A case study

Showing a Specific Electric Company's Challenges and Logistical Efforts to Restore Power following Super Storm Sandy

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Welcome

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Superstorm Sandy: Preparation, Response, and Going Forward
Overview

• Storm Preparations
• Sandy’s Scope and Intensity
• Sandy’s Impact
• Restoration
• Going Forward
Storm Preparations
Storm Preparations

• Preemptively reconfigured electric overhead

• Restored as much out-of-service equipment as possible

• Installed sandbags and water dams to protect substations and generating plants from flooding

• Relocated personnel and supplies to higher ground
Sandy’s Scope and Intensity
An Unprecedented Event

- Largest Atlantic storm on record, spanning 800 miles
- More than 8.5 million power outages across 21 states
- Sustained winds reached 64 mph at LaGuardia Airport with peak gust of 90 mph on Staten Island
- Storm tide recorded at the Battery – 14.06'
Storm Surge: Exceeded Expectations and Set Record
Sandy’s Impact
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Sandy’s Impact

• Transportation
  – NYC subway and ferry service disrupted for days
  – LIRR, NJ Transit, MetroNorth service disrupted for weeks
  – JFK, LaGuardia and Newark-Liberty airports closed for days

Both photos courtesy: MTA
Sandy’s Impact

• Hospitals
  – Coney Island, Bellevue, NYU Langone hospitals evacuated
  – NYU-Downtown, Manhattan Veterans Affairs hospitals closed
  – Elective admissions to six hospitals and 41 chronic-care facilities in Zone A cancelled
  – Patients in other health-care facilities moved to higher floors
Sandy’s Impact

- City schools closed for most students until Nov. 2
- New York Stock Exchange trading suspended Oct. 29, 30
- Senior centers, public libraries, and city parks closed
- Broadway cancelled all Oct. 28 evening and Oct. 29 shows
- First Brooklyn Nets game at Barclay Center postponed
Sandy’s Impact: Extensive Damage to Con Edison Equipment
Sandy’s Impact: Electric Systems

- Independent power producers lost 4,000 MW of generation
- 5 transmission substations
- 14 Manhattan networks
- 1 Brooklyn network
- 3 Staten Island area stations
Sandy’s Impact: 13th Street Event

- Circuit breaker connected to a high-voltage transformer failed because of exposure to saltwater
- Failure caused dramatic arc that looked like an explosion
- Circuit breaker failure did not cause loss of electric service to downtown Manhattan networks
- Outage caused by flooded control equipment at substation and preemptive shutdown of flooded networks in Lower Manhattan
- Preemptive shutdown of 13th Street substation would not have helped
Sandy’s Impact on Manhattan Networks
Sandy’s Impact:
East 13th Street Substation
Sandy’s Impact: Steam System

- One-third, or 561 customers, lost service
- Roughly 30 miles of steam main isolated to prevent catastrophic damage
- Flooding overcame protective barriers around critical equipment
- 59th Street and 74th Street steam-generating facilities and First Avenue steam tunnel were shut down
Sandy’s Impact: Gas System

- 4,200 gas customers lost service
- Uprooted trees damaged 33 gas services that had to be turned off
- Coastal flooding in the Bronx prompted isolation of gas services
Sandy’s Impact: Significant Damage to Overhead System

- Worked with city and municipalities to clear roads of trees and debris
- Primary concern of safety
- 70 percent of customers served by overhead systems lost power
After Sandy and the Nov. 7 Nor’easter:
More than One Million Customers Without Power
Restoration
Restoration Amid Devastation
Con Edison Daily Restoration Count

Total Customers Interrupted: 1,115,294

Excludes customers unable to receive service because of damage to their homes or businesses
Restoration Strategy

- Coordinated with FEMA, city, state, and local agencies
- Focused on public safety
- Prioritized restoration
- Restored networks
- Distributed dry and wet ice
- Set up command buses and outreach sites
Restoration: Hardest-Hit Areas

- Continuous process
- Damage to customer equipment
- Certification process
Restoration: Mutual Aid

- Established five base camps
- Managed logistics
  - Provided housing and meals
  - Acquired materials needed, including fuel
  - Supported restoration efforts in flood zones
Restoration: Military Assistance
Restoration Complication: 
November 7 Nor’easter
Restoration: Communications

• Outreach to customers, elected officials, city agencies, municipalities, regulators and media

• Call centers handled more than 1.2 million calls

• Company called nearly 1.4 million customers

• Daily press briefings

• Con Edison CEO Kevin Burke participated in 3 mayoral press briefings
Going Forward
Going Forward: Coordinated Approach

- All levels of government
- Regional transportation systems
- Environmental organizations
- Climate scientists
- Urban planners
Going Forward: Protecting Overhead Electric Distribution System

• Harden circuits that feed critical load
• Revisit possibility of burying overhead wires
  – Cost: installation and maintenance
  – 60% longer to repair underground equipment
• Develop new overhead designs
• Add overhead switches to help isolate damaged equipment
Going Forward: Fortifying the Future

- Review all options
- Collaborate with key stakeholders
- Continue to improve communications
- Remain focused on strengthening our systems to help withstand extreme weather
Thank you for attending!

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