National Grid – Planning Preparation, and Response to Icing Events

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Jonathan Pease

Lead Program Manager for the New York Jurisdiction Emergency Planning Department of National Grid.

Formerly employed with the NYS Department of Health – Office of Health Emergency Preparedness, and the NYS - Washington County Department of Public Safety, as an Emergency Management Coordinator

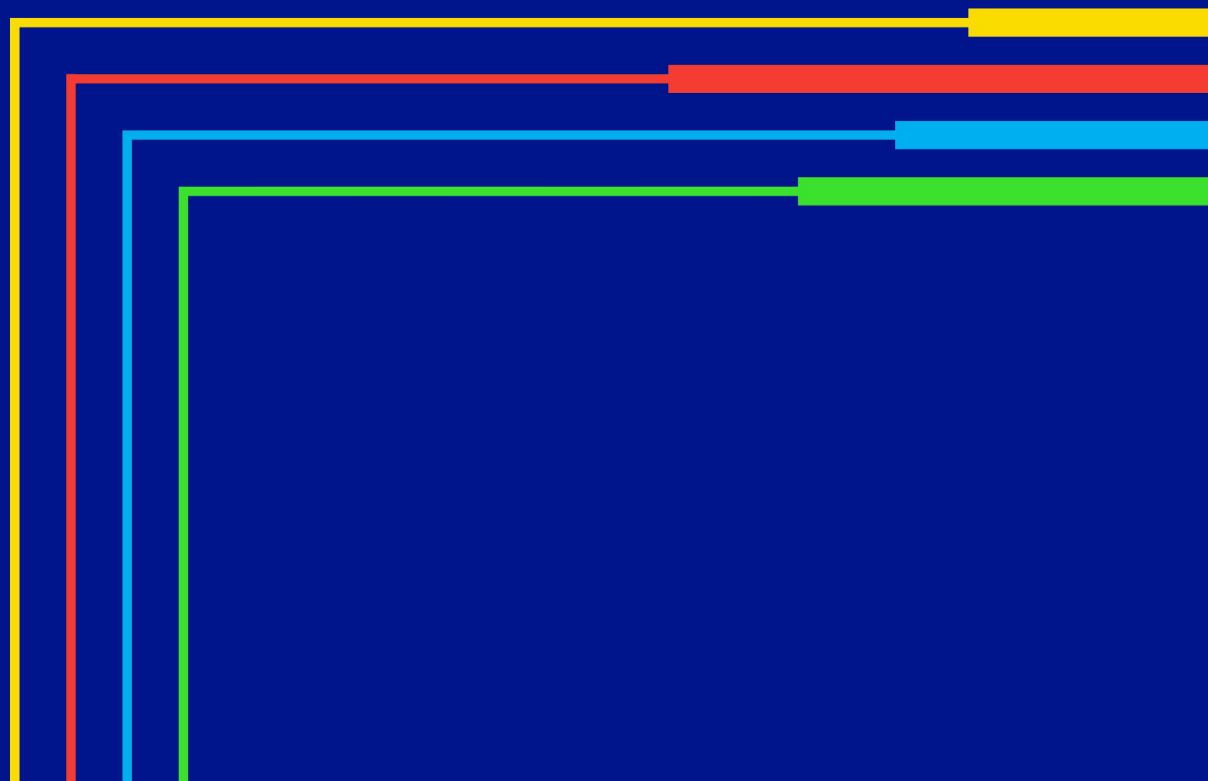
Previous employment at the State and County level working in Emergency Management, working closely with Governmental Agencies, Public Health Offices, Fire Service, Emergency Medical Service, and Federal partners.

Bachelor of Technology degree in Emergency Management from SUNY Canton with an abundance of knowledge and experience gained over 15+ year career in the field of Emergency Management.

Comprehensive working knowledge of the National Incident Management System (NIMS) and Incident Command Structure (ICS300, ICS400), along with extensive knowledge on advanced coursework in the NEMBA – National Emergency Management Basic Academy.

Vast accumulation of training and experiences through 20 years of volunteer service as a firefighter and various officer positions and has been a member of the New York State Emergency Management Association since 2011.

Service Territory



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New York

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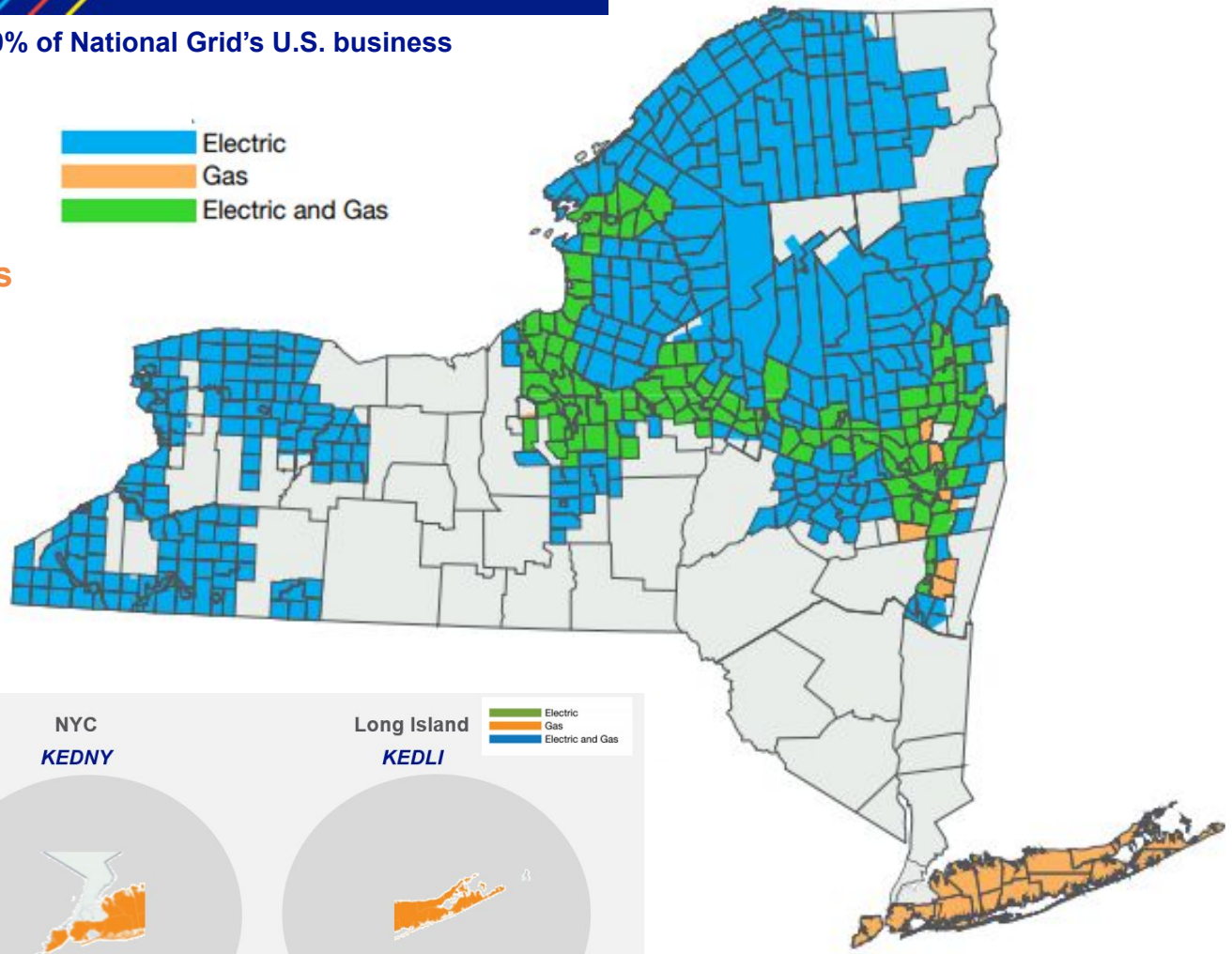
Our New York business represents 60% of National Grid's U.S. business

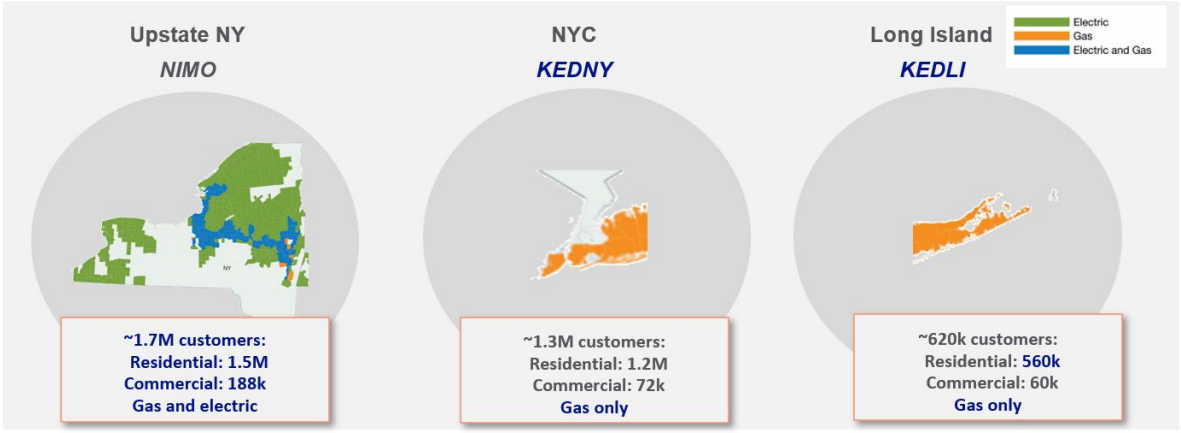
1,680,000
Electric Customers

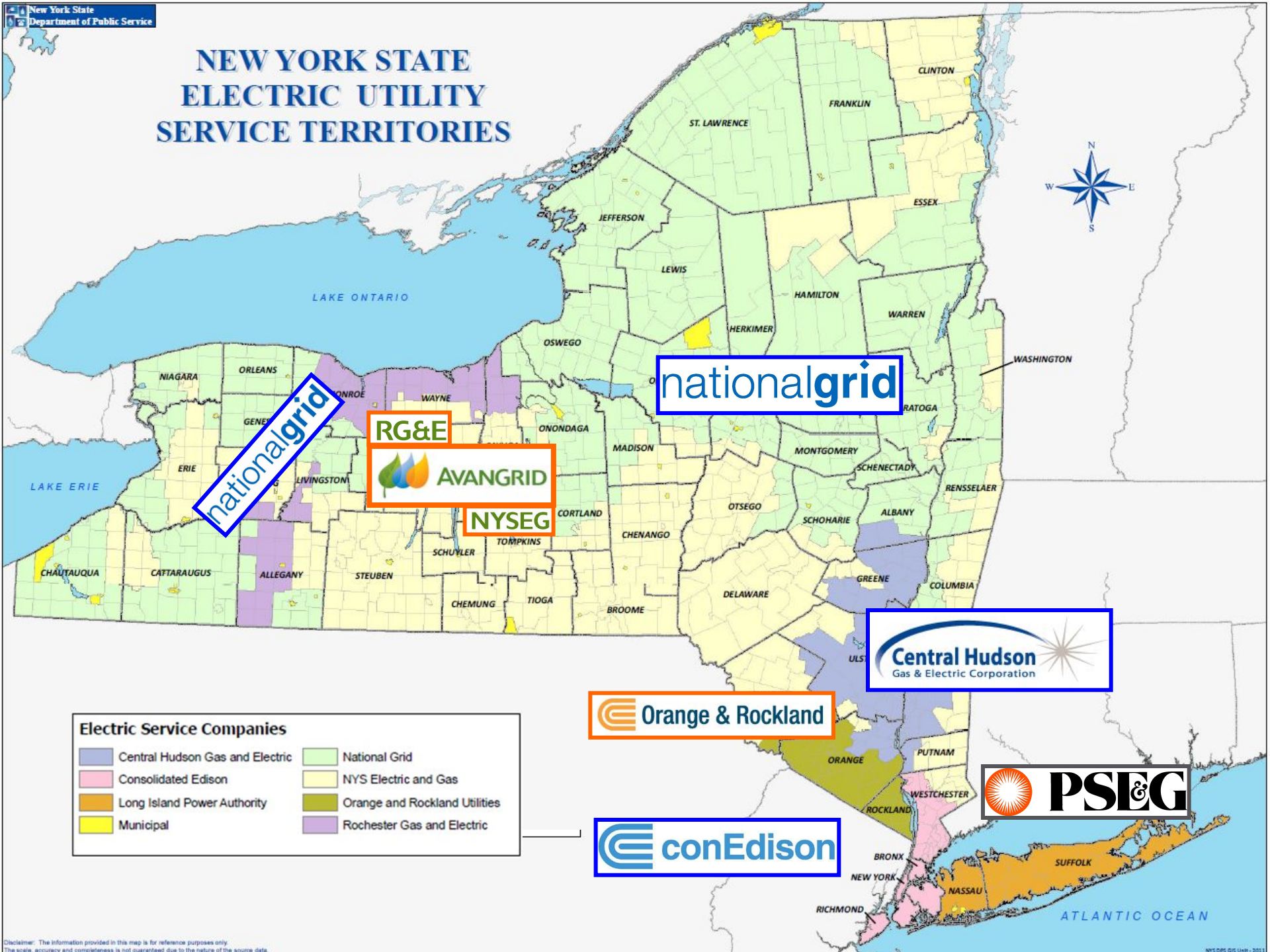
2,550,000
Natural Gas Customers

6,001 Miles
Transmission Lines

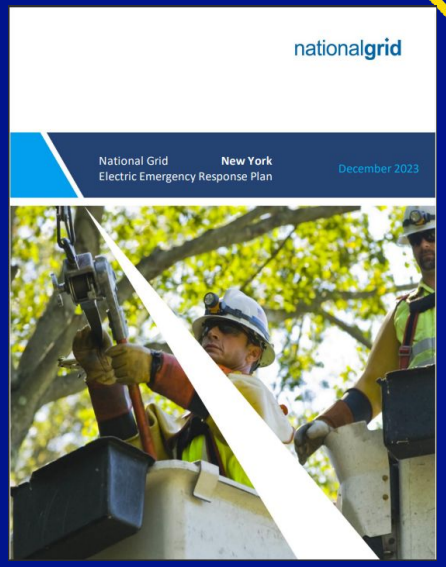
22,357 Miles
Natural Gas Pipeline






New York State
Department of Public Service
NEW YORK STATE
ELECTRIC UTILITY
SERVICE TERRITORIES
LAKE ONTARIO
LAKE ERIE
ATLANTIC OCEAN
CLINTON
FRANKLIN
ST. LAWRENCE
ESSEX
JEFFERSON
LEWIS
HAMILTON
WARREN
HERKIMER
OSWEGO
WASHINGTON
NIAGARA
ORLEANS
MONROE
WAYNE
ONONDAGA
MADISON
MONTGOMERY
SCHENECTADY
RENSSELAER
ALBANY
SARATOGA
ERIE
LIVINGSTON
CORTLAND
OTSEGO
SCHOHARIE
CHENANGO
TOMPKINS
SCHUYLER
CHAUTAUQUA
CATTARAUGUS
ALLEGANY
STEUBEN
CHEMUNG
TIOGA
BROOME
DELAWARE
GREENE
COLUMBIA
ULSTER
ORANGE
PUTNAM
WESTCHESTER
ROCKLAND
BRONX
NEW YORK
NASSAU
SUFFOLK
RICHMOND
nationalgrid
RG&E
AVANGRID
NYSEG
Central Hudson
Gas & Electric Corporation
Orange & Rockland
PSEG
conEdison
Electric Service Companies
Central Hudson Gas and Electric
Consolidated Edison
Long Island Power Authority
Municipal
National Grid
NYS Electric and Gas
Orange and Rockland Utilities
Rochester Gas and Electric
Disclaimer: The information provided in this map is for reference purposes only.

Accountability and Regulatory Requirements



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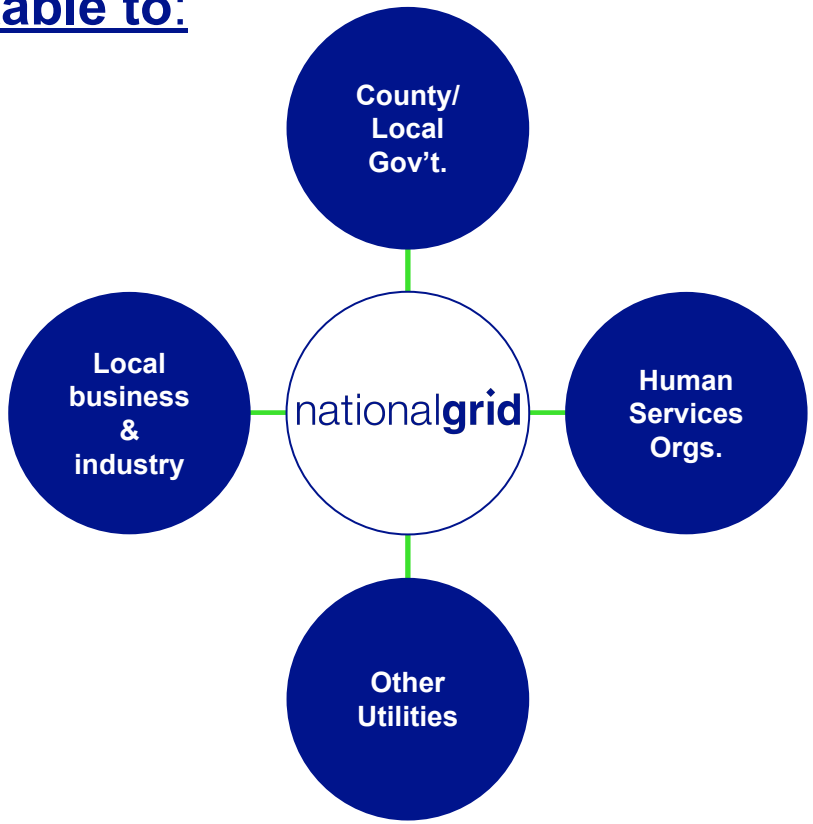
Accountability and Regulatory Requirements

National Grid **Reports to** and is **Accountable to**:

- Our customers
- Our regulators ….
  - **NYS Department of Public Service**

- Utilities are required to prepare for an "all-hazard" approach to emergency response and incidents that may affect our ability to deliver goods and services.

- Critical aspects of emergency response and incident management:
  - Communication,
  - Coordination
  - and Cooperation



Key Thresholds for a NY Response

- **The NY-PSC ETR Protocol** for when information will be available and/or provided in response to storms or storm-like electric emergencies (load shed, blackouts, etc.) when:
  - More than 5,000 customers are interrupted for more than 30 minutes within a Division
  - or more than 20,000 customers are interrupted company-wide (upstate NY) for more than 30 minutes.
- **Event Expected to last longer than 48-hrs or less than 48-hrs**
  - Forecasted or Restoration
- **Start of Event**
  - 72-hrs or more – Utility Emergency Performance Metrics
- **Start of Restoration**
  - 72-hrs or more – Formal, post storm report to be filed with the NY-PSC

Key Thresholds for a NY Response

New Term

- **Widespread Prolonged Outage**
  - A “widespread prolonged outage” for an electric outage event is defined as “an event impacting at least 20,000 customers at the same time and having one or more customers who remain without power for 72 hours or more due to utility-owned equipment unable to provide power.” While not expressly stated, the 20,000-customer threshold would apply individually to each utility.

Preparing for the Event

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Planning Approach to Emergency Response

- National Grid (the Company) has established the New York Electric Emergency Response Plan (ERP) for the purpose of managing electric outages caused by storms and other natural disasters, civil unrest, major equipment failure, cyber events, or other emergency events. It is intended to be simple, flexible, and easily adapted to an all-hazards approach to emergencies. This ERP includes procedures that will be adhered to by the Company in New York whenever an Emergency Event occurs.
- The ERP provides the framework for the orderly response of Company and Company managed resources during Emergency Events.
- The ERP utilizes the National Incident Management System (NIMS) as a guide to a comprehensive approach to incident management that is applicable at all levels of the Company's Emergency Response Organization (ERO) and across functional disciplines.
- The ERP applies the principles of the Incident Command System (ICS) and the Company's Group Crisis Management Framework to the structure of the ERO. The ERO establishes a chain of command that sets an orderly line of authority and relationships in place within the ranks of the organization where lower levels are subordinate to and connected to higher levels.

Preparation / Operational Response / Communication

Blue Sky

- Identify risk for outage / disruption
- Develop and implement plans to mitigate risk and / or restore service
- Communicate plans and train Company personnel
  - Storm Assignments
  - Regular Drills / Exercises
- Regular interface with appropriate Agencies:
  - Local
  - State
  - Federal
  - Media

Preparing for / Responding to an Event

- Pre-Event
  - Monitor Weather
  - Pre-Event Conference Calls / Strategy
  - Obtain Additional Resources where deemed necessary
- Pre-Stage: Manpower / Equipment / Materials
  - Communicate with:
    - Customers / Govt. & Municipal leaders / Key Stakeholders
    - Regulators
    - Employees
- Our response organization is modeled under the Incident Command System
  - Sections are activated (as required) based on the incident

How National Grid prepared for the snow and freezing rain event on March 22-23, 2024

- 3 – 5 day monitoring of the weather forecast after the threat of changing temperatures

- Started requesting to have conference calls or be provided forecasts and data specific to the territory from our weather partners:
  - NWS – Albany
  - NWS - Binghamton
  - NWS – Buffalo
  - NWS – Burlington
  - NYS Mesonet (NY State owned localized weather station data system)
  - WeatherSentry by DTN (3rd Party Weather Service)

- Executives then apply thought into what we are seeing in the forecast, comparing to past events which were similar in forecast, and what we saw as an impact statements specific to different areas of geography

- Ice events are the hardest to forecast, making them the hardest to prepare for.

How National Grid prepared for the snow and freezing rain event on March 22-23, 2024

- **Importance of radial ice vs flat ice and the threshold for concern typically > .15-.25" and above of radial ice coupled with wind are two (2) big factors in the decisions for "next steps"**

- Accumulated ice will damage the system initially and as it begins to melt on strained poles and wires, and especially trees, they begin to "snap" back which results in additional outages

- Specific to ice storms - Ice is extremely heavy and when it falls it can be deadly. Safety becomes a very important component for the response of our crews. The emphasis on safety is increased as the additional need to watch out for falling ice, trees, poles, wire, etc. after an ice storm vs other storm types

How National Grid prepared for the snow and freezing rain event on March 22-23, 2024

Specific to additional Resources:

- Evaluate how the storm will impact the greater Eastern Region of the country
  - Determines availability of additional resources and their ability to mobilize to the territory
  - If the storm is going to impact only us; or will it affect a larger area impacting multiple states and possibly multiple utilities

- Based on the forecast, confidence in radial ice, wind, etc., we secured external resources to be pre-staged in areas where we expect to see the greatest impacts

- We will typically secure more crews for an ice event than a regular wind event, as the damage associated with an icing event can be devastating

- What is going on around the country in terms of other events that may be using resources that we would typically call upon, is important to the timing of the planning, as the resources may be farther away than typical or unable to be available

Response and Coordination

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Top Priorities for Emergency Response

When responding to an emergency:

- Safety – of our employees / of our customers
- Restoration of Service
- Communication

To be successful:

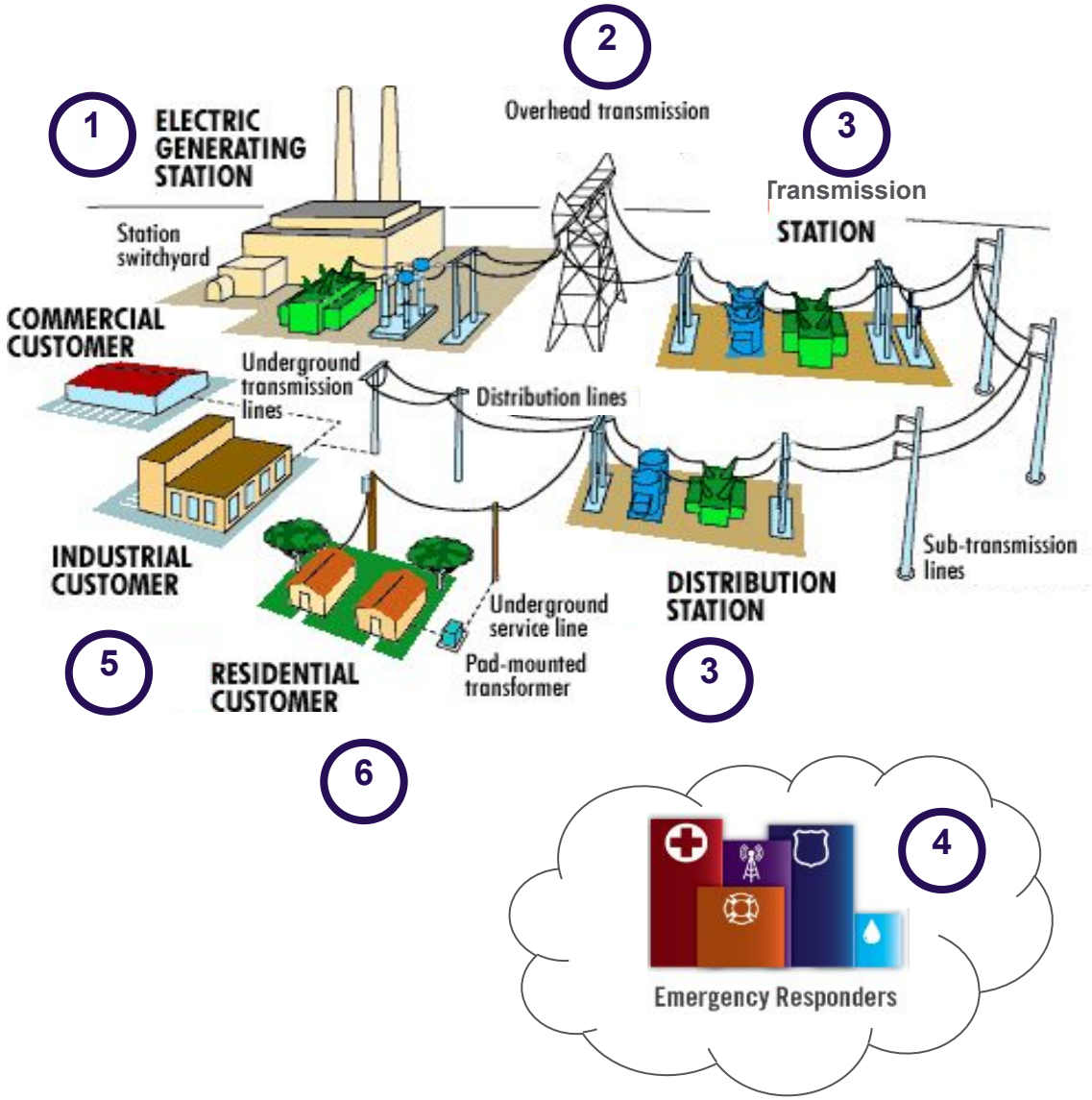
- Expectations must be properly set and managed
- Chain of command must be followed
- Support must focus on operations

Restoration Priorities – Infrastructure

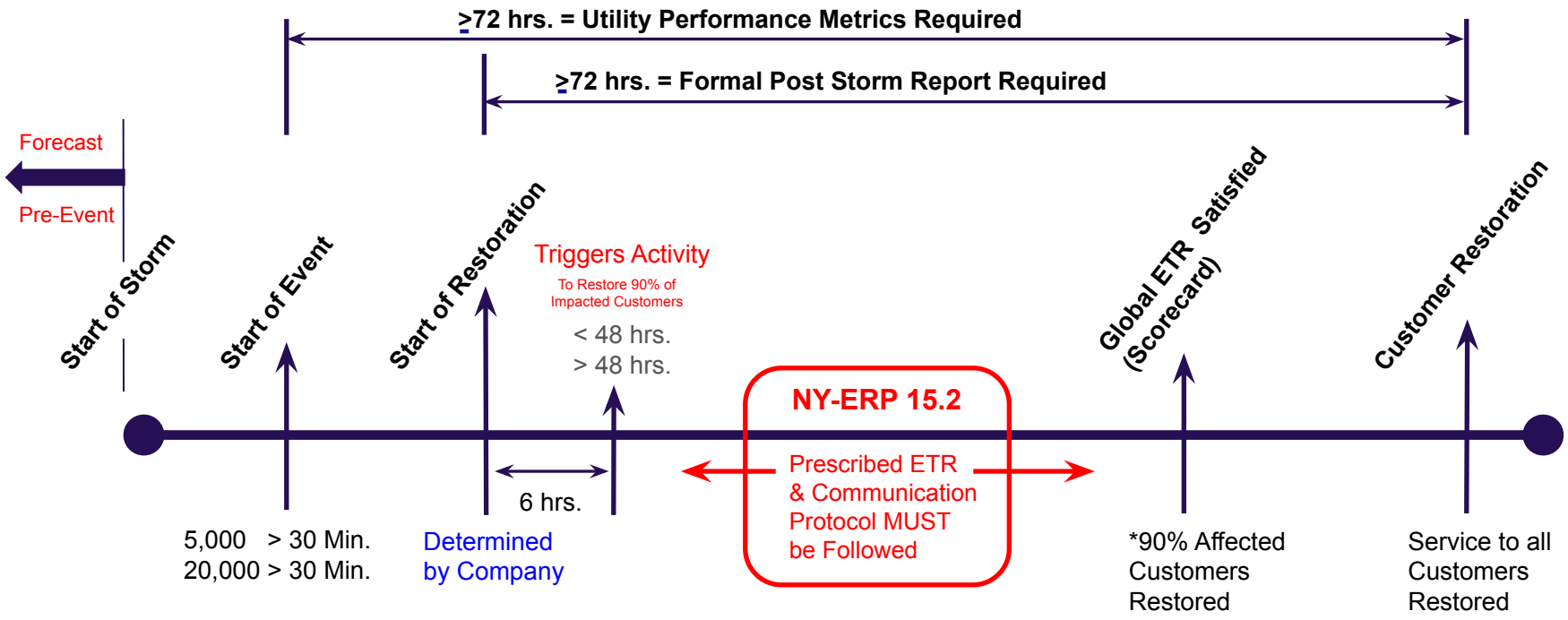
- Live Wires and Other Extreme Hazards
- Transmission
- Substations
- Critical Customers
- Life Support Customers
- Primary Circuits
- Secondary Circuits
- Street Lighting Circuits
- Permanent Repairs

Strategies
- Cut-N-Clear
- Road Clearing Task Force

Summary – The Storm Restoration Process Cont'd



NY-ERP Timeline of a Storm



Manage ETR to the Ticket Level as applicable

Global (Division) ETR provided is applicable to 90% of the affected customers at the Division Level.
Regional (county) and Local (town / municipality) ETRs provided are applicable to at least 95% of the affected customers in the reported level.

March 22-23, 2024 Icing Event Response

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March 22-23, 2024 Icing Event Response

Key Points/Summary of Greatest Impacts

March 22, 2024
5:32 AM

Winter Storm Warning Tonight through Saturday

- Snowfall amounts of 7-10 inches expected across the southern Adirondacks and Lake George Region
- Hazardous travel conditions possible due to snow covered roads and poor visibilities.
- Power outages possible due to heavy snow load on trees and wires

Winter Weather Advisory Tonight through Saturday

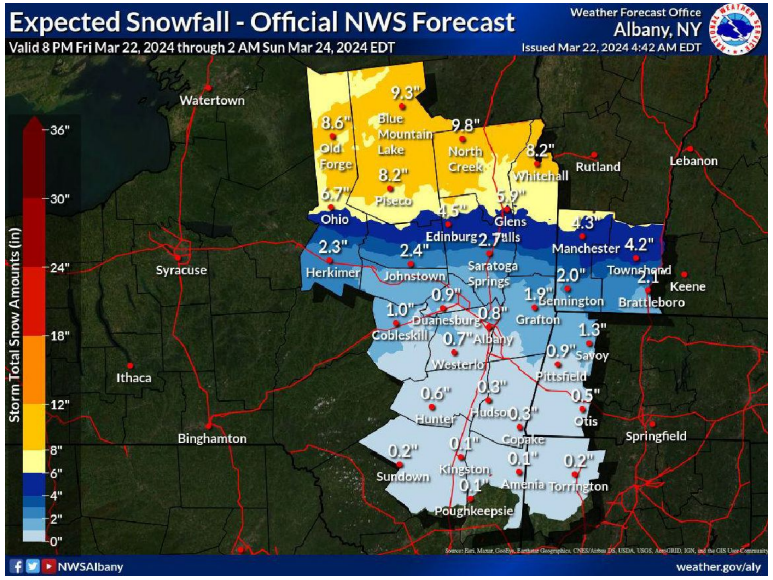
- Snowfall amounts of 3 to 6 inches and up to a tenth of an inch of ice in the western Mohawk Valley, Saratoga Region and southern Vermont
- Up to 2 inches of snow and up to a tenth of an inch of ice in the eastern Catskills, Schoharie Valley and Helderbergs.
- Up to an inch of snow and up to a tenth of an inch of ice in the central Taconics and Berkshires
- Up to an inch of snow and a glaze of ice in the Litchfield Hills

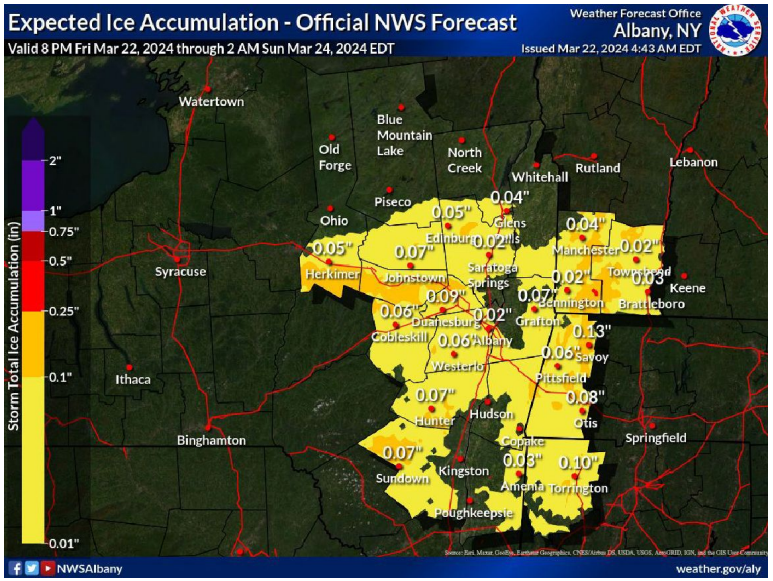
Flood Watch 8 AM Saturday through 2 AM Sunday

- Flooding of urban and poor drainage areas as well as low lying areas and minor river flooding possible

National Oceanic and Atmospheric Administration
U.S. Department of Commerce

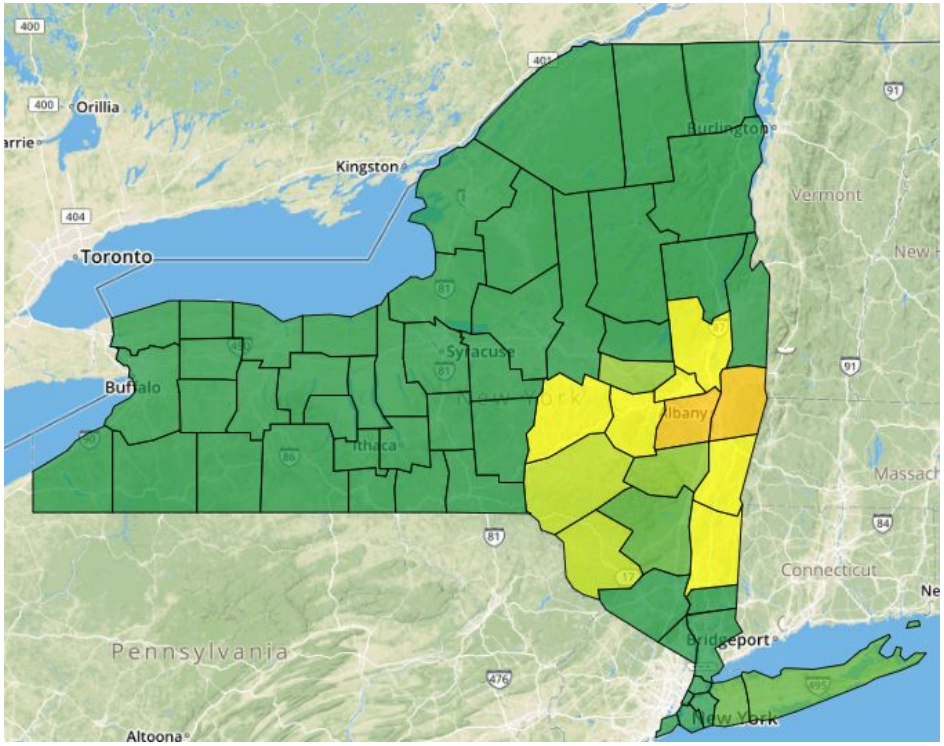
National Weather Service
Albany, NY





March 22-23,2024 Icing Event Response

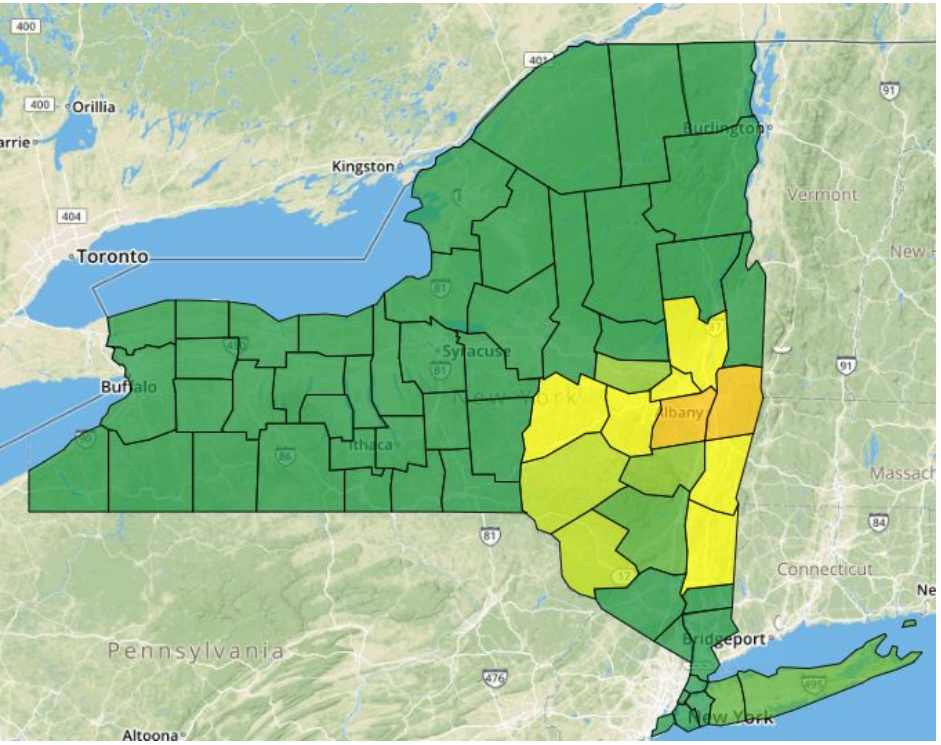
Outages out by county

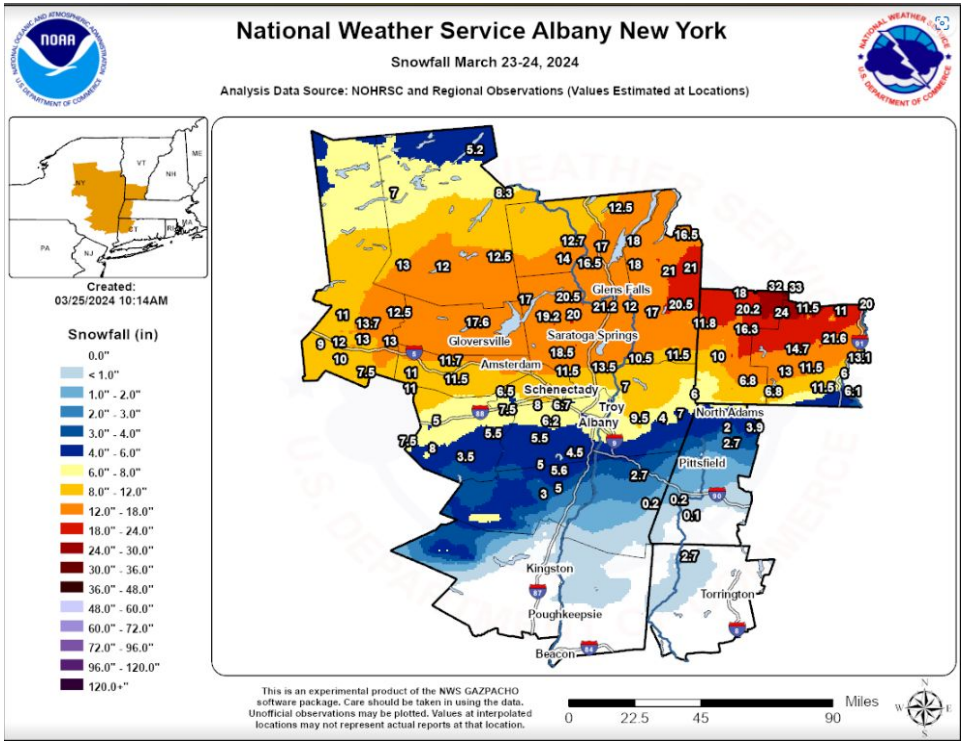


96 Poles and 24 transformers

	Abbr	County	Outages
+	NY	Albany	33,379
+	NY	Rensselaer	16,569
+	NY	Columbia	7,335
+	NY	Saratoga	4,436
+	NY	Schenectady	3,973
+	NY	Schoharie	2,382
+	NY	Otsego	2,238
+	NY	Suffolk	1,271
+	NY	Delaware	933
+	NY	Dutchess	592
+	NY	Sullivan	530
+	NY	Steuben	276
+	NY	Ulster	177
+	NY	Albany	156
+	NY	Greene	113
+	NY	Nassau	74
+	NY	Kings	48
+	NY	Montgomery	37
+	NY	Washington	33
+	NY	Tioga	25
+	NY	Rockland	20
+	NY	Queens	15
+	NY	Westchester	14
+	NY	Tompkins	9
+	NY	Allegany	2
+	NY	Essex	2

March 22-23, 2024 Icing Event Response





March 22-23,2024 Icing Event Response

- National Grid's NY-Eastern Division was impacted with a combination of sleet, freezing rain, and heavy wet snow that in its totality, exceeding forecasted expectations. A reported **20.5" of snow** has fallen across parts of Saratoga County since Friday, while the **Albany area saw over 8"** of accumulation. **Warren and Washington Counties saw 18"-19"** of snow while **Rensselaer, Montgomery, Herkimer, and Hamilton Counties all saw more than 12" of snow**.

- In addition to the significant snow accumulations, **ice accretions** reported near the **Albany Airport approached 0.5"** contributing to the conditions that ultimately caused significant damage to the electric system resulting in more than **109,200** customers being interrupted at peak and more than **218,000** total customers affected by this storm.

- Damage incurred from the storm has been widespread and significant across the **Albany, Troy, and Hudson areas with the hardest hit counties being Albany, Rensselaer, Saratoga, and Schenectady**.

- National Grid mobilized a field force of more than **3,500 FTEs**, of which - more than **2,700** of these resources are committed to our Eastern Division storm restoration efforts.

March 22-23, 2024 Icing Event Response

Peak Outage Summary

Jurisdiction: NY | NE
Division: Select
Region: Select
Crew Area: Select
Reported from: 03/23/2024 08:00
To: 03/27/2024 00:00

Jurisdiction | **Division** | Region | Crew Area

Peak Summary Report

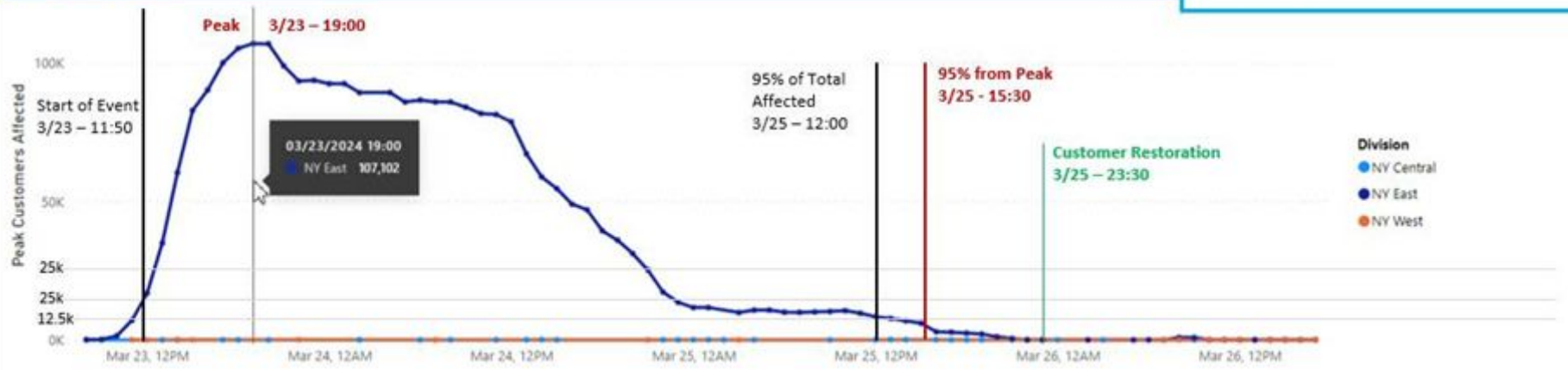
Area	Peak Customers Affected	Total Customers Affected	Total Outages	Total Outage Calls	Total Non-Outage Calls	Total Calls
NY						
NY Central	94	434	34	175	101	276
NY East	107,102	216,618	973	88,616	2,704	91,320
NY West	69	138	13	73	88	161

Event Timing	NY-East Date / Time
Start of Event	3/23/2024 11:50
Peak	3/23/2024 19:00
Start of Restoration	3/24/2024 7:00
Customer Restoration	3/25/2024 23:00
95% Restored - of Peak	3/25/2024 15:30
95% Restored - of Total Affected	3/25/2024 12:00

Hours to Restore From:	NY-East Hours
95% Restored from SOE[1]	48:10:00
95% Restored from SOR[1]	29:00:00
95% Restored from Peak[2]	44:30:00
Customer Restoration SOE	59:10:00
Customer Restoration SOR	40:00:00
Customer Restoration from Peak	52:00:00
Peak Customers	107,102
Total Customers Affected	216,618

Note
1-Based on Total Cust. Affected
2-Based on Peak Cust. Affected

Peak Summary Detail



Lessons Learned From Previous Events

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Lessons and Best Practices Learned from previous events

Applied practices from the 2008 Ice Storm and other "significant" storm events have contributed to changes in our preparation and response including the following:

- **Mutual Assistance** – Industry wide, fundamental change that has included the consolidation of several smaller mutual assistance groups in the north east into one larger group known as the North Atlantic Mutual Assistance Group (NAMAG) which now stretches from Canada to Virginia and is the primary region where national Grid participates in the sharing of resources in times of need.

- National Grid also expanded its **contractor relationships** to encompass a wider geographic region. The company established standardized processes and methods to secure contractors in anticipation of forecasted events so that resource are available and ready when needed and to speed deployment of their crews to the field upon arrival.

- **Community Liaisons** – a trained, company staff member is assigned to each affected community during a storm to provide a direct conduit for community officials to address specific concerns or issues.

Lessons and Best Practices Learned from previous events

- **Customer Communications** – Our customer response center utilizes web updates, including our Outage Central map, text messages, emails, the deployment of community vans, outbound calls and social media, including Facebook and Twitter, to keep our customers informed of important storm-related information.

- **Damage Assessments** – National Grid developed an enhanced damage assessment process that enabled information from the field to be gathered more rapidly. Damage assessment provides critical information to decision makers which helps to expedite restoration. National Grid also provides a free mobile app to report and check the status of outages. In addition, the company maintains a mobile app that targets our first responder community as authorized users to report damage to utility infrastructure as easily as sending a text message.

Lessons and Best Practices Learned from previous events

- **Drills and Exercises** – Throughout the year, National Grid conducts emergency exercises and drills that involve hundreds of employees in table-top, storm-related scenarios to gauge the company's readiness which helps us to constantly refine our storm preparation and restoration procedures.

- **Training for employees** – Every National Grid employee's storm assignment has been reviewed and updated to maximize their ability to contribute during storms and to expedite restoration.

- **Infrastructure investment, feeder hardening, grid resiliency**
  - Including a concentration on tree trimming
  - More attention to infrastructure strategies based around flood mitigation, and flood response initiatives

- **Fundamental changes in our Emergency Response Plans**
  - Transformed our individual emergency response plans to a single, more integrated set of strategic guidance documents that provide better controls over jurisdictional activities that deliver continuity of response

Mutual Assistance

The mutual assistance program:

- Promotes the safety of employees and customers;
- Strengthens relationships among electric companies;
- Provides a means for electric companies to receive competent, trained employees and contractors from other experienced companies;
- Provides a predefined mechanism to share industry resources expeditiously;
- Mitigates the risks and costs of member companies related to major incidents;
- Proactively improves resource-sharing during emergency conditions;
- Shares best practices and technologies that help the electric power industry improve its ability to prepare for, and respond to, emergencies;
- Promotes and strengthens communication among RMAGs; and
- Enables a consistent, unified response to emergency events.

Questions, Comments, Follow-ups:

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