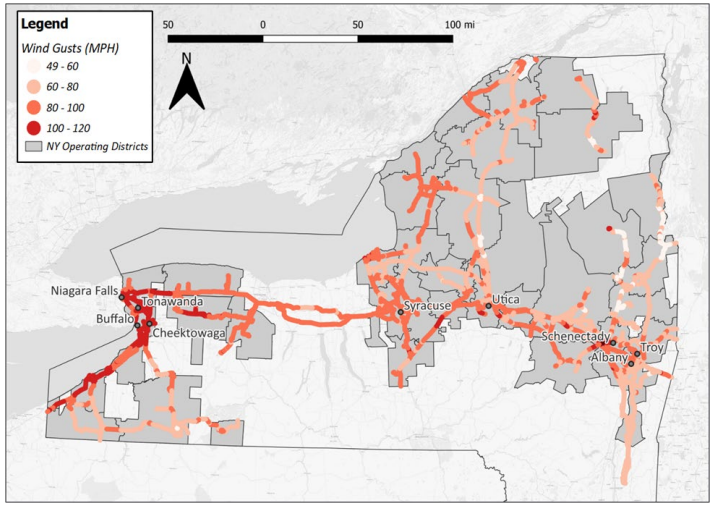
Exposure: Flooding and Substations

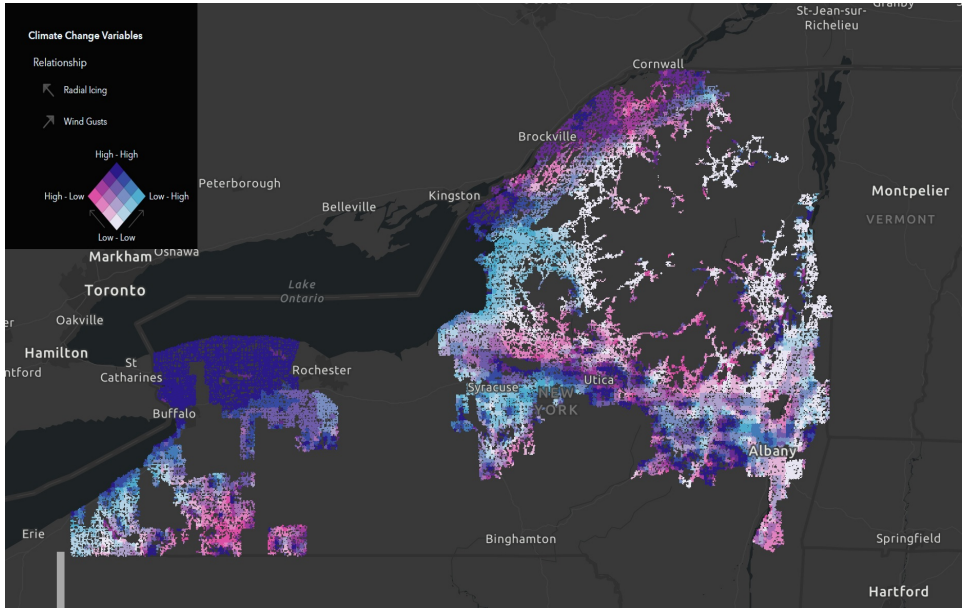


Examples of our study

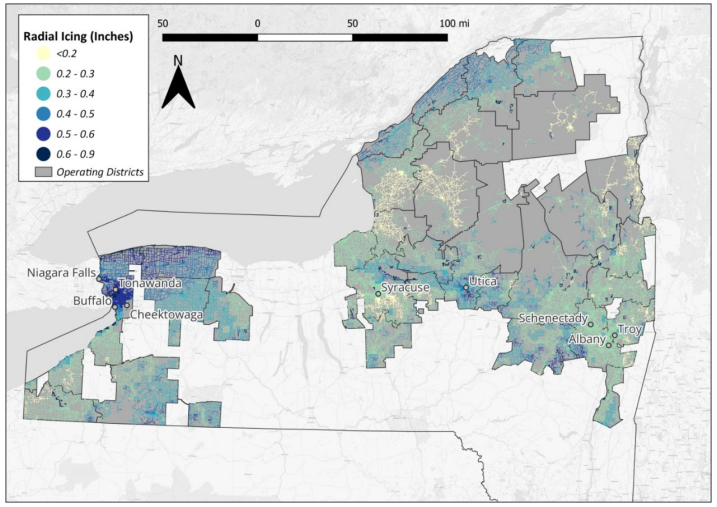
Exposure: Wind (Distribution and Transmission)

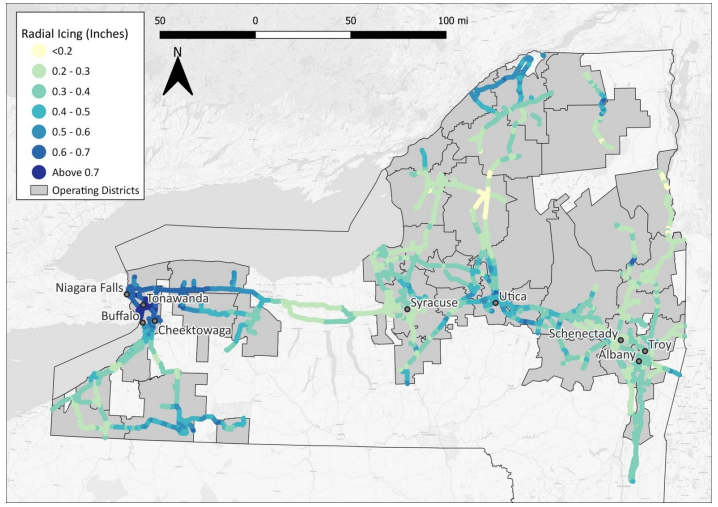




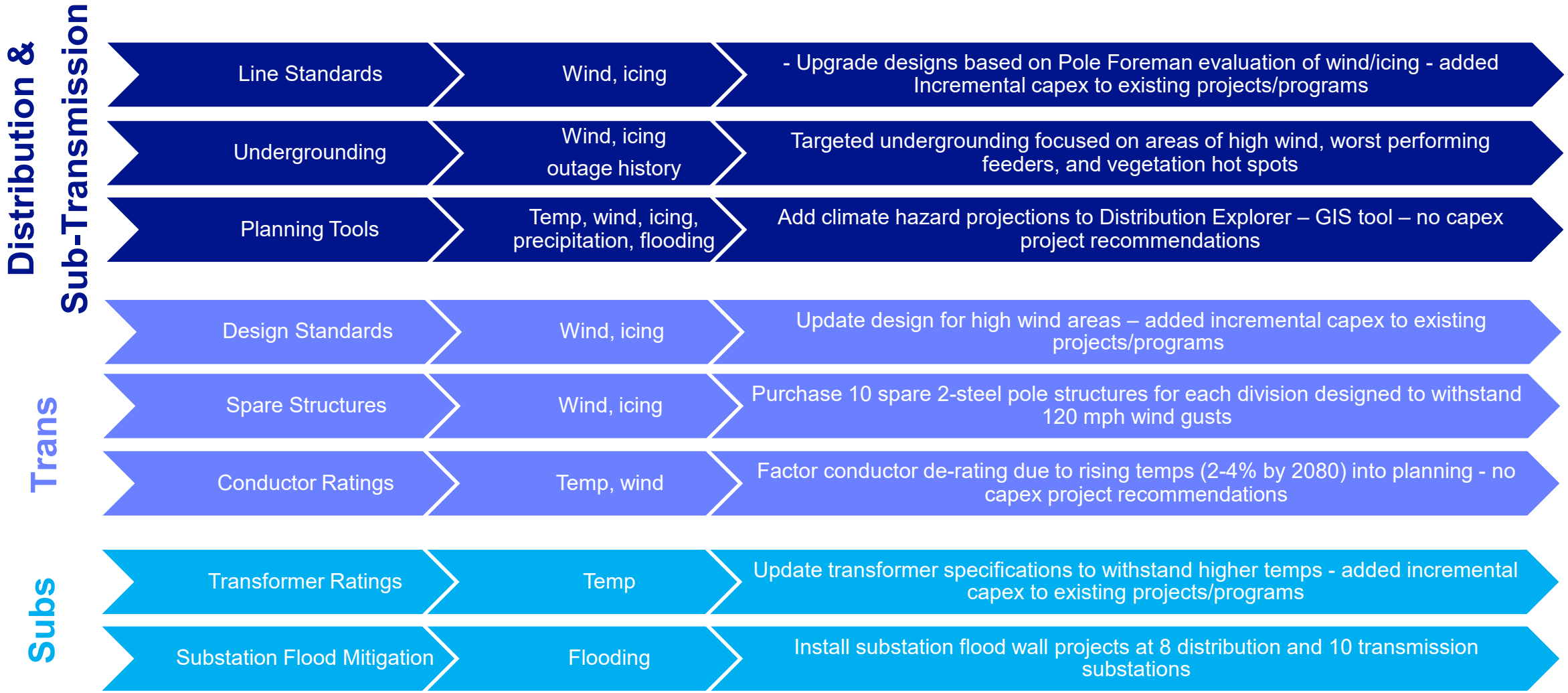


Exposure: Ice



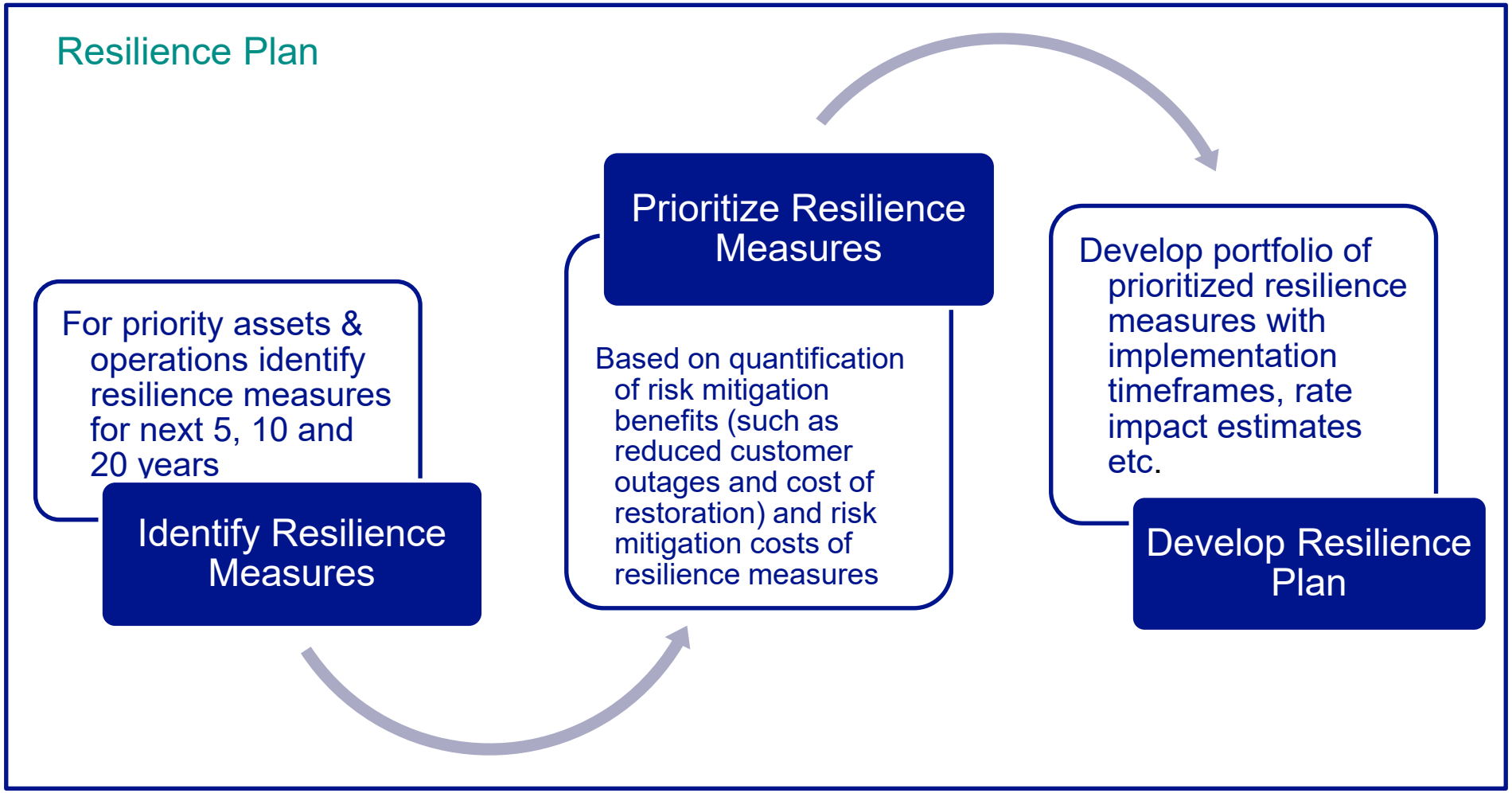


Summary of Anticipated Recommendations



Vulnerability Study results will inform the Resilience Plan

Results from Vulnerability Study



Climate Change Resilience Plan

Proposes measures to mitigate the vulnerabilities identified in the Study and maintain the resilience of the electrical system

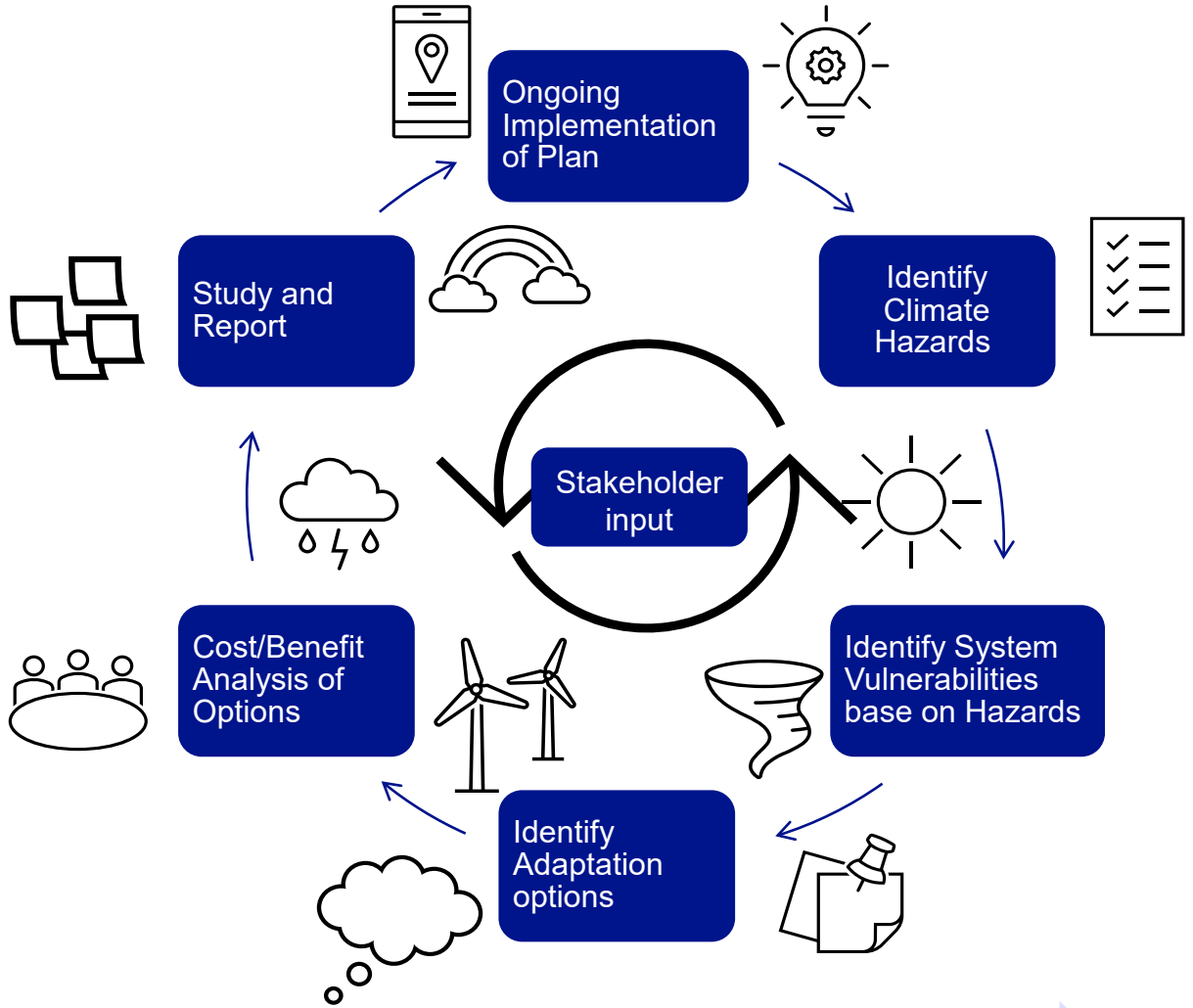
Report - Outline

- Executive Summary
- Introduction and Background
- Summary of potential adaptation measures from the Study
- Potential Consequences
- Engagement of the Climate Resilience Working Group
- Multi-pronged Resilience Strategy and Approach
    - Incorporating Resilience into Existing Planning, Design, and Operations Practices
    - Proposing Resilience-Related Measures Applying New Technologies
- Consideration of Equity
- Investment Plan
    - Summary of projects and programs
        - 5-year period
            - Identify rate impacts, benefits and value
        - 10-year and 20-year periods
- Governance
- Performance Measures
- Conclusion and Next Steps
- Appendices

Meeting Follow Up

Looking ahead:

- You will receive a Draft Study.
  - Please provide your valuable input
  - Questions



Climate Change Vulnerability Study by September 2023

- Evaluate infrastructure, design specifications, and procedures to identify vulnerabilities
- Include adaptation measures to address vulnerabilities, feeds into Resilience Plan

Climate Change Resilience plan by November 2023

- Propose storm hardening measures for next 10 and 20 years
- Detail how climate change reflected in planning, design, operations, & emergency response
- Address impacts on costs, outage times, potential for undergrounding lines, etc.
- Additional requirements the PSC may identify

PSC to approve or modify Resilience Plan within 11 months of filing

- Cost recovery allowed for projects approved in Resilience Plan
- Projects placed in service between rate cases recoverable via surcharge
- Utilities established working group to advise on resilience plan