NYSEG RG&E

Part of the AVANGRID Family

Climate Change Vulnerability Study and Resilience Plan

Stakeholder Meeting

September 22, 2022

Agenda

Welcome & Introductions

Background

Project Overview

Opportunities for Engagement

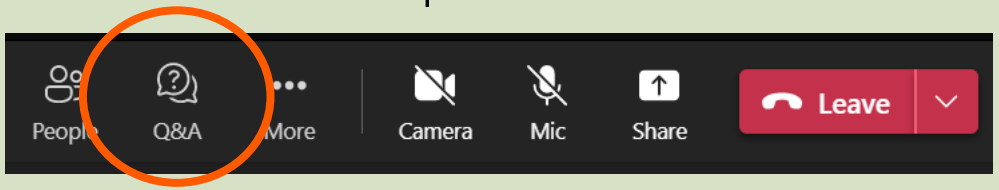
Q&A

Welcome & Introductions

Welcome!

- We have approximately 30 minutes for the presentation and then we will then open it up for Q&A
- You may submit questions throughout the presentation using the Q&A button on the toolbar
- All participants are in listen-only mode
- The meeting will be recorded
- This presentation will be provided to everyone who was invited to today's event
- If you have technical difficulties or need assistance with the Microsoft Teams event please message jeffrey.meek@icf.com

Example of Toolbar



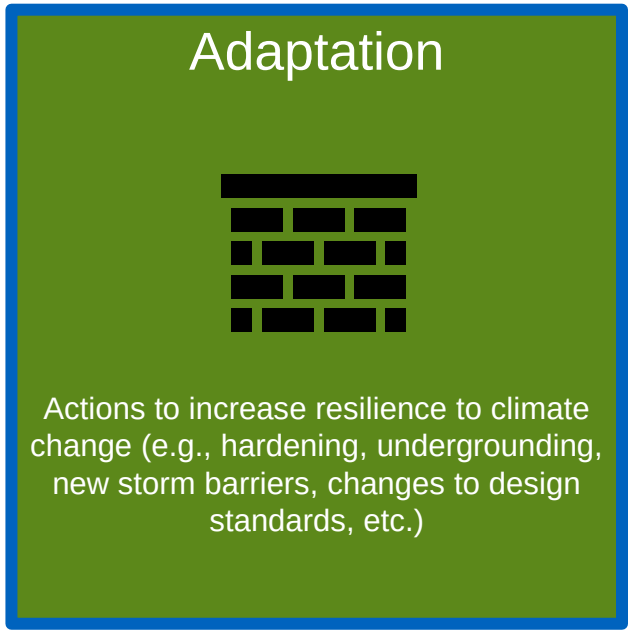
Team

- **Project Lead:** Dave Bradt, Senior Director – Strategic Planning
- **Technical Lead:** Ed Roedel, Principal Engineer – Strategic Planning
- **Stakeholder Engagement:** Dave Gridley, Director – Government & Community Relations
- **Regulatory Lead:** Lori Cole, Manager – Regulatory & Tariffs

- **Study Support:** ICF

Today's Focus

- Review study process for determining **physical impacts** of climate change on electric utility infrastructure and associated mitigation strategies
- Information on the context, approach, and timeline for the Climate Change Vulnerability Study and Resilience Plan
- Opportunities for engagement



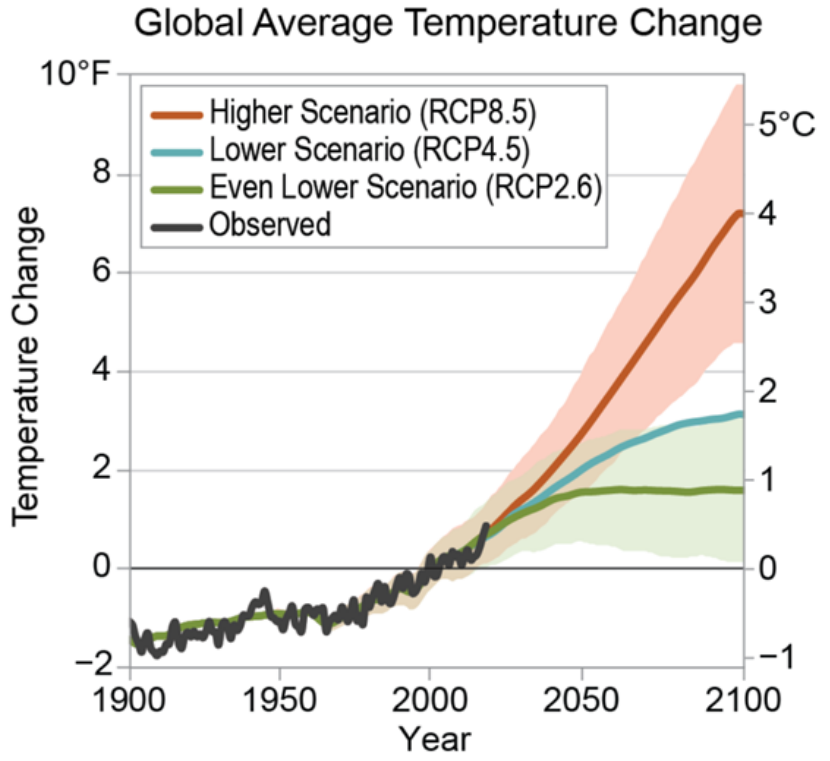
Background

Overview of Recent 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 must be **filed in the fall of 2023**, with updates at least every five years

Project Objectives

- Develop a robust set of utility-relevant **climate change hazard projections**
- Understand the **range of potential impacts (i.e., vulnerabilities)** of climate change on NYSEG and RG&E's electric system
- **Prioritize vulnerabilities** for electric assets alongside quantitative and qualitative evaluation of other key risks
- Develop **solutions to address key vulnerabilities** in a prioritized manner
- Develop a **climate resilience plan** for NYSEG and RG&E that is integrated with all future electric system planning



Project Approach

Project Approach Overview

Climate Change Vulnerability Study

Resilience Plan

Stakeholder Engagement

Climate Science

Exposure
The degree to which assets, operations, or systems could face climate hazards, based on their physical locations and projected hazards.

Potential Impact
The potential for negative outcomes in the event of climate hazard exposure.

- **Sensitivity**: The degree to which assets, operations, or systems could be affected by exposures.
- **Consequence**: Estimated magnitude of negative outcomes associated with impacts. Incorporates criticality and adaptive capacity.

Vulnerability
The potential of assets, operations or customers to be affected by projected hazards, and the significance of the potential consequences.

Resilience Framework
Comprehensive framework to address gradual climate change and extreme events that can guide investment planning

Key Planning, Design, Operations, and Emergency Response Changes

Resilience Measures for Next 10 and 20 Years

Estimated Costs and Benefits

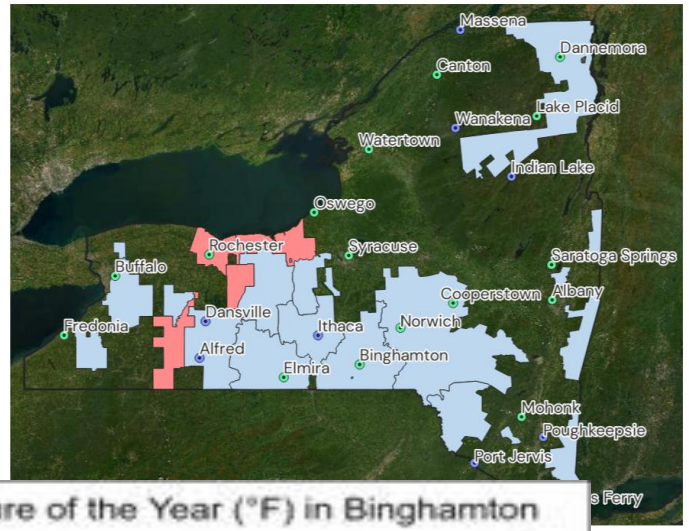
- Initial Stakeholder Meeting
- Working Group: Exposure & Potential Impacts
- Working Group: Vulnerability Summary
- Working Group: Resilience Measures

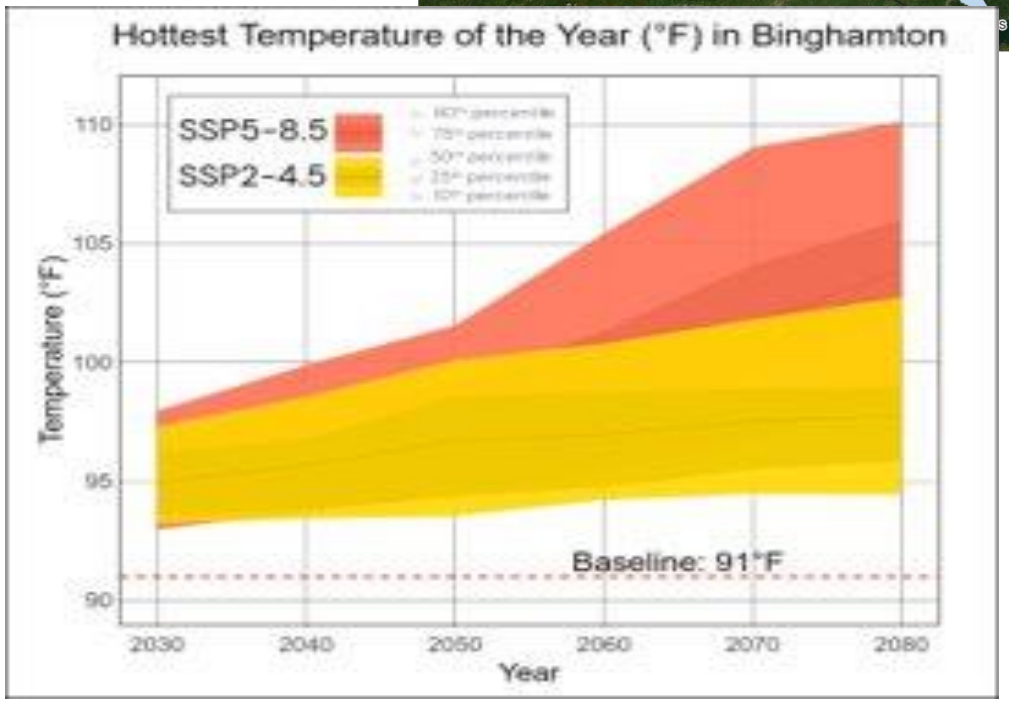
Q2 2022 | Q3 2022 | Q4 2022 | Q1 2023 | Q2 2023 | Q3 2023 | Q4 2023

Climate Science

Climate science specific to NYSEG & RG&E's system

- Evaluate projections for climate variables related to NYSEG and RG&E's system (e.g., system sensitivities based on equipment, operations, etc.)
- Global Climate Models localized to match historical weather and produce meteorologically-realistic climate projections through late-century
- Multiple greenhouse gas concentration scenarios to support a risk-based assessment
- Supplementary extreme event analysis and literature review



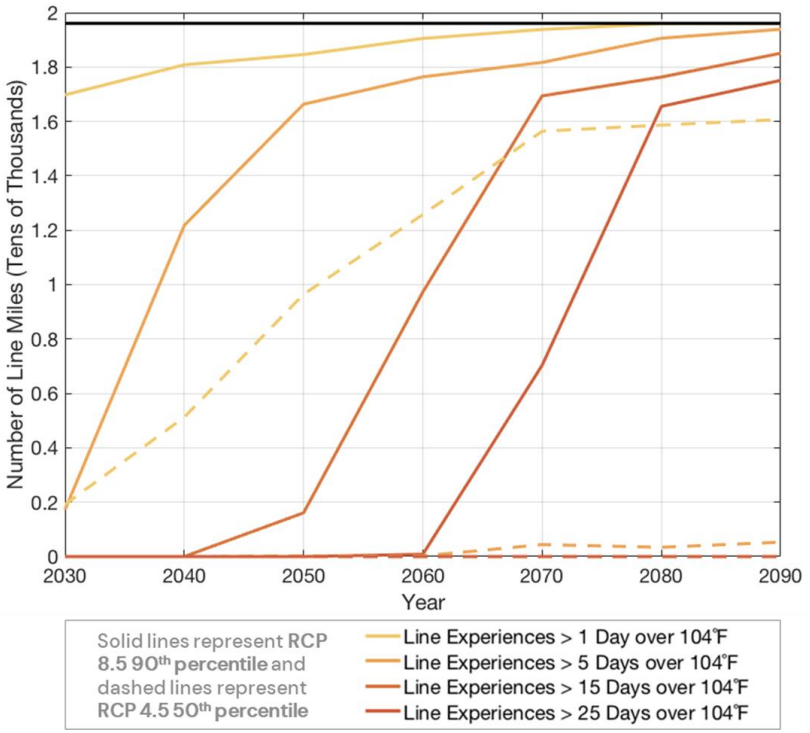


Example hazards

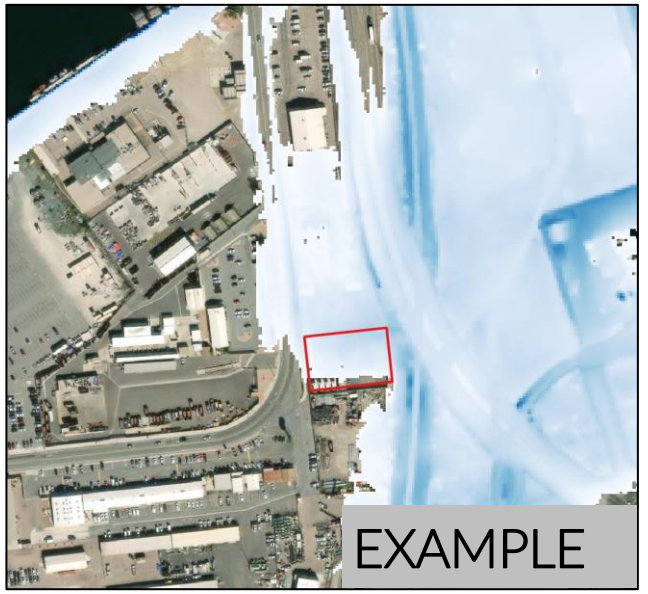
Average and extreme temperatures	Inland flooding
	Wind
Extreme precipitation	Humidity and heat index

Exposure

- Asset-level exposure projections and/or scenarios for relevant timescales
- Highlight climate hazards to operations and processes



Sample temperature exposure figure for ICF utility client

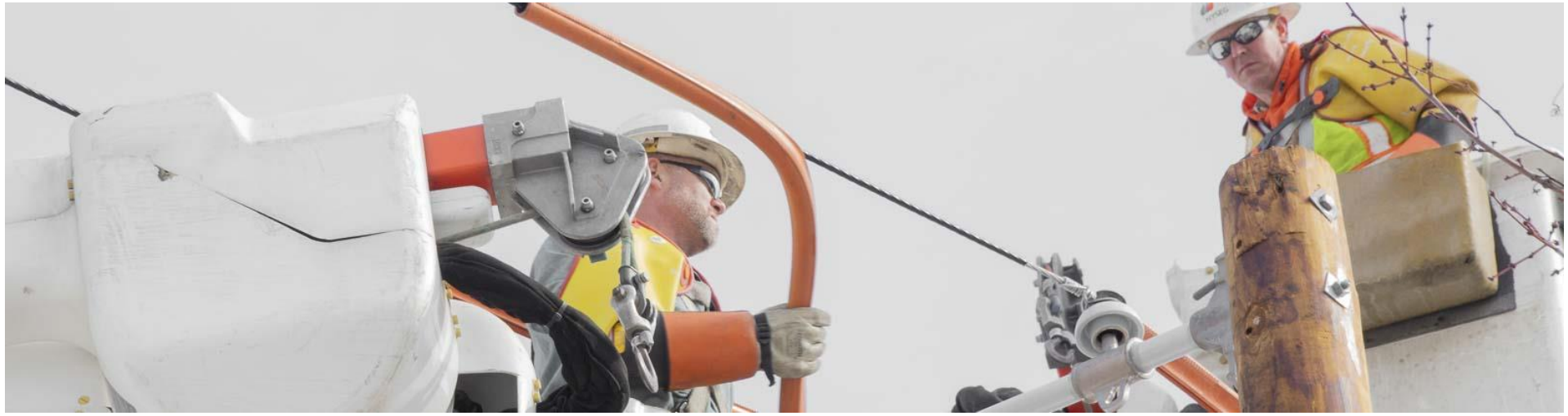


Potential Impacts

- Assemble initial climate hazard sensitivities for electric assets:
  - Summarize industry knowledge and ICF experience
  - Collect and review NYSEG and RG&E design specifications, procedural documents, and historical info
- Summarize sensitivity and adaptive capacity of key assets; vet with NYSEG and RG&E experts
- Characterize potential consequences to assets, operations, and systems
- Develop ranking of potential impacts for assets

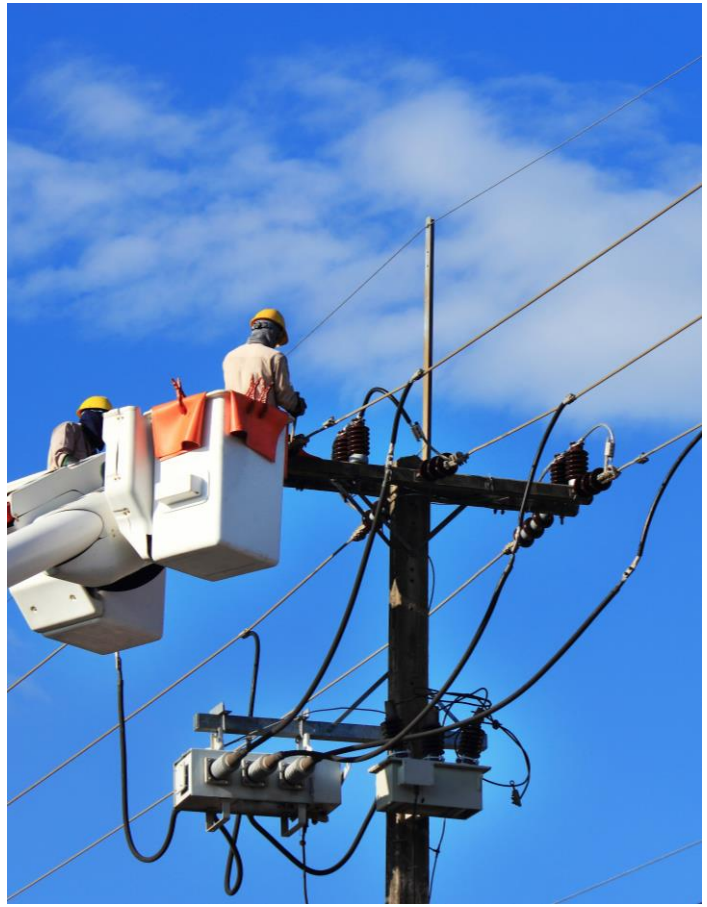
Vulnerability Summary and Report

- Summarize exposure, sensitivity, and potential consequences of key climate hazards
- Characterize vulnerability at a system-wide level
- Identify specific assets and regions of particular vulnerability as priorities
- Provide cross-cutting characterization of the relative vulnerabilities of specific asset categories and hazard combinations



Resilience Plan

- Develop a comprehensive framework to address gradual climate change and extreme events
- Identify key planning, design, operations, and emergency response changes
- Identify resilience measures to mitigate the impacts of climate change to NYSEG/RG&E's infrastructure prioritized in the Climate Change Vulnerability Study
- Estimate associated costs and benefits to support investment
- Develop a project management plan, timeline, and resource requirements



Opportunities for Engagement

Stakeholder Engagement Opportunities

Information Gathering

- Public engagement is key to this process
- Opportunities for feedback, suggestions, and questions

Project Updates (email)

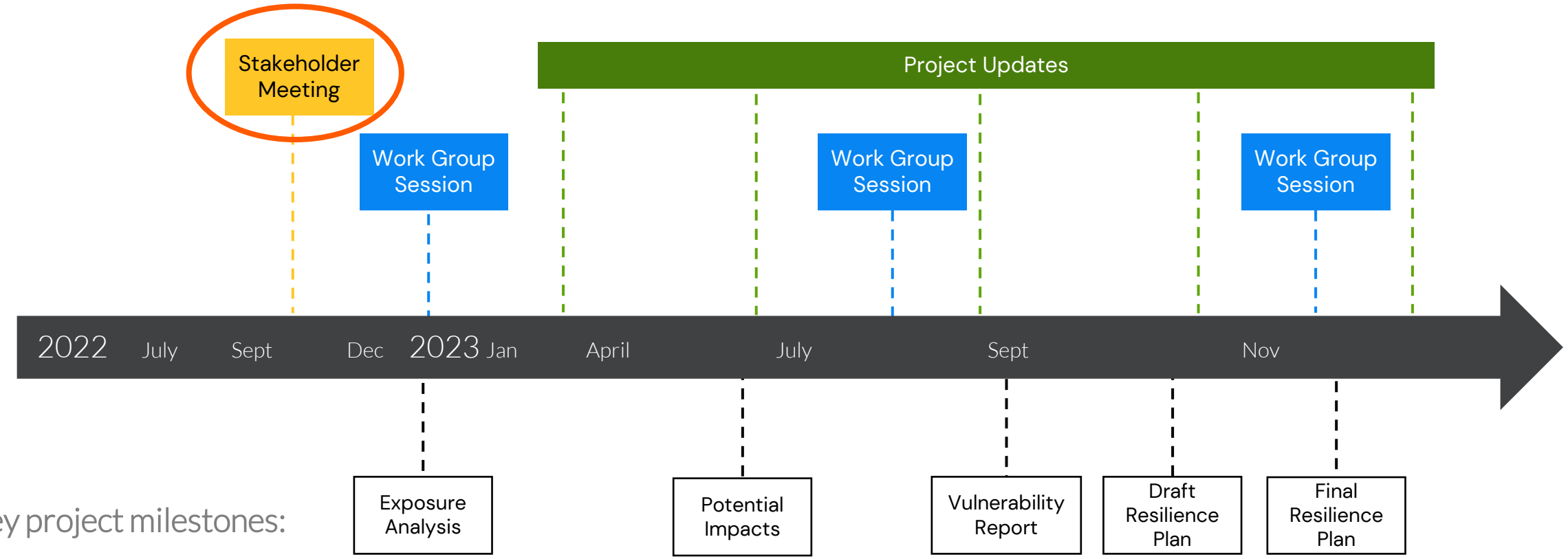
- High-level reporting on the study, updates and progress, and results
- Details on upcoming opportunities to engage
- If you haven't already registered to receive project updates, please send an email to **nyseg.rge.publicaffairs@avangrid.com** to be added to the distribution list

Stakeholder Engagement Opportunities

Working Group (WG)

- A platform for open and constructive discussion of key issues affecting NYSEG and RG&E's climate resilience planning
- Seeking participants to be engaged in detailed discussion on key topics, including:
  - Climate risk assessment and adaptation
  - Infrastructure planning for resilience
  - Community resilience and priorities
- Parties are welcome to join the Working Group at any time. If you are interested in joining, please email: **nyseg.rge.publicaffairs@avangrid.com**
  - Your name and organization
  - A summary of your relevant expertise and interest would be helpful

Stakeholder Engagement Timeline



Key project milestones:

Questions?

Please submit questions via the Q&A feature on the toolbar