

# Orange & Rockland Climate Change Vulnerability Study Summary 2023

Orange and Rockland Utilities, Inc. (O&R) provides electric service, which serves an essential role in the daily lives of over 234,000 customers in New York. While society becomes increasingly dependent on resilient, reliable electricity, climate change is bringing more frequent and severe heat waves and storms that can impact electric delivery equipment and cause customer outages. O&R's first Climate Change Vulnerability Study (CCVS) provides a detailed review of the threat climate change poses to O&R's electric system infrastructure and customers.

## Temperature and Humidity

### Climate Projections

- **Increasing Temperatures:** O&R's service territory will experience rising temperatures and increasingly frequent, intense heat waves.
- **Example:** The CCVS estimates that by 2030, the O&R service territory will experience **up to 18 days per year** with daily maximum temperature **exceeding 95°F**, as compared to 4 days per year historically.

### Key Vulnerabilities

- **Increased System Load:** Intense heat and humidity causes customers to increase the use of their air conditioners to stay safe and comfortable, **increasing the amount of power** flowing through electric delivery equipment.
- **Decreased Asset Capacity:** Operating at higher temperatures will likely decrease the capacity of electrical equipment such as cables and substation transformers.
- **Accelerated Asset Degradation:** Higher temperatures with increased load will accelerate the aging of substation transformers.

## Flooding

### Climate Projections

- **Sea Level Rise:** The CCVS shows that **sea levels will rise 16 inches by 2050**, increasing the risk of flooding.
- **Precipitation:** By 2050, the O&R service territory will experience **up to five days per year** with precipitation **exceeding 2 inches**, compared to three days per year historically.

### Key Vulnerabilities

- **Equipment Damage:** Floodwaters damage electrical equipment and saltwater can cause corrosion.
- **Limited Accessibility:** Assets such as substations and underground power lines that are flooded or surrounded by water are difficult for crews to access for maintenance and repair. **That can mean longer outages for customers.**

## Wind and Ice

### Climate Projections

- **Wind:** Scientific studies indicate that intensifying storms will carry stronger wind gusts, and the maximum annual wind speed in White Plains is expected to increase **to up to 55 mph** in the next 10 to 15 years.
- **Icing:** There is potential for icing events to increase in intensity in the winter months. Projections indicate by as much as 1 inch of annual radial icing at White Plains.

### Key Vulnerabilities

- **Vegetation Impacts:** Strong winds and ice accumulation can cause trees and tree limbs to fall on overhead lines and other electrical equipment, causing customers to lose service.
- **Line Impacts:** Ice gathering on overhead lines can result in electrical equipment failure and outages.



## Extreme and Coincident Events

### Climate Projections

- **Hurricanes:** Scientific studies project that hurricanes will be more intense and likely to track toward the Northeast.
- **Nor'easters and Cold Snaps:** Nor'easters and cold snaps could be less frequent, but more intense when they do occur.
- **Drought and Wildfire:** Drought and wildfire are projected to increase in both frequency and intensity, due to projected increases in temperature, dry conditions, and the occurrence of lightning strikes.
- **Lightning and Tornadoes:** Lightning and tornadoes could potentially increase in frequency and intensity due to projected increases in temperature coupled with increases in atmospheric water vapor.
- **Deluge Rain:** Deluge rain, meaning short bursts of torrential downpours, is expected to increase in frequency and intensity.
- **Concurrent and Consecutive Extreme Events:** Concurrent and consecutive extreme events are expected to increase in frequency and intensity, which amplifies the impact to O&R assets and storm response efforts.

### Key Vulnerabilities

- **Systemwide Impacts:** These concurrent and consecutive events pose challenges to O&R's electric system. O&R will need to take this into account in its emergency response planning.



## Ongoing Efforts

- **Worker Safety:** O&R will update its safety guidelines on heat exposure, including proper preparations, precautions, and safe work actions during elevated heat index days. O&R is also participating in pilot studies to test worker equipment in high heat conditions.
- **Load Relief Planning:** O&R is updating its process for planning load relief measures to consider climate-driven changes in system load and asset capacity.
- **Emergency Preparedness:** O&R plans to update its drills and exercises to reflect the extreme weather events climate change is causing. O&R continues to improve and better incorporate climate projections into the forecast model it uses for emergency response preparation.
- **Updated Asset Standards:** O&R is planning to adopt a climate change planning and design guideline to account for rising sea levels. The Company will continue to make investments to protect assets against climate change.
- **Spare Equipment:** O&R maintains a stock of spare equipment it can use to repair or replace components damaged during major weather events.
- **Vegetation Management:** O&R has updated the clearances around overhead conductors to reduce the risk of damage from tree contact during storms and other high wind events. The Company will continue to monitor vegetation management practices and update as needed to respond to climate change.

The Company has formed an Environmental Justice Working Group and plans to release an Environmental Justice Policy Statement in 2023 to apply an equity lens to Company investments.

Key components of the upcoming policy statement include:

- Operations will not disproportionately burden disadvantaged communities.
- O&R will work to understand the concerns of those in these communities.
- Clean energy investments will benefit these communities.
- O&R will provide opportunities for clean energy jobs.

O&R will file a Climate Change Resilience Plan in November 2023 which summarizes planned investments to address climate vulnerabilities.