

Tropical Storm Isaias

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Consolidated Edison, Inc.

Summary

- Isaias' path shifted westward unexpectedly and caused enormous damage to our service territory
- Second most outages in our nearly 200-year history, surpassed only by Superstorm Sandy, impacting 329,901 customers from Staten Island to northern Westchester
- Largest response by overhead workers: during restoration, 1.6 times as many overhead resources than we applied during the same period to Superstorm Sandy
- While the damage was extensive, the pace of restoration for this storm was significantly faster than previous major storms
- 60 percent of customers were restored by the end of the second day of restoration, 75 percent by the end of day three, and 90 percent by the end of day five.
- Implementation of initiatives from 2018 storms Riley and Quinn improved preparedness and response
- Serious and thoughtful discussion with various stakeholders on how to best balance cost and customer expectations regarding storm restoration

What Happened: Pre-storm Preparation

Blue Sky Preparations

- Tree trimming and danger tree removal program
- Post Riley / Quinn resiliency - \$25 million annually
- Hire the appropriate amount of mutual aid and private contractors on standby
- ETRs
- Continuous installation of Smart meters
- IT enhancements and testing
- Staff meteorologists examine weather trends daily
- Over 100 drills and exercises since Riley & Quinn in 2018
- Employee Emergency Assignments activated

As Storm Approached

- Municipal calls with WC and NYC
- Mutual aid calls
- Internal storm prep → Corporate Emergency Response Center initiated
- Coastal Storm Plan Calls started at 120 hours pre-storm
- Inter-Regional Calls
- North Atlantic Mutual Assistance (NAMAG) calls

Tropical Storm Isaias

- Planned and prepared for the storm that was forecasted, responded to the storm that arrived and the damage it wrought
- Late breaking divergence westward
- Winds higher than forecasted
 - NYC area 60-70 mph
 - Westchester 50-60 mph
- Enormous amount of damage caused by downed trees and limbs

Storm Related Outages

Isaias caused unexpected and wide-reaching damage and outages across the entire Northeast

- Region-wide Event
- 4.9 Million Customers affected from SC to ME
- 844,069 NY
- 725,890 CT
- 1.3 Million NJ
- 329,901 CECONY Customers affected (2nd Most in the company's history)
 - 209,437 Riley & Quinn
 - 203,821 Irene



Outages By Region

Bronx: 33,072; Brooklyn: 28,439
Manhattan: 20; Queens: 76,319
Staten Island: 66,221; Westchester: 127,830

Storm Related Damage

CECONY Damage by the Numbers

- 454 Poles Damaged
- 2,016 Primary Wires Down
- 1,455 Trees Down
- 630 Road closures
- 4,563 Restorations jobs



Rebuilding and Restoration Effort

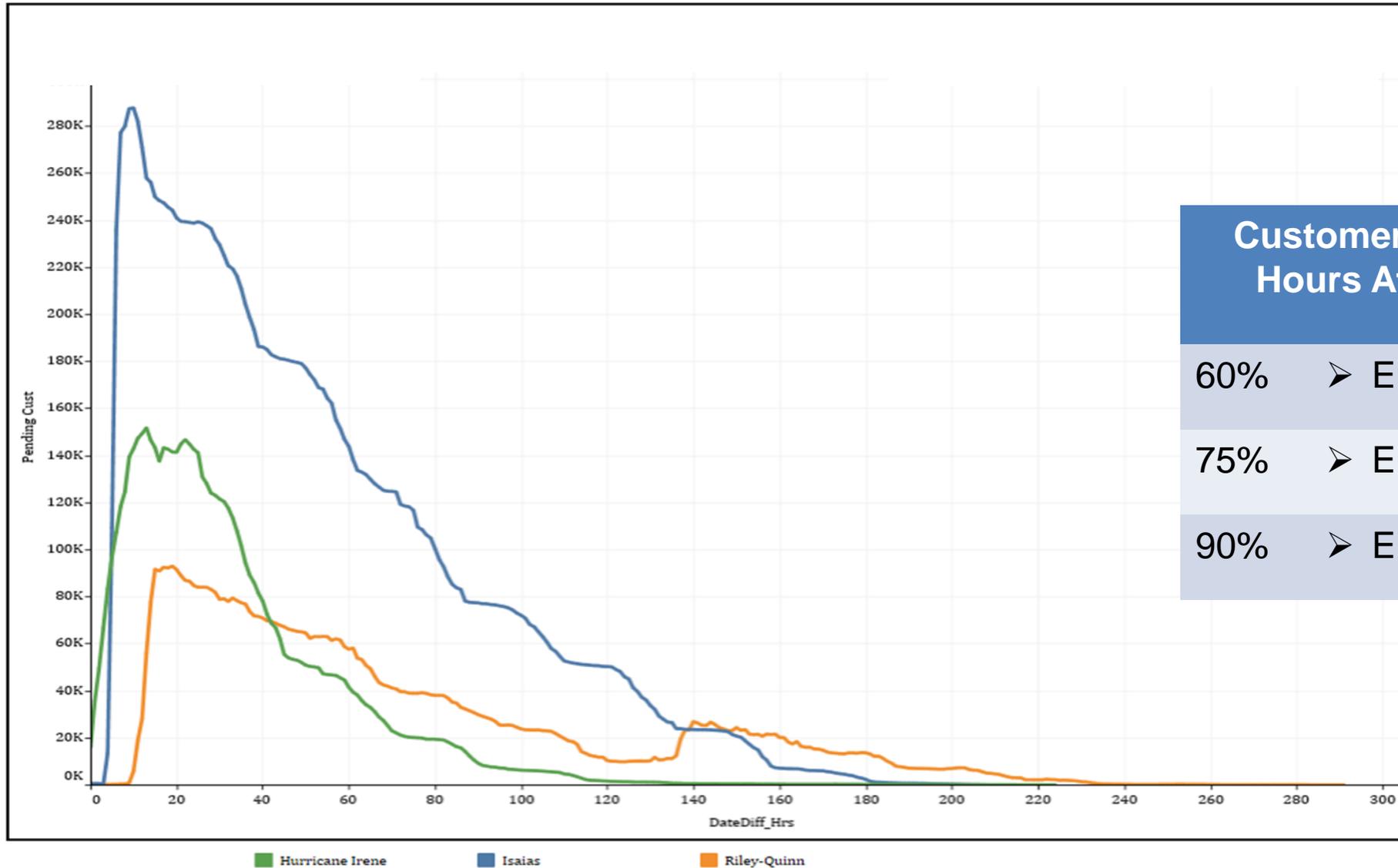
Within the hour of the storm ending, Con Edison overhead employees and mutual aid begin work, completing 4,563 individual jobs to restore power to every customer.

- Corporate Emergency Response Center (CERC) initiated and online 24/7 throughout restoration
- Customer and municipal communication began days prior to the storm and remained constant during and after the storm and throughout the restoration
- Safety of our customers and employees remained paramount
 - Clearing downed wires and working to open closed roads
- Focus on safety -- clearing downed wires and working to open closed roads
- Restore Essential Services and Critical Facilities
 - 385 critical customers affected
- Order of Restoration
 - Jobs impacting large numbers of customers: high rate of restoration
 - Small scattered and single customer outages: restoration rate decreases



- Distributed 14,310 bags of dry ice
- Distributed 5,285 bags of wet ice

Rebuilding and Restoration Effort



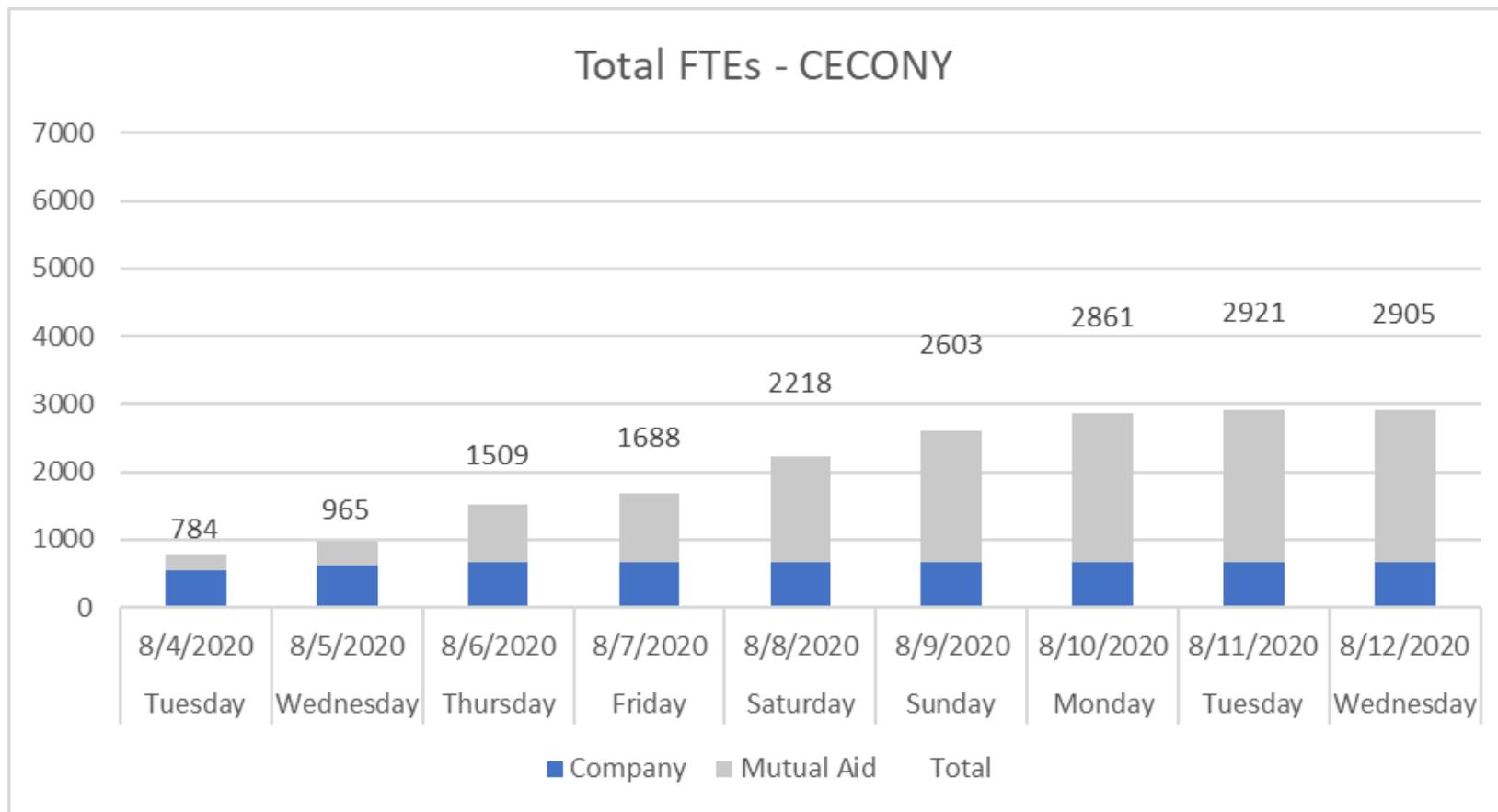
Customers Restored Hours After Storm

60% ➤ End of Day 2

75% ➤ End of Day 3

90% ➤ End of Day 5

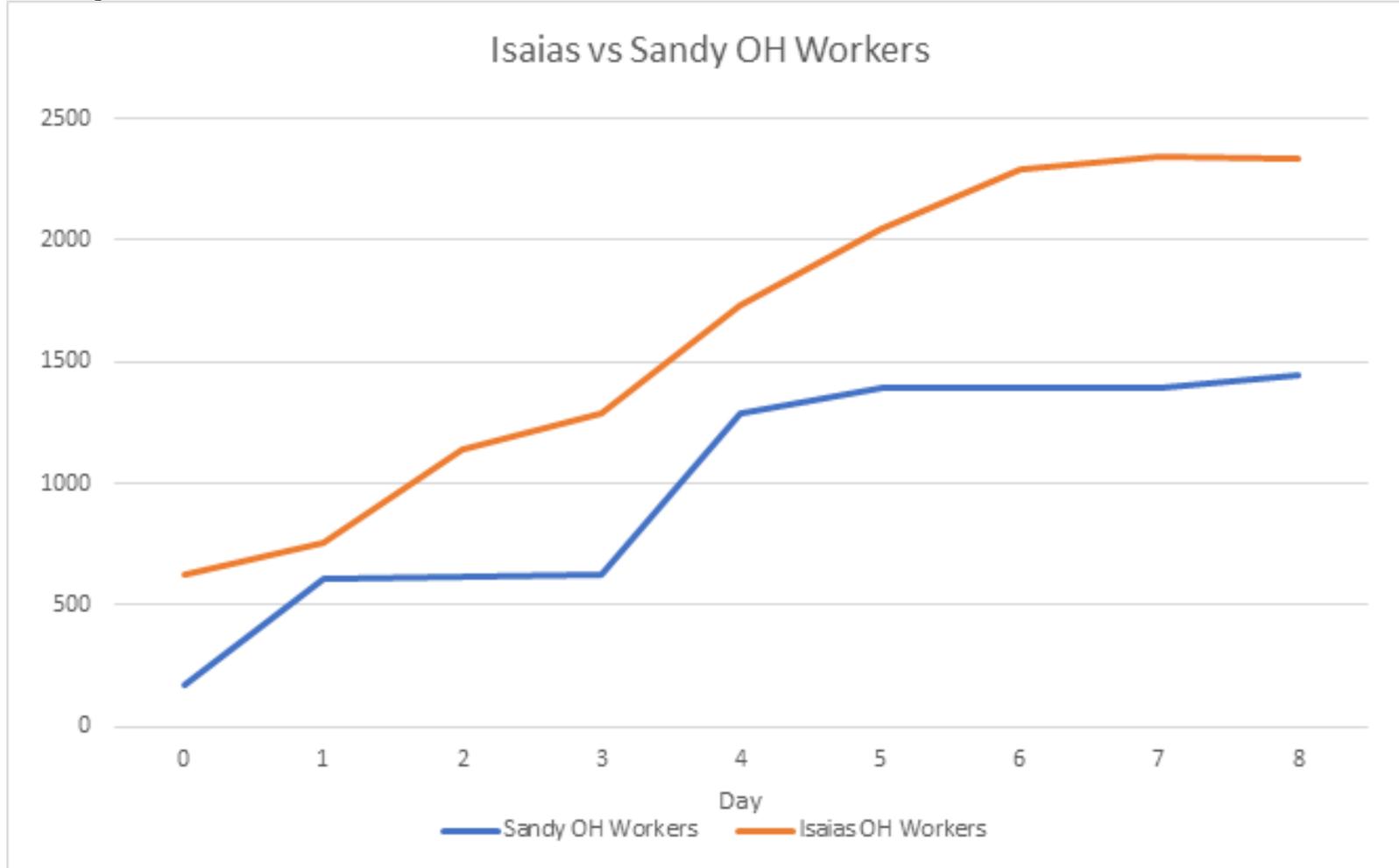
Rebuilding and Restoration Effort: Total Overhead Workers



*Total FTEs includes Company Forces and mutual aid (both overhead workers and tree trimmers)

Rebuilding and Restoration : Superstorm Sandy vs Isaias

Largest response by overhead workers: during restoration effort we applied 1.6 times as many overhead resources than we applied during the same period to Superstorm Sandy.



Overhead Workers		
Day	Sandy	Isaias
0	174	629
1	607	758
2	617	1,143
3	625	1,285
4	1,292	1,729
5	1,397	2,050
6	1,392	2,287
7	1,397	2,347
8	1,449	2,331
Total Worker-days	8,950	14,559

* Overhead workers = OH company forces and mutual aid but not tree trimmers

Rebuilding and Restoration Effort: New Technologies

Smart Meters

- Leveraged information from ~ 2.6 million smart meters to better understand outage scope
- Ongoing project will allow us to leverage smart meter technology to validate restoration and integrate with outage map

Damage Assessment Mobile App

- Transfers information between Assessors and Engineers
- Available on multiple platforms for employees and contractors
- Enhancements since Riley/Quinn
 - Increased variety of training and inclusion in monthly drills
 - Expanded feeder patrol resources
 - Microsoft Teams and remote dispatching
- Over 9,000 tickets field assessed during Isaias



Communication: Estimated Time of Restoration (ETR)

Global	Regional	Local	Customer
<ul style="list-style-type: none"> • Estimate of when 90% all customers affected will be restored system-wide • Established within 24 hours of start of restoration • Press releases, website • Isaias Global ETR was met 	<ul style="list-style-type: none"> • Estimate of when “vast majority” (95%) of affected customers will be restored within the region (borough/county) • Established within 48 hours of start of restoration • All Regional ETRs were met (Bronx, Brooklyn, Queens, Staten Island and Westchester) 	<ul style="list-style-type: none"> • Estimate of when “vast majority” (95%) of affected customers will be restored at the local level (municipality) • Westchester only • 24 out of 39 local ETRs were met 	<ul style="list-style-type: none"> • Estimate of when customer will be restored • Developed with work plan and crew dispatch • Further refinements as crews arrive on site

- ETRs provide customers a general idea of when they can expect power back
- Operations team dedicated to ETR management
- Widespread and disruptive storms make establishing accurate ETRs extremely challenging
 - Discovery of additional damage post ETR
 - Thousands of jobs, often complex
 - Nested outages
- Small percentage of customers remain out even after Global, Regional and Local ETRs are met
- Acknowledge that ETRs not met can cause confusion and frustration

Customer Communication

We utilized lessons learned from Riley / Quinn to better communicate throughout the restoration. The outage map functioned as designed.

Robust communications

- Answered 101,535 storm related calls at our call center
- Posted 148 social media posts related to the storm
- Responded to 5,457 social media customer service inquiries
- Placed 4,300 calls to 941 LSE customers who incurred an outage and over 800 wellbeing check referrals to police
- Communicated change in food and medicine spoilage reimbursement policy
 - Over 13,500 claims received (as of 8/18)
 - 887 residential claims paid totaling \$224,186 paid thus far

Community Communications

Media Relations

- 33 Press Releases
- 6 Media Briefings
 - 4 CECONY President
 - 2 Vice President of Emergency Preparedness
- Dozens of interviews
- Hundreds of requests fielded from news media

Regional and Community Affairs & Government Relations

- 37 Operator Assisted Calls with State and Local Elected officials and Municipal Depts.
 - Brooklyn: 7; Bronx: 7; Queens: 7; Staten Island: 6; Westchester: 10
- Elected Official interactions/inquiries: Approximately 1960

Continuous Improvement

Improvements Post Riley & Quinn Helpful During Isaias Restoration

Investing to Make Overhead System More Resilient to Storms

- Upgrading overhead systems by installing a combination of stronger poles, smart switches, and breakaway power lines that will reduce a storm's impact on the system.

Event Response

- Used Automated Roster Callout System (ARCOS) for managing logistics, Mutual Assistance resources and callouts of employees for System Emergency Assignments;
- Used Customer Relationship Management System (CRMS) data for Municipal liaisons and municipalities to see priority work and restoration status;
- Implemented predetermined timeframes for the review and update of ETRs;
- Established a post review process to evaluate ETR performance;
- Prioritized road closures with municipalities;
- Used Muni dashboard for critical facilities;
- Staging areas and satellite locations;
- Liaisons deployed to every requesting municipality

Mutual Assistance Prior to Isaias' Arrival

- Used right of first refusal contracts to retain additional assistance up front;
- Successfully flew in 100 mutual aid contractors to support restoration (pilot program began after R/Q)

Continuous Improvement, Cont'd.

Improvements Post Riley & Quinn Helpful During Isaias Restoration

Communications

- Used a script that covered customer outages, critical customers and road closure priorities for Municipal calls;
- Integrated information from the Information Officer into communications and consolidated data for reports and dashboards;
- Consistent customer messaging through emails, web, municipal calls, texts, press releases and social media;

Information Technology

- No system failures during Isaias;
- Semiannual stress tests for Outage Management Systems (OMS);
- Semiannual training for OMS users;
- Increased data flow between OMS, smart meters, Supervisory Control and Data Acquisition (SCADA) systems and other applications;
- Mechanism installed to alert operators to anomalies in storm data;
- Consolidated data reports for internal management of response;
- LSE dashboard, Customer Mobile Application and Municipal Dashboard upgrade for customer communications.
- Mobile applications for Damage Assessment and Site Safety
- Visualization of Outage Data for Road Closures

Where do we go from here?

- Meetings with municipalities and NYC partners on process improvements
- Continue discussions with state and local elected officials
- Continue system investments to improve durability and reliability
- Continue operational enhancements to improve restoration performance
- Climate Change & CLCPA
 - Con Edison's Clean Energy Commitment

Where do we go from here?

- Feedback
 - Received from customers, state and local partners in government
 - Review, digest and implement improvements based on that feedback
- Internal assessments
 - Storm Assessment Team
 - After-action review
 - Identify strengths and weaknesses
 - Implement improvements
- PSC Scorecard – Due September 11th
 - Used as a guidance document to assess response to significant outages
- File Part 105 report with PSC – Due October 11th
 - Required self-assessment of restoration efforts for outages longer than 72 hours
- PSC Investigation Announced August 5th