INTERIM INVESTIGATION REPORT ON TROPICAL STORM ISAIAS

New York State Department of Public Service, Staff

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1 EXECUTIVE SUMMARY

On August 5, 2020, Governor Andrew M. Cuomo directed the Department of Public Service (Department or DPS) to conduct an investigation into New York State's major electric utilities' (utilities) following the slow and inadequate response of certain electric utilities to Tropical Storm Isaias.[1] Tropical Storm Isaias struck the State on August 4, 2020, significantly impacting Long Island, New York City, and several counties in the mid and lower Hudson Valley. The storm's impacts resulted in peak outages of approximately one million. This report presents the preliminary findings of the Department Staff's (Staff) investigation.

The Department is responsible for ensuring that utilities in New York provide electric, natural gas, steam, water, and telecommunications services in a safe and reliable manner. The Department's emergency-response oversight occurs in three phases: storm preparation, active monitoring of utility impacts and system restoration, and post-storm analysis. To ensure that electric utility companies are fully prepared for emergency events, Public Service Law (PSL) §66(21)(a), Part 105 of Title 16 on the New York Codes, Rules, and Regulations, and the LIPA Reform Act, collectively require each major electric utility to submit a comprehensive Emergency Response Plan (ERP) to the Commission, or, in the case of LIPA, the Department. The ERPs detail procedures and define roles, responsibilities, and required training to reduce confusion and promote a common understanding of the restoration process. The ERPs are reviewed annually by Department Staff (Staff) and approved by the Commission or, in the case of PSEG Long Island (PSEG LI), as LIPA's service provider, the Long Island Power Authority (LIPA) Board

[1] The investigation includes PSEG Long Island (PSEG LI), Consolidated Edison Company of New York, Inc. (Con Edison), Central Hudson Gas and Electric (Central Hudson), Orange and Rockland Utilities (Orange & Rockland), and New York State Electric and Gas (NYSEG).

of Trustees. Each utility is required to perform restoration efforts in compliance with its ERP and is also expected to update its plan after a major event to capture all lessons learned.

Based on information obtained during the storm and shortly thereafter, notices of apparent violations related to Tropical Storm Isaias were issued to PSEG LI, Con Edison, Orange & Rockland, and Central Hudson. The August 19 letters notified each utility that it apparently failed to follow its Emergency Response Plan's requirements.[2] Specifically, the Department's initial investigation showed PSEG LI apparently (1) failed to conduct adequate damage assessment responsibilities, which led to ineffective assignment of resources and restoration crews; (2) failed to maintain a functional Outage Management System; (3) did not provide accurate estimated restoration times; and (4) failed to meet its responsibility for timely and effective communication and coordination with its customers, local municipal governments, and state agencies. Con Edison apparently (1) failed to appropriately classify the storm, which establishes the level of pre-staged crews; and (2) provide accurate estimated restoration times at the town or city level. Orange & Rockland apparently failed to follow requirements relating to pre-storm crewing assessments. Central Hudson apparently (1) failed to appropriately classify the storm, which establishes the level of pre-staged, and (2) maintain a functional website at the start of the event.

Each letter containing notice also provided direction for interim remedial action. The Department also requested that the National Grid, New York State Electric and Gas, and Rochester Gas and Electric also take these actions. The Department conveyed that it expected the following remedial actions to be implemented immediately: (1) begin the process of adding crewing capacity via retainer contracts from private contractors or utilities located outside of New York, with a goal to be able to secure sufficient crewing to double existing internal capacity, and report bi-weekly to the Department on crewing

[2] Investor owned utilities must follow Public Service Commission ordered emergency response plans. PSEG LI must follow Department recommended and Long Island Power Authority Board of Trustees adopted emergency response plans.

capacity for the reminder of the 2020 calendar year; (2) develop other plans to secure utility crews in addition to private contractor and mutual aid provided by the North Atlantic Mutual Assistance Group before and during storms, and report bi-weekly to the Department on progress for the reminder of the 2020 calendar year; (3) test capabilities at all command and data centers, call centers and back-up command centers to ensure capability to handle an outage impacting 90% or more of customers in the service territory and provide confirmation back to the Department regarding the results of the test within 10 days; (4) refine coordination plans such as road clearing and local liaisons with municipalities tailored to each county and provide the Department a written confirmation from each county Emergency Operations Center that it understands and accepts the plan within 20 days; and (5) update Life Support Equipment and Critical Infrastructure lists to remove or add customers as necessary and file such updated lists with the Department within 10 days. PSEG LI had an additional remedial action to test, repair or upgrade the Outage Management System, as well as all communication systems, to guarantee functionality to receive and respond to extraordinary high customer call volumes and certify to the Department within 10 days that its command and communication systems and Outage Management System would effectively handle such high call volumes.

2 INTRODUCTION AND STORM IMPACT

On August 4, 2020, Tropical Storm Isaias made landfall on the east coast, where it made its way north and passed through eastern New York State. The storm caused severe and extensive damage throughout the Mid-Hudson, New York City, and Long Island Regions.[3] PSEG LI experienced the highest winds, which included recorded gusts between 70-78 mph. Gusts up to 70 mph were reported for Con Edison, 45-60 mph for Central Hudson, 40-60 mph were reported for NYSEG, and 40-60 mph for O&R. The storm caused widespread damage to overhead electric infrastructure, leaving significant numbers of New Yorkers without power. Peak outages in New York State due to Tropical Storm Isaias reached approximately one million customers, and roughly 1.5 million New York customers experienced power outages during this event. On August 9, 2020, ninety percent of the utility customers who had lost power had been restored, with full restoration occurring on August 12.

The Part 105 storm reports filed by each utility, as required by the Department's regulations, identified approximate peak outages of 380,000[4] for PSEG LI, 290,000 for Con Edison, 138,000 for O&R, 110,000 for Central Hudson, and 95,000 for NYSEG. The reports also noted total customer impacts of approximately 645,000 for PSEG LI, 330,000 for Con Edison, 189,000 for O&R, 116,000 for Central Hudson, and 183,000 for NYSEG.[5] Approximately 90 percent of customers in the PSEG LI service territory were restored on August 10. PSEG LI restored all customers on August 12. Con Edison customers were 90 percent restored by August 9 and were fully restored by August 12. Orange & Rockland restored 90 percent of its customers the morning of August 8, with full restoration on August

[3] The damage in Niagara Mohawk Power Corporation d/b/a National Grid Capital Region was not as severe. National Grid had a peak of approximately 35,000 customer outages that were restored in less than 36 hours.

[4] The accuracy of this figure is questionable due to the issues PSEG LI had with its OMS.

[5] See Matter 20-01633, In the Matter of DPS Investigation into the Utilities Preparation and Response to August 2020 Tropical Storm Isaias and Resulting Electric Power Outages, Part 105 Reports.

11. Central Hudson had 90 percent of customers restored by August 7 and fully restored all customers impacted by the storm by the evening of August 8. The majority of outages experienced by NYSEG were in its Brewster Division, which serves customers in Dutchess, Putnam, and Westchester Counties. By 5:00 pm on August 8, more than 90 percent of customers in the NYSEG's Brewster Division were restored with full restoration just after 10:00 am on August 10.

3 PRE-STORM EFFORTS

3.1 Weather Forecasts Underestimated The Strength Of The Storm

Although Tropical Storm Isaias was originally forecasted to make land fall in Florida and most-likely have little impact on the northeast, it is well known that forecasts change. Between July 31 and August 3, the storm wavered between a Category 1 Hurricane and a Tropical Storm. Isaias brushed the coast of Florida and Georgia with rain and gusty winds on August 2 and 3. Isaias strengthened into a hurricane again late on August 3 just hours before making landfall near Ocean Isle Beach, North Carolina, at 11:10 p.m. as a Category 1 Hurricane. As part of normal operations, each electric utility in New York State monitors weather forecasts daily.[6] Each utility obtains predictions from weather forecasting service and, in the case of Con Edison, its own meteorologist.[7] The utilities also indicate they consider information provided by other sources such as the National Weather Service and media-based weather sources.

The National Weather Service began issuing Situational Awareness Briefing on Tropical Storm Isaias impact on the downstate area at 5:54 p.m. on Thursday July 30, 2020. The initial briefing stated Isaias would potentially accelerate near the Tri-State Region on Tuesday, August 4 as a Tropical Storm and since the storm was still in its developmental stages, there was uncertainty on the track, intensity, and impact. On Friday, July 31, 2020, the National Weather Service Briefing predicted a 20 percent chance of sustained Tropical Storm Force winds along the East coast and a 10 percent chance for

[6] Con Edison monitors and compiles daily weather forecasts for Orange & Rockland

[7] All New York electric utilities mentioned DTN as a service used to monitor weather. Con Edison and Central Hudson also noted the University at Albany.

the interior.[8] Confidence was moderate that the event would occur and low as to the track, intensity, and impacts.

On Thursday July 30, the downstate utilities' weather forecast was generally consistent with the National Weather Service's forecast calling for a Tropical Storm on Tuesday, August 4. On Friday, July 31, like the National Weather Service, the utilities had low confidence regarding the track, intensity, and impacts of Tropical Storm Isaias but only forecasted rain and windy conditions. Con Edison discussed two main track options roughly equally likely to occur. Track 1, Isaias maintains a Category 1 hurricane strength and sideswipes Florida that Sunday; it would then hug the coast Monday into Wednesday while weakening along that progression. With this track Con Edison expected that New York would see heavy rainfall and possibly gusty winds and system impact similar to Tropical Storm Fay.[9] Track 2, Isaias continues to intensify and turns before affecting Florida Sunday, then curves out to sea through the next week.

The National Weather Service issued five additional briefings between August 1 and August 4. The projected path of Tropical Storm Isaias continued to move west, and confidence increased each day on the timing and magnitude of impacts. Confidence levels ranged from high that the event would occur and low/moderate regarding the track, intensity, and impacts the evening of Saturday, August 1 to moderate/high regarding the track, intensity, and impacts on the evening of Monday, August 3.

On Saturday, August 1, the National Weather Service Briefing predicted a 30 percent chance of sustained Tropical Storm Force winds (40-50 mph) along the coast and a 10 to 20 percent chance of sustained Tropical Storm Force winds (39-55 mph) across the interior. The storm total rainfall

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[8] Tropical Storm Force Winds are defined as maximum sustained surface winds ranging from 39-73 mph. In later forecasts, the National Weather Service provides a closer range referenced in parentheses after the term Tropical Storm Force Winds

[9] Tropical Storm Fay impacted New York State on July 10, 2020.

forecast was 3-6 inches with locally higher amounts. NYSEG and PSEG LI were generally consistent with the National Weather Service's wind forecast but predicted lower rain totals. Both utilities were uncertain regarding the track, intensity, and impacts. In contrast, Con Edison stated the worst-case scenario would be heavy rain fall and possibly gusty winds and system impact similar to Tropical Storm Fay.[10] Tropical Storm Fay had not produced dramatic impacts in New York, having only 2-3 inches of rain and 40-46 mph wind gusts. Both the rainfall and wind gust stated by Con Edison were less than the National Weather Service forecast. Con Edison's confidence was medium regarding the track, intensity, and impacts.

Monday morning, August 3, the National Weather Service issued a Tropical Storm Warning for coastal counties, a Tropical Storm Watch for inland counties, and a Coastal Flood Watch for Lower New York Harbor and south shore back bays of western Long Island. The briefing predicted a 60-70 percent chance of sustained Tropical Storm Force winds (40-50 mph and 70 mph gusts) along the coast and a 50 to 60 percent chance of sustained Tropical Storm Force winds (40 mph and 50 mph gusts) across the interior. The storm total rainfall forecast was 3-6 inches with the exception of 1-3 inches for eastern Long Island. By Monday morning Con Edison was confident its service territory would endure 1-4 inches of rain, 30-45 mph sustained winds, and 45-60 mph gusts. For Orange & Rockland and Con Edison's northern Westchester service area, Con Edison anticipated 3-6 and 1-4 inches of rain respectively, 15-30 mph sustained winds, and 30-45 mph gusts. Except for Orange & Rockland's rain total, Con Edison's predictions for it and Orange and Rockland were for lower impacts than what was provided by the National Weather Service. PSEG LI was confident their service territory would endure 1-3 inches of rain, 32-48 mph sustained winds, and 45-60 mph gusts. PSEG LI's prediction, however, reflected lower wind speeds than the National Weather Service. PSEG LI's weather report also stated confidence in wind gusts was medium to low, as it would be very dependent on the exact track, and even a slight change in the

[10] Matter 20-01633, supra, Con Edison's Scorecard Report (filed September 11, 2020), Appendix 1.1A, page 7.

track makes a large difference in wind speeds. NYSEG expected 1 to 2 inches of rain with locally higher amounts of 3 to 4 inches, 30 to 37 mph average gusts, and 50 mph maximum gusts. NYSEG's wind estimates were closer to the National Weather Service, however, rain totals were lower than National Weather Service. Central Hudson believed the storm would be the most impactful south of its service territory until the Monday morning weather forecast, which predicted heavy rain, 20-30 mph sustained wind, and 50 mph gusts.

Monday evening, the National Weather Service expanded the Tropical Storm Warning to include the entire Tri-State area. The briefing increased sustained winds to 45-55 mph and gust remained at 70 mph along the coast including New York City and Southern Westchester. Sustained winds of 35-45 mph and gusts increased to 60 mph across the interior. The storm total rainfall forecast changed to 2-4 inches, 4-6 inches for New York City and Northern Westchester, and 1-2 inches for Eastern Long Island. By Monday evening, NYSEG expected Tropical Storm Isaias to track across portions of its Brewster and Mechanicville Divisions with 1-2.5 inches of rain and up to 55 mph gusts. Both lower than the National Weather Service predictions.

The National Weather Service indicated on August 4, 2020, that the center of Isaias passed approximately 65 miles west of New York City at 3:00 p.m. Tropical storm force winds extended east of the storm's center. The highest sustained wind speeds ranged from 35 to 55 mph, with gusts approximately 60 to 80 mph. Peak wind gusts occurred between 12:20 p.m. and 6:00 p.m. on August 4, 2020. Peak wind gusts greater than 70 mph were observed across central Long Island, with a maximum of 78 mph reported at 1:46 p.m. over Farmingdale, Suffolk County. These winds caused widespread damage across New York City, Long Island, and the Lower Hudson Valley. The highest rainfall totals were across the Lower Hudson Valley with much lower totals to the east. The highest rainfall total of 4.55 inches was measured in Port Jervis, Orange County, with 3.06 inches in Rockland County and approximately 1.50 inches in Westchester, Kings, and Queens Counties.

3.2 Con Edison, Orange & Rockland and Central Hudson Did Not Prepare For Stronger Winds On The East Side Of The Storm

Tropical Storms and Hurricanes rotate counter-clockwise, which, when combined with moving in a northward direction, result in stronger winds the east side of the storm. As to Tropical Storm Isaias, this concept was amplified given the speed that the storm was traveling. Con Edison, Orange & Rockland and Central Hudson, however, focused their initial planning efforts based on the premise that they would be on the west side of the storm center. Con Edison's forecasts recognized the likelihood of strong winds along the coast; however, it was forecasting less winds and damage in the Bronx/Westchester area.

Forecasts are consistently updating and changing. The National Hurricane Center produces information representing many data points regarding a predicted storm, including its projected path, based on the latest known information. These forecasts clearly indicate the uncertainty of their projections, and do not only describe the most likely weather impacts. When projecting a storm's path, an expanding cone is used to represent that uncertainty, and the forecasts note that the cone represents the probable path of the storm, but that hazardous conditions can occur outside of that cone. Based on the considerable indications in reputable storm forecasts that the relevant service territories risked facing severe impacts from Tropical Storm Isaias, the utilities should have better prepared for the storm. This preparation should have included taking actions to properly prepare for experiencing the strongest winds associated with the storm, including adjusting storm classifications and acquiring appropriate resources.

3.3 Utilities Relied On Historic Impacts And Failed To Account For Existing Factors Such As Foliage, Drought, Etc.

The investigation determined that the utilities relied on historical impacts of prior weather events to help assess what level of damage might occur. This includes the use of damage prediction models developed internally or in association with meteorological groups, such as DTN or the University

at Albany. Actual weather elements and damage experienced are incorporated in the models' underlying data sets in the aftermath of storms, with the goal of improving the accuracy of the models over time. The models are intended to produce ranges of anticipated damage numbers, or "jobs," and may estimate the number of customers expected to be impacted.

None of the utilities solely rely on the result of the respective model for planning purposes. Additionally, it was noted by several utilities that some of the models have understated the impact of events, particularly large events, despite having historical information. As a result, the utilities would add subjective analysis, derived from experience, to establish storm classifications and staffing levels. For Tropical Storm Isaias, PSEG LI also indicated it reviewed impacts from Floyd, Ernesto, Irene and Sandy to establish estimated workload if 200,000, 300,000, or 400,000 customers were impacted.

The lack of historical events with such high winds apparently made the models less reliable as compared to their relative accuracy in predicting more common, recurring weather events. While the utilities each stated that they consider the time of year when the storm impacts to account for the variance in foliage, it is not evident that the seasonal factors always were defined in enough detail to account for fully, partially, or completely de-foliaged trees. Inputs to the models include, but are not limited to, wind/gust speeds, precipitation expectations (rain/snow), and recent weather experienced. Therefore, the models do not adjust for conditions that may impact tree growth or degradation due to heat, drought and/or disease that could compromise the structural integrity of trees. The utilities need to better identify these conditions and account for the variances when running models to improve the accuracy of the models. Other improvements in the respective models or subjective planning decisions must also occur. Con Edison stated that even if it had the perfect forecast, its model would not have predicted the impact caused by Tropical Storm Isaias.[11] Therefore, a combination of improved and

[11] Matter 20-01633, supra, Con Edison's Part 105 Storm Report (filed October 13, 2020) p.10.

improving models will be necessary to provide key information needed to trigger early actions, such as acquiring additional resources while they are available.

3.4 Utilities Were Unsuccessful In Obtaining Additional Crews As Weather Forecasts Increased In Severity

During large events, utilities supplement their in-house line workers with contractors and other forms of mutual assistance. The process of securing external resources is well documented. Actual success in obtaining Full-Time Equivalents, or FTEs, was limited following Tropical Storm Isaias. This is especially true as to utility attempt to request resources through their Regional Mutual Assistance Group (RMAG).[12] The New York utilities are part of the North Atlantic Mutual Assistance Group (NAMAG) and request and receive other utility resources through this group.[13] If unable to provide the requested resources, NAMAG will reach to other RMAGs to obtain the resources.[14] Lastly, mutual assistance may come from municipalities through the New York State Public/Private Utility Mutual Assistance Protocol (NYP/PUMA). This process works similar to the NAMAG process in that NYP/PUMA will determine what resources may be offered for assistance to fulfill the utilities requested FTE levels. When a utility accepts

[12] RMAGs are organized geographically to efficiently meet the needs of electric utilities in its region and the mutual assistance agreements, which define responsibilities and payment procedures are managed by seven RMAGs: North Atlantic Mutual Assistance Group, Great Lakes Mutual Assistance Group, Wisconsin Utilities Mutual Assistance Group, Midwest Mutual Assistance Group, Western Region Mutual Assistance Group, Texas Mutual Assistance Group, and Southeastern Electric Exchange.

[13] NAMAG consists of 26 electric utilities from across northeast Canada and the United States that assist each other during large scale restorations. Geographically NAMAG covers 13 U.S. states and 4 Canadian provinces. NAMAG utilities represent more than 36 million customers.

[14] Some information provided on mutual assistance process gathered from Regional Mutual Assistance Groups: A Primer by Miles Keogh and Sharon Thomas with support from the U.S. Department of Energy. https://pubs.naruc.org/pub/536E475E-2354-D714-5130-C13478337428.

mutual assistance resources, either through NAMAG, NYP/PUMA, or another RMAG, it is responsible for the resources financially.

PSEG LI initiated the request for additional line resources and their first request for 500 FTEs was made on July 31. No other utility requested support at that time. PSEG LI did not receive any FTEs in response to its request and the next call was scheduled to occur two days later. On August 2, PSEG LI raised its request to 1,500 FTEs. In contrast, Con Edison, the only other utility to request support, requested only 150 FTEs. Again, neither of these requests were filled. On the 12:30 p.m. call on August 3, Con Edison maintained its request for 150 FTEs, while NYSEG and Central Hudson each requested 100 FTEs. PSEG LI lowered its request to 700 FTEs because it was successful in obtaining resources outside of the NAMAG process. Only 126 resources were allocated during that call with approximately half going to PSEG LI and the remaining split between NYSEG and Central Hudson. Therefore, obtaining resources prior to the storm's arrival through NAMAG was extremely unsuccessful as more than 85% of the requests remained open. NAMAG began having a morning and night calls after the storm passed, however, the process remained unproductive. On the 8:00 p.m. call on August 4, Con Edison and Orange & Rockland made a dramatic increase in their requests, with requests of 1,200 FTEs and 750 FTEs, respectively. PSEG LI raised its request to 1,000 FTEs, while Central Hudson and NYSEG each requested 200 FTEs. However, only 88 FTEs were assigned to the New York utilities, leaving 97% of the requests open. Similar request levels persisted on August 5, resulting in an additional 373 FTEs being secured, the majority of which were obtained during the evening call.

Based on the unsuccessful response of NAMAG, which was an anticipated response, the utilities primarily relied on calling contractors directly to increase crewing. While responses were better than the NAMAG, it was still difficult to procure resources with limited travel time to be available at the start of the event. Con Edison had the least success in obtaining contractor resources as it was only able

to obtain approximately 85 contractors through direct calls with contractors. By contrast, NYSEG obtained nearly 300 contractor resources.

Obtaining commitments for resources is only part of the response, and travel times to New York must be accounted for in planning. As additional resources arrived each day of the to support the restoration efforts, utilities were able to cover more damage locations. A review of FTEs on property by day showed that resource levels significantly increased in days following the storm.[15] Con Edison increased its line resources ready to work from 409 line FTEs by August 4 to 856 line FTEs on August 6, eventually having approximately 2,000 line FTE by August 10 as resources in other areas were freed up. PSEG LI was able to obtain 1,200 external line FTEs that arrived on August 4. PSEG LI also increased its line resources from 1,683 FTEs on August 4 to 2,172 on August 7 and 3,089 on August 9. Line FTEs at PSEG LI increased to nearly 4,000 FTEs August 10, until it peaked at nearly 5,000 FTEs on August 12. Orange and Rockland was able to increase its 253 line FTEs available to work on August 4 to approximately 500 FTEs by August 7. Finally, Central Hudson was able to increase its line resources ready to work from its typical level in the lower 300 FTE range to 465 FTEs on August 4. Central Hudson also increased its resources to 500 line FTEs and 572 line FTEs on August 6 and 7, respectively.

Based on the low level of resources on site at the time that restoration began, it is clear that Con Edison, Orange & Rockland, and Central Hudson were unable to obtain the needed resources in a timely manner. This significantly extended both immediate and overall restoration times. As a result, all utilities have been requested to immediately begin the process of adding crewing capacity via retainer contracts from private contractors or utilities located outside of New York, with a goal of being able to secure sufficient crewing to double existing internal capacity. The utilities were also requested to develop

[15] Each utility provided resource information to the Department in response to Interrogatory/Information Requests.

other plans to secure utility crews in addition to private contractor and mutual aid provided by the NAMAG before and during storm events.

4 ISSUES WITH TECHNOLOGY

4.1 PSEG LI's Outage Management System Had Significant Problems Following A June Upgrade

Outage management systems (OMS) are core applications behind how a utility manages outage events.[16] OMS systems process reported customer outage information received through various means; predict outages to capture the full extent of customers impacted; create, prioritize, and manage jobs; and interface with various applications to provide consistent and updated outage information to utility personnel and the public during normal and emergency operations. Following the investigation into the 2018 Winter Storms, it was determined that lack of stress testing, particularly within Con Edison, led to errors and the communication of misinformation to the public. As a result, all the electric utilities ERPs require that stress testing be performed on their OMS to ensure continued functionality, accuracy, and robustness under changing system conditions. Additionally, the utilities should ensure that they are adequately staffed with trained OMS operators during emergencies.

Since February 2020, PSEG LI has been working to implement a software upgrade to its OMS from version 5.5 to 6.7. The updated version included the following enhancements to the existing OMS system:[17]

- Automated GIS import for daily OMS map updates;
- Improved electronic dispatch and work scheduling to minimize paperwork records;
- Electronic reports which replaced paper reporting thereby improving the accuracy, timeliness and accessibility of data;
- New system interface used for asset management and financial reporting;
- Facilitated OMS-AMI integration;
- Increased timeliness and accuracy of work status; and

[16] For the purpose of this report, the Outage Management Systems will include multiple products, including those in the CGI suite of applications PSEG LI used for recording, managing, and dispatching outage jobs.

[17] PSEG LI's Response to Information Request DPS-8.

- New web based technology to provide direct updates to and from mobile device.

On June 28, PSEG LI went live with version 6.7 after completing the needed training for operators. After going live, however, PSEG LI experienced issues with OMS. It was determined that PSEG LI had recorded over 300 issues with the upgrade by the end of July.[18] System issues were exacerbated during Tropical Storm Isaias when the volume of data and requirements on the system increased. Most notable were problems related to the ability of OMS to process records and dispatch jobs timely.

Customer reported outages are key to identifying the impact to the electric system. Therefore, outage reports from multiple sources, including the call center, Interactive Voice Response (IVR), website, and text messaging, are electronically posted to OMS. Due to system issues, however, outages reports could not be processed by OMS causing transmissions to time out. PSEG LI theorized that as systems re-tried to enter the outage reports, time differences caused the outages to be considered duplicative and resulted in the system's inability to properly group and aggregate outages. PSEG LI also stated that the information on its website was inaccurate and overstated the number of customers without power. PSEG LI indicated that early in the event the number of customers interrupted, number of outage jobs, number of areas out, number of single customer jobs, the location/municipality of reported outages and the incoming rate of new jobs did not appear to reflect actual conditions.[19]

The investigation determined that PSEG LI failed to properly stress test version 6.7 prior to going live with the system. PSEG LI did perform testing in June prior to placing the new version into production. However, it is unclear how PSEG LI uses the performance testing to determine when the software should be placed into production as the test report included the statement "[t]The findings of load testing included in this report may or may not have any bearing on the final recommendation to

[18] PSEG LI's Response to Information Request DPS-8, Attachment.

[19] PSEG LI's Response to Information Request DPS-6.

move this system to production." It should be clear what the standards are for a test to be considered a pass and that an unsatisfactory test should prevent the system from moving into final production. PSEG LI should also work, develop, and/or improve procedures to ensure test processes and parameters are better defined and provide for worse case scenarios.

The investigation found that, with all the post go-live issues with version 6.7, PSEG LI should have both anticipated and prepared for the issues with its OMS during a major event. This includes having an action plan to increase real-time monitoring of the system, limiting the interaction with automated inputs to mitigate the stress the system is experiencing, and a communication strategy that would address multiple scenarios concerning failure of PSEG LI's Information Technology (IT) systems. Additionally, PSEG LI should have performed increased training prior to the storm to ensure it had enough personnel that could be dedicated to OMS as well as training staff on alternate means to manage dispatching and damage assessment that rely on OMS. While these steps would not have resolved the underlying issue, they would have reduced the worst outcomes that occurred. PSEG LI would have been able to limit the inaccuracies of records, and associated work to reconcile the inaccuracies, and mitigate some of the confusion within PSEG LI response. Moreover, communications would have been timely and would have more clearly informed the public and governmental officials of effective means to report outages and obtain information, rather than those individuals having to experience the frustration of not being able to reach the utility because systems are not functioning at a most basic level.

4.2 Central Hudson's Secondary Data Center Was Not Designed Appropriately

Central Hudson has two data centers, a primary and secondary center, to ensure continued operability. Central Hudson, however, experienced multiple software failures at 2:59 p.m. on August 4 following the loss of internet and its Wide Area Network at its primary data center. The internet failure was caused by storm damage to a fiber line that Central Hudson's internet provider uses to serve the primary data center. Because the fiber line damage was in close proximity to the data center, there was

no ability for the internet provider to reroute the traffic through alternate means to maintain internet service to Central Hudson primary data center. As a result, Central Hudson needed to switch to its secondary data center to maintain its operations, including updating its website.

Secondary data centers should be designed to meet the essential needs of the utility if the primary location is compromised, however, this was not the case for Central Hudson. On August 4, Central Hudson lost the ability to communicate externally due to the improper design of its secondary data center. Systems impacted include sending and receiving email to or from external personnel, mobile applications, and the ability for customers to reach its website and outage map.[20] Central Hudson was able to maintain local operations, including its OMS, and receive system information over its internal communications network. Central Hudson also implemented temporary workarounds for certain activities impacted, however, the loss of its website for communicating with customers was significant and will be discussed later in more detail.

Central Hudson's primary location uses a 500 mbps internet connection, yet the secondary data center had a 5 mbps connection. Central Hudson explains that the data connection at its secondary location is low due to the lack of daily traffic and the fact that Central Hudson has the ability to reach out to its internet provider and upgrade the connection. However, the fact that this step needed to be taken in order to use the secondary data center is a significant flaw and results in an added delay; it took until almost 8:00 p.m. on August 4 to make the request to its internet provider and another two and a half hours to complete the upgrade. By 10:30 p.m. on August 4, Central Hudson had restored its internet access and transporting capabilities through the secondary data center. The outage map on the website,

[20] For the purpose of our investigation, www.cenhud.com is considered Central Hudson's website and primary source for customers get to its outage map. Central Hudson did indicate that its outage map could be viewed, by directly going to www.stormcentral.cenhud.com. However, this site had outdated or stale data because of its loss of internet service.

however, was still not working because Central Hudson had switched over to a static page earlier that night (discussed below). The website was only restored at approximately 7:00 a.m. following morning when the internet provider stopped redirecting customers to the static website. Because repairs had been made to the fiber overnight, the website was restored to the primary data center. Central Hudson may have been able to restore the website the previous night, however, it is inconclusive as to why the internet provider was unable to remove the website routing to the static page sooner and having it redirect to the secondary data center.

Central Hudson's lack of preparedness to actually use its secondary data center as a redundant facility is unacceptable. It appears that Central Hudson was aware of its vulnerabilities with its existing internet connections and that, prior to Tropical Storm Isaias, had been researching enhanced internet access through the installation of diverse fiber solutions. The redundant capability of the secondary location should have been the same as the primary location, at least in terms of providing all required services during an emergency event, and the location should have been tested on a routine basis to ensure proper operation during an emergency. Central Hudson needs to redesign its secondary data center so that it can seamlessly transition the secondary center without compromising systems relied on internally and externally during emergencies.

4.3 PSEG LI Had Inadequate Capacity For Its Call Center And Misdirected Responsibility

PSEG LI leases trunk lines from Verizon to support its call center. The trunk capacity allows for a combined 575 inbound and outbound calls at the Melville facility. PSEG LI publishes two numbers for contacting the call center, one for customers to call when reporting and outage and a second for billing inquiries. When determining the volume of calls expected to come into the call center during storms, PSEG LI assumed certain percentages of outages would be reported through alternate means, such as the website, account manager app, or text messaging, thereby reducing the required call center capacity. As previously discussed, the alternate means of contacting PSEG LI, namely MyAccount and PSEG LI's mobile

application, following Tropical Storm Isaias were compromised due to the inability of OMS to process the volume of reports coming through these alternate methods. Unsurprisingly, a significant number of customers turned to calling PSEG LI directly in order to report their outages, report downed power lines, and/or obtain information. As a point of comparison, Con Edison noted that nearly three quarters of outages were reported through the its website or texting.[21]

The outage reporting line is equipped with a high-volume call system. PSEG LI engaged this system at 8:15 p.m. on August 3. Pre-storm activation is atypical, as the systems usually only need to be activated based on the call volumes experienced when the storm is causing sizable numbers of customer outages. Despite having activated the high-volume call system, many customers experienced busy signals when calling PSEG LI due to various issues. These issues included problems with routing calls to the high-volume call system, the sheer volume of calls that were directed to PSEG LI call center, and the increased call volumes on the billing inquiry line as customers began using the billing inquiry number due to the inability to reach PSEG LI on the outage line. It should be noted that the billing inquiry line was not set up to use the high-volume call system. Therefore, calls on this line were trying to connect directly to PSEG LI call center, resulting in more traffic that needed to be managed over its 575-call capacity.

In response to the issues and complaints that customers could not reach PSEG LI, PSEG LI had Verizon perform diagnostic testing at both Verizon's central offices and PSEG LI's call center to determine the cause. The investigation determined that by 7:30 p.m. Verizon was able to verify that all trunk lines going to PSEG LI call center were fully operational and the busy signals experienced were due to the fact that the number of calls exceeded the capacity of the trunk lines going to the call center. It was also determined that having the calls go through AT&T prior to connecting to the high-volume call system created a bottleneck. Verizon alleviated this bottleneck at approximately 11:00 a.m. on August 5

[21] Matter 20-01633, supra, Con Edison's Part 105 Storm Report (filed October 13, 2020) p. 21.

by making use of 144 trunks between Verizon's Deer Park and Brentwood Central Office to route calls between those Central Offices and then directly to the high-volume call system, thereby bypassing AT&T. However, an issue still existed regarding the high traffic to PSEG LI's call center. To alleviate the issues associated with outage callers using the billing inquiry line, PSEG LI had Verizon change its business platform and establish an interactive voice response system to prompt callers regarding the nature of the call upfront.[22] If the call was storm related, the system would send the call to the high-volume call system rather than going to PSEG LI's call center. This solution was in place as of 9:00 p.m. on August 6. Nonetheless, this solution did nothing to prevent billing inquiry calls from tying up capacity. The investigation determined that PSEG LI should have done more to limit calls related to billing until restoration had progressed significantly and the call center had ample capacity and resources to handle all outage calls and billing inquiries. Moreover, the overall call and routing design was well within PSEG LI purview (and, notably, not within Verizon's) and its failure to ensure that there was proper capacity for calls to reach its high-volume call center is a major oversight. It does not appear that PSEG LI properly coordinated the call routing process with all participants and did not perform any type of stress testing. As of August 24, PSEG LI has worked to deploy a more permanent fix for routing calls to the high-volume system, however, it is unclear if this will result in the proper amount of capacity. PSEG LI may still need to expand the number of lines going into its primary and backup call centers. PSEG LI should continue to review this area and take actions necessary to ensure there is an appropriate level of capacity and resources to enable customers to interact with it during emergency events, particularly when its digital means of communications are compromised.

Finally, PSEG LI issued questionable and misleading press releases and statements that the issues customers were experiencing when trying to contact PSEG LI were caused by the

[22] The platform PSEG LI was on prior to this change did not allow for IVR services.

telecommunications network. PSEG LI issued press releases on August 4 and 5, as well as provided comment in news articles which preeminently singled out Verizon as contributing to its system issues. In doing so, PSEG LI perpetuated a stronger focus on Verizon in news and media coverage, which was inconsistent with PSEG LI's initial findings that included identified failures with its OMS. These questionable communications to the public continued after Verizon had verified the operation of PSEG LI's phone lines. While PSEG LI did encounter issues with an overwhelming number of calls received in the early hours of the storm, these issues were not directly caused by Verizon, nor were the on-going issues with the means and methods for PSEG LI to receive outage notifications from their customers solely related to operations managed by Verizon.

4.4 Central Hudson, Orange & Rockland, PSEG LI And NYSEG Experienced Website Issues Resulting In A Communication Gap With The Public

Utility websites are an effective means for customers and governmental officials to receive information, such as territory-wide and local estimated times of restorations, locations for the distribution of dry ice and bottled water, locations for warming shelters, safety tips and up-to date news on the restoration efforts. Ensuring these sites remain accessible provides customers with the material necessary for them to make informed decisions, such as whether they need to relocate. It was determined, however, that Central Hudson and Orange & Rockland failed to keep their websites active and updated for extended periods of time during the storm event.

As previously discussed, Central Hudson's internet connection was impacted at 2:59 p.m. on August 4 which impacted Central Hudson's main website and storm specific website, stormcentral.cenhud.com. Thereafter, the storm specific site was available but was not receiving updated information. At 7:39 p.m. a static webpage was established alerting customers of the website availability issue and offering a customer service telephone number. The static webpage was updated at 9:45 p.m. The website was fully restored by approximately 7:00 am the next morning, August 5, 2020.

Orange & Rockland's website and outage map were accessible for the duration of the event; however, the outage map did not display updated outage data for several periods of time during the early days of the restoration. The maps are typically updated on a 15-minute basis, with the expectation that the maps will be updated at a minimum of once an hour during sizable events. On August 4, the data failed to routinely update between 5:29 p.m. and 9:53 p.m. On August 5, routine updates did not occur between 2:28 a.m. and 3:53 a.m., 3:53 a.m. and 5:14 a.m., 8:25 a.m. and 10:21 a.m., and 3:28 pm and 4:30 p.m. Addition periods when the outage map did not routinely update include on August 6 between 12:01 a.m. and 5:59 a.m., August 7 between 12:15 p.m. and 1:47 p.m., and August 8 between 6:21 a.m. and 8:02 a.m.

PSEG LI reported that its website remained operational during the event, however, data being provided to the website was unreliable. Because of the OMS issues, the data shown on its web map showed inaccurate outage counts and locations. PSEG LI was fully aware of this problem and, in an attempt to address it, modified the banner on the map to provide customers alternate information. For example, on August 7 at 1:00 p.m., PSEG LI's outage map showed over 215,000 customers without power and a banner that directed the viewer to click on which indicated that the outage map "may contain inaccuracies," yet, the corresponding banner narrative stated that as of 12:45 p.m. there were fewer than 105,000 customer outages. PSEG LI continued to periodically update the banner similarly several times throughout Tropical Storm Isaias. The opening messaging of the banner, however, did not appear focused on the purpose of informing customers so that they could make important decisions during the event.

On August 5 at 10:27 a.m., NYSEG experienced internal server errors with its website. The service was restored at 1:40 p.m. During this period the map was fully available and accurate, however, some users experienced an intermittent inability to view other pages. Additionally, on August 5 between 2:00 p.m. through 5:15 p.m. there were intermittent website issues due to recovery work. This occurred

on three separate occasions, with each instance causing the website to become inaccessible for approximately 10 minutes.

5 ESTIMATED TIMES OF RESTORATION

5.1 PSEG LI Released Estimates For Restoration That Were Inconsistent With The ETR Protocol And Inaccurate

Estimated Time of Restoration (ETR) is the approximate date and time an electric utility estimates it will restore service after a power outage. Customers depend on ETRs to make health and safety decisions, including determining the need for alternative accommodations. Therefore, the ETRs must be timely, widely accessible, and accurate. In each utility ERP, there is an ETR protocol that specify when ETRs must be issued and the geographic level the ETRs should be tailored to. To account for unknown factors while still providing enough information for customers, the ETRs should cover 90 percent of customers for the global and 95 percent of customers thereafter.

PSEG LI failed to issue the required ETRs in the line with their ERP and the ETR Protocol. At the time when it was issuing its global ETR on August 5, PSEG LI indicated when 85 percent of its customers would be restored, rather than the required 90 percent. This ETR was issued at a time when, as previously discussed, PSEG LI's job count in OMS was not accurate and the damage assessment process was hindered due to issues with OMS. The next day, PSEG LI failed to issue county specific ETRs and stated in its 6:30 p.m. press release that "PSEG Long Island estimates 85 percent of customers will be restored by end of day Friday, with the remainder restored by end of day Saturday." PSEG LI completely misled its customers and governmental officials that all customers would be restored by Saturday, August 8. PSEG LI made this claim while it was still managing the uncertainties caused by OMS failures.[23]

PSEG LI vastly underestimated the effort required to restore impacted customers. At 12:45 p.m. on August 7, PSEG LI revised its ETR to indicate that jobs were requiring more work than

[23] PSEG LI's Response to Information Request DPS-6.

anticipated and some restorations would extend beyond Saturday, August 8. By 6:30 p.m. that same day, PSEG LI stated "some restorations to Sunday, with the possibility that a handful of the most extensive jobs may be restored early Monday." The 9:45 p.m. press release did not even address ETRs in a meaningful fashion and simply stated "[w]hile we expect the vast majority of customers to be restored by end of day Saturday, we are finding that each job is requiring more work than anticipated due to the extent of the storm's damage." This comment was not consistent with previous statements, as the Company had publicly indicated that all customers would be restored on Saturday.

The ETRs continued to change and be pushed out as restoration work progressed less than what was anticipated. Communications identified August 10, end of day as the ETR until it was replaced on August 10 with end of day on August 12 for the hardest hit areas. Clearly the incremental movement in ETRs indicates that PSEG LI was not accurately anticipating the effort and work involved in the restoration of customers. As a result, customers and public officials were frustrated by the inconsistent and inaccurate messaging.

5.2 Con Edison and Orange & Rockland Use Of "Vast Majority" Was Misleading

Following the 2018 Winter and Spring Storms, the Commission revised its ETR Protocols to reduce confusion and provide for more customers to be covered as more information is known through damage assessment activities, clarity on crewing received through mutual assistance or other means, and early restoration efforts.[24] The ETR Protocols include minimum requirements for when, and at what level of detail the utilities would communicate to the public, based on the forecasted outage duration.[25]

[24] Case 19-E-0742, In the Matter of December 15, 2019 Electric Emergency Plan Review, Order Approving Amended Electric Emergency Response Plans, issued May 14, 2020.

[25] For events expected to last 48 hours or less, the electric utility is to provide within the first 6 hours of restoration any available information to the public; within the first 12 hours of restoration provide a global ETR and available regional ETRs; and within the first 18 hours of restoration establish and communicate ETRs for each locality affected. For events expected to last more than 48 hours, the electric utility is to communicate

Following Tropical Storm Isaias a global ETR, or when 90 percent of the customers are expected to be restored, was issued by both Con Edison and Orange & Rockland on August 5.[26] For Con Edison, it meant that approximately 270,000 customers would be restored by 11:00 p.m. on August 9 and 170,000 would be restored by 11:00 p.m. on August 11 for Orange & Rockland. Therefore, 33,000 and 18,900 customers were estimated to remain without service after those times passed

Despite the significant number of customers expected to remain without power, both utilities issued press releases on August 5 that contained the statement that the "vast majority" of customers would be restored by the dates indicated above. This misled the public and government officials and set false expectations, essentially minimizing the notable workload remaining several days into the event. Because Con Edison did not pair the overall outage number with the percentage of customers it expected to restore, recipients of the "vast majority" messages were left unable to calculate how many customers would be left without power even after the referenced period. The two utilities repeated this error the next day when they issued county level ETRs. While these ETRs represent 95 percent of customer impacted from the storm, the 5 percent still represented a sizeable number of customers for each utility. The phrase "vast majority" is needlessly opaque when utilities could transparently convey the required percentages they are referring to. Utilities should refrain from this "vast majority" language during any storm events to minimize confusion.

ETRs within the first 24 hours of restoration, where known, on a general geographic basis; within the first 36 hours of restoration for storms with expected restoration periods five days or less, provide a global ETR and establish regional/county ETRs for areas expected to be restored in five days, even if the companywide restoration period is expected to be more than five days; within the first 48 hours of restoration for storms with expected restoration periods five days or less, provide global ETR and municipality level ETRs, provide regional and county ETRs for heavily damaged areas where large numbers of customers are expected to remain without service for five or more days; and beyond the first 48 hours of restoration for storms with expected restoration periods more than five days, provide ETR for each locality affected.

[26] Matter 20-01633, supra, Con Edison's Scorecard Report (filed September 11, 2020), Appendix 18A.

5.3 Con Edison and Orange & Rockland Failed To Provide Locality ETRs In The Event

As discussed earlier, the ETR Protocol requires the utilities to provide ETRs for each locality affected in addition to the global and regional ETRs. Local ETRs are required to be issued after the first 48 hours of restoration when the restoration period is expected to be more than five days as indicated in the ETR Protocol. The investigation determined that Con Edison and Orange & Rockland neglected to issue local ETRs. Con Edison indicated that it issued "initial" local ETRs on August 6, 2020 at 4:00 p.m., which is the same time it issued the regional ETRs. By doing so, Con Edison gave the impression that 95% of customers in each locality would be restored by 11:00 p.m. on August 10 within Westchester Country and 11:00 p.m. on August 9 for each neighborhood in the Bronx, Staten Island, Queens, and Brooklyn. [27] Similarly, Orange & Rockland issued its local ETRs on August 6, 2020 at 4:20 p.m., the same time it issued regional ETRs, both for August 9 at 11:00 p.m.[28] The reality is that Con Edison and Orange & Rockland never produced local ETRs at all because it skipped from the regional ETRs directly to issuing "Incident Specific" or job level ETRS, which are not necessarily municipal-wide.[29] A local ETR should not simply reiterate the same as a regional ETR that was previously provided, and failing to provide local ETRs also puts customers and officials at a disadvantage in terms of planning and decision-making.

Con Edison reported that it issued a total of 39 local ETRs issued on August 6, 2020, at 11:00 a.m., 28 of which had to be updated on August 7, 2020 at 5:00 p.m. pulling seven of those ETRs in from August 10, 2020 at 11:00 p.m. to August 9, 2020 at 11:00 p.m. and 21 from August 10, 2020 at 11:00 p.m. to August 10, 2020 at 3:00 p.m. [30] The ETR Protocol clearly outlines the time requirements for issuing local ETRs to enable utilities to provide more focused information through continuing damage assessment

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[27] Con Edison's Response to Information Request DPS-6, Question 4.

[28] Matter 20-01633, supra, Orange & Rockland's Scorecard Report (filed September 11, 2020), p. 14.

[29] Con Edison's Response to Information Request DPS-6, Question 4.

[30] Id.

activities and increased restoration planning such that detailed local ETRs could be determined. Con Edison clearly had more time to analyze incoming data before it issued local ETRs and by prematurely issuing local ETRs on August 6, 2020, Con Edison had to update more than 70 percent of those initial local ETRs on the very next day. Orange and Rockland also indicated it had to modify some of its initial local ETRs. Therefore, Con Edison and Orange & Rockland both failed to provide customers and governmental officials accurate ETRs.

During the latter days of restoration, Con Edison also failed to provide numerous local ETRs at all, which was yet another point of frustration for customers and government officials. When an ETR is set to expire, Con Edison must populate revised ETRs to keep customers well-informed on when their power will be restored. Con Edison was criticized during Winter Storms Riley and Quinn for allowing ETRs to expire without providing customers updated ETRs for hours.[31] To that end, Con Edison's implemented a process whereby a dedicated group, including the Regional ETR Officer, ETR Supervisors, and/or Operations personnel participate in regular conference calls focused "…on jobs with ETRs are due to expire and will not be met to ensure timely and appropriate ETR actions are taken."[32] This would position Con Edison to perform better by proactively reviewing ETRs set to expire and making necessary adjustments more timely, thereby avoiding customer and government official frustration going forward. During Tropical Storm Isaias, however, rather than using this process, Con Edison employed the use of a default message of "More Work Required" for extensive periods of time in instances when restoration was not completed by the estimated date and time provided by the company. This statement is not an ETR and certainly is not an appropriate communication to customers.

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[31] Case 19-M-0285, In the Matter of Utility Preparation and Response to Power Outages During the March 2018 Winter and Spring Storms, 2018 Winter and Springs Storms Investigation Report (issued April 18, 2018) p. 73.

[32] Matter 19-02752, In the Matter of December 15, 2019 Electric Emergency Response Plan Review, Con Edison Revised Electric ERP (filed May 8, 2020) Section 12.5, p. 162.

All electric utilities have systems that contain warnings on operator screens or dashboards that are monitored continuously. The warnings are usually thirty minutes prior to an ETR's expiration, so that actions can be taken to find out from the field if the ETR will be met or if it needs to be updated. Rather than revising and presenting accurate ETRs to customers and government officials, Con Edison allowed the default message to automatically populate each expired ETR on the Outage website beginning on August 9 at 11:01 p.m. for over 10 locations. By the end of August 10, Con Edison allowed that same message to appear for a peak nearly cities, towns and villages. The ambiguous message remained on the Con Edison's website for an extended period of time when customers were desperate to know when their power was going to be restored.[33]

Customers and officials expressed frustration that Con Edison had been providing consistently inaccurate ETRs, and this transition to no ETR whatsoever added to their frustration and anger. Government officials relayed concerns through liaisons and openly criticized Con Edison on this point during municipal calls. Additionally, the use of "More Work Required", gave the impression that ETRs would not be issued when less than five percent of customers impacted within each municipality from the start of the event remain out of service. This is, once again, an inappropriate response. For a major event, five percent of customers is a sizeable number of customers. Con Edison's reluctance to revise these local ETRs clearly indicates that it was not prepared to provide accurate ETRs. Con Edison should not have opted for the easy way out by publishing a default statement that lingered for days.

[33] Con Edison's Response to Information Request DPS-30, Question 6, Attachment 1.

6 COMMUNICATIONS

6.1 ORANGE & ROCKLAND, CON EDISON, PSEG LI, CENTRAL HUDSON, AND NYSEG FAILED TO ADEQUATELY CONTACT LSE CUSTOMERS

The electric utilities are required to maintain daily direct contact with all affected LSE customers during major events to verify their continued safety and well-being. Utilities are expected to contact 80 percent of affected LSE customers each day, via personal telephone calls, within 12 hours of the start of the event; make a second attempt each day within a 12-hour period if the LSE customer is not reached the first time; and to directly contact or refer to an EOC or other third-party for 100 percent of affected LSE customers within 24 hours each day.[34] The responsibility for this daily direct contact with LSE customers does not, at any time during an outage event, shift to any other third party, such as an EOC or emergency responder. The electric utilities bear the ultimate responsibility for all communications with LSE customers, including closing the loop with LSE customers to ensure daily contacts are made when referrals are provided to an EOC.

By its own admission, Orange & Rockland "failed to meet internal, as well as regulatory, expectations for making timely contacts" with regard to LSE customers.[35] Orange & Rockland claimed that technology issues with its outage map, Customer Information Management System (CIMS), and unavailable cellular telephone services were the cause of these failures. Orange & Rockland performed inadequately in its outreach to affected LSE customers during Tropical Isaias. Specifically, Orange &

[34] Case 13-E-0140, Proceeding on Motion of the Commission to Consider Utility Emergency Performance Metrics, Order Approving the Scorecard for Use as a Guidance Document to Assess Electric Utility Response to Significant Outages, (issued December 23, 2013) p. 26.

[35] Matter 20-01633, supra, Orange & Rockland's Scorecard Report (filed September 11, 2020), p. 56.

Rockland contacted only 56 percent of affected LSE customers within 12 hours, rather than the required 80 percent within 12 hours; made second attempts to contact only 81 percent of affected LSE customers within 12 hours, rather than 100 percent; and, contacted or referred only 63 percent of affected LSE customer within 24 hours, rather than 100 percent of affected LSE customers contacted or referred within 24 hours.[36] So too, did Con Edison fail to meet the requirements for contacting affected LSE customers within 24 hours. In particular, Con Edison contacted only approximately 66 percent of the affected LSE customers within 12 hours on August 4; referred only 97.9 percent of affected LSE customers it had not contacted within 24 hours; and admits its failure to make any contact attempt or referral to eight affected LSE customers.[37] Clearly, Con Edison also failed its LSE customers, similar to Orange & Rockland, which indicates both companies have insufficient regard for the vulnerability of these customers.

While PSEG LI indicated that it met the 100 percent contact or referral of all affected LSE customers, the Company admits in its Scorecard Report that it too failed to make a minimum of two call attempts to all affected LSE customers within 12 hours of an outage on August 4, 2020.[38] Further, the investigation revealed that, of the affected LSE customers PSEG LI referred, 1,764, or 70 percent were labeled "Total EOC resources unavailable for Wellness Checks." yet no information was provided to explain what other actions had been taken by PSEG LI to physically contact these vulnerable customers.[39] The investigation has not yet revealed the reasons why PSEG LI did not take additional actions to address that 1,764 LSE customers not receiving wellness checks from the applicable EOCs on August 4, 2020 to ensure these customers were safe .

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[36] Matter 20-01633, supra, Orange & Rockland's Scorecard Report (filed September 11, 2020), p. 36.

[37] Id.

[38] Matter 20-01633, supra, PSEG LI's Scorecard Report (filed September 14, 2020), p. 46.

[39] Id.

Lastly, both Central Hudson and NYSEG failed to perform adequately when contacting their affected LSE customers as well. Central Hudson reported that it experienced some confusion with the start and end periods for the 12-hour and 24-hour time window requirements which led to representatives failing to make calls within the required timeframe.[40] Even so, Central Hudson was able to contact more than 80 percent of LSE customers by phone within 12 hours. Central Hudson did attempt to contact, visit or refer all affected LSE customers not previously contacted, however, it did so outside of the time requirements. NYSEG also failed to contact 80 percent of LSE customers within 12 hours, reaching only 59 percent within that timeframe on August 4.[41] In addition , NYSEG failed to contact or refer all of its affected LSE customers within the 24 hour period as required.[42] Clearly, Central Hudson and NYSEG need to place more emphasis on fulfilling the LSE Customer contact requirements.

6.2 PSEG LI Failed To Maintain Accurate LSE Customer Contact Lists

Life Support Equipment (LSE) customers are defined under 16 NYCRR § 105.4(b)(9) as those customers who require electrically operated equipment to sustain basic life functions. While LSE customers do not receive priority restoration during outage events, they do receive certain protections regarding shut-off and a specialized level of communication from their utilities when affected by power outages due to their medical vulnerability. In fact, LSE customers' accounts contain a special code and their meters are designated with a medical seal to prevent disconnection. The utilities' ERPs detail how LSE customer information is to be verified and updated semi-annually, at a minimum.

The utilities are required to update LSE customer information at each touch point with this customer group, i.e., through interactions with customer service representatives or other internal groups

[40] Central Hudson response to Information Request DPS-010.

[41] NYSEG Tropical Storm Isaias Scorecard Report, p.33.

[42] Id.

during routine communications, or through specific outreach efforts such as annual recertification, etc. The need for accurate LSE customers' contact information becomes particularly acute during significant outage events and can lead to unnecessary wellness visits (i.e., the LSE customer no longer lives at the premises, or the LSE customer is deceased, etc.). In addition, inaccuracies may also divert essential first responders or internal utility resources from other priority restoration functions

Following the 2018 Winter and Spring Storms Investigation Report, all electric utilities included in their respective ERPs provisions to use every available touch point with LSE customers to update personal and emergency contact information for LSE customers. These opportunities include that call center representatives will, when speaking LSE customers, review that customer's contact and emergency information and make updates as necessary. To place emphasis on the importance of this task, changes were made to require the utilities to certify that the LSE customer lists and contact information have been updated and verified at least twice each year.[43] This investigation found that PSEG LI did not properly maintain its list as a number of these vulnerable customers were no longer residing at the premises of record, were no longer using life-support equipment, or were deceased, in certain instances for significant periods of time. This failure led to unnecessary wellness visits, which did indeed, result in municipal, elected, and first responder personnel conducting unnecessary wellness checks during Tropical Storm Isaias. Having inaccurate LSE customer lists is a historical failing for PSEG LI. DPS has raised this issue regarding PSEG LI's inability to maintain its LSE customer lists in prior reports.[44] Further, DPS is aware that since 2018, LIPA, as part of its Internal Audit program, identified specific issues and areas for improvement with PSEG LI's procedures regarding its Critical Care, Life Support Equipment, and Medical Emergency customers.

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[43] Case 19-M-0285, supra, 2018 Winter and Springs Storms Investigation Report (issued April 18, 2018) p. 141.

[44] Id.

It is especially disheartening to see that complaints regarding deceased LSE customers and LSE customers no longer residing at a location continued to be lodged against PSEG LI during Tropical Storm Isaias, particularly now that PSEG LI has established a dedicated group to address LSE customers.[45] Further, the investigation revealed that, compared to the other utilities, PSEG LI was extremely unsuccessful reaching affected LSE customers by phone. PSEG LI indicated on August 4, 2020, the first day of the event, that of the total 2,505 affected LSE customers, 2,297, or 92 percent, were referred to EOCs for wellness checks.[46] This is an inordinate and unacceptable number of referrals and a similar pattern continued throughout Tropical Storm Isaias.[47] In fact, PSEG LI did not reach a phone contact level of even 50 percent of affected LSE customers on any day during Tropical Storm Isaias. This failure in inexcusable and puts undue burden on EOCs and first responders to conduct daily wellness checks for large numbers of LSE customers. It is PSEG LI's responsibility to contact affected LSE customers in the first instance and keep the referral numbers as low as possible. EOC personnel and first responders are often engaged themselves during large scale events and PSEG LI should be aware that they simply do not have the resources to conduct thousands of wellness checks on behalf of the utility. PSEG LI should conduct an internal review of its LSE contact process to determine the root cause of its failure to contact the majority of its affected LSE customers (i.e., insufficient resources, technology issues, etc.) with the goal of improving its performance to be on par with the other electric utilities, which performed much better during Tropical Storm Isaias.

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[45] https://www.newsday.com/long-island/pseg-government-response-communications-failure-1.48568771.

[46] Matter 20-01633, supra, PSEG LI Scorecard Report (filed September 14, 2020) p. 181, Appendix Q, , Figure Q.2.

[47] Id.

6.3 PSEG LI And Central Hudson Failed To Properly Staff Call Centers

Customer service is one of the most valuable methods of maintaining a positive relationship between an organization and its stakeholders. Each electric utility's ERP provides guidelines detailing how the utility will staff its call centers in order to effectively respond to the high volume of callers attempting to speak to a live representative throughout an event. At most times, call centers were adequately staffed, however, there were multiple instances when certain call centers were understaffed.

PSEG LI reported that it had multiple instances of understaffing in the call center on August 4, August 7, August 8 and August 9, 2020. The utility reported that, on August 4, it had an average of 134 representatives working from 4:00 p.m. to midnight. However, PSEG LI's ERP requires the minimum staffing level of 150 representatives in the call center when customer outages are over 100,000, such as during Tropical Storm Isaias. PSEG LI also reported that for August 7, that staffing level averaged 153 representatives from 8:00 a.m. to 4:00 p.m. and staffing level averaged 143 representatives from 4:00 p.m. to midnight. The utility should have had a minimum of 160 and 150 representatives, respectively, based on the number of customers still without power. On August 8, PSEG LI continued to decrease staffing, which was not aligned with its ERP. Between the hours of 8:00 a.m. and 4:00 p.m., the required staffing level was a minimum of 160 representatives. However, PSEG LI reported having an average of only 110 representatives. Similarly, between the hours of 4:00 p.m. and midnight on August 8, when 150 or more representatives were required, PSEG LI again failed to meet the minimum requirements by having an average of only 93 representatives. On August 9, PSEG LI continued to staff the call center below the required minimum between the hours of 8:00 a.m. and 4:00 p.m., with 111 representatives, rather than 140 representatives. In addition, between 4:00 p.m. and midnight, PSEG LI was required to have a minimum of 100 representatives, yet the utility reported a staffing level of an average of only 95 representatives.

The investigation also determined that Central Hudson understaffed its call center in one instance at the beginning of the restoration. On August 5, during the period from 12:00 a.m. to 6:00 a.m., Central Hudson reported average staffing of 15 representatives, while its required minimum staffing level is 18 representatives.[48] Central Hudson appropriately staffed the call center for all other shifts.

6.4 PSEG LI, Con Edison, Orange & Rockland, And Central Hudson Had Multiple Days With Inadequate Call Answer Rates

Customers expect to be able to contact a live representative in situations where an IVR automated system cannot fully assist them. Providing this service adds value to the relationship between the utility and its stakeholders. To gauge proper response, the utilities are expected to meet a minimum of 80% of calls answered by a live representative within 90 seconds throughout an event. This criterion becomes more important when circumstances arise that prevent customers from reporting outages through other technologies, i.e., text, email, etc.

PSEG LI reported that it failed to meet the minimum call answer rate on seven out of eleven day period from August 4 through August 14. The daily call answer rates for the days PSEG LI failed were as follows: 63.4% on August 4, 30.4% on August 5, 53.1% on August 6, 56.6% on August 7, 70.6% on August 8, 54.0% on August 9; and 58.40% on August 10. Due to the inability to reach customer representatives in a timely manner, PSEG LI reported abandon rates during this same seven-day period that ranged between 10.5% and 22.4%. Due to these factors and the overall desire of customers to obtain accurate information, PSEG LI should have taken actions to improve its call center performance. This performance is inexcusable.

[48] Central Hudson's Response to Information Request DPS-18.

Con Edison reported two out of nine days, on August 4 and August 5, when it failed to meet the minimum call answer rate. On August 4, a call answer rate of 34% was achieved while on August 5, a call answer rate of 35% was achieved. The utility's call abandon rates for August 4 and August 5 were very high at 48.97% and 22.76%, respectively. Orange & Rockland reported two out of seven days where it failed to meet the minimum call answer rates. As to O&R failures, O&R achieved a call answer rate of only 22.5% on August 4 and 67.19% on August 10.

Central Hudson reported that it failed to meet the minimum call answer rate requirement on three out of five days. On August 4, August 5, and August 8, Central Hudson had respective answer rates of 51.0%, 60.7%, and 76.8%. Central Hudson also experienced high abandon rates (as high as 53.7% on August 4). As with PSEG LI, and in response to alternative communication method failures, Central Hudson should have taken more action to improve its call center performance. NYSEG failed to meet the minimum call answer rate goal on August 4, with 71.3% of calls answered within 90 seconds. This was the sole day that NYSEG performed below the 80% target.

6.5 PSEG LI, Con Edison And Orange & Rockland Failed To Timely Update IVR Messaging

Interactive Voice Response, or IVR systems allow the utilities to provide basic information to customers prior to speaking with a representative, in addition to enabling call routing. This important tool provides customers with the opportunity to avoid long wait times during emergency events by choosing from several service options to complete tasks such as report an outage or that wires are down, etc. Callers rely on the IVR messaging to be updated throughout an event and utilities use the issuances of press releases to update the IVR messaging to ensure callers are provided with the most timely and relevant information during large-scale events. To that end, emergency response plans require each utility, including PSEG LI, to update IVR messaging within one hour of each press release issuance so as to provide callers with the most current information related to the utility's restoration efforts and progress

as well as ETRs, locations of shelters and warming/cooling centers, and water and dry ice distribution locations, etc.

PSEG LI failed to update its IVR messaging within one hour in eight out of 28 instances where press releases issued.[49] The instances of failures included the following: (1) press release issued on August 4 at 5:00 p.m., two associated IVR updates at 9:15 a.m. and 6:35 p.m.; (2) press release issued on August 6 at 6:30 p.m., associated IVR update at 8:00 p.m.; (3) press release on August 7 at 12:45 p.m., associated IVR update at 2:30 p.m.; (4) press release issued on August 7 at 6:30 p.m., associated IVR update at 8:10 p.m.; (5) press release issued on August 8 at 10:15 a.m., associated IVR update at 8:15 a.m.; (6) press release issued on August 9 at 9:45 p.m., associated IVR update on August 10 at 9:30 p.m.; (7) press release issued on August 11 at 11:45 a.m., associated IVR update at 1:30 p.m.; and, (8) press release issued on August 12 at 7:00 a.m., associated IVR update at 9:00 a.m. Moreover, PSEG LI completely failed to update the IVR messaging altogether in response to 13 press releases including the press releases on: (1) August 5 at 6:30 pm; (2) August 5 at 10:00 pm; (3) August 6 at 9:45 am; (4) August 6 at 9:30 pm; (5) August 7 at 9:45 pm; (6) August 8 at 10:30 pm; (7) August 10 at 9:45 pm; (8) August 11 at 8:45 am; (9) August 11 at 3:45 pm; (10) August 11 at 9:45 pm; (11) August 12 at 11:00 am; (12) August 12 at 4:00 pm; and, (13) August 12 at 10:00 pm.[50]

Con Edison twice failed to update its IVR messaging within one hour. On August 7, 2020, Con Edison issued a press release at 5:00 p.m. but did not update its IVR update until 6:03 p.m. On August

[49] PSEG LI's Response to Information Request DPS-25.

[50] Id.

10, 2020, it issued a press release at 9:40 a.m. but did not update its IVR until 11:06 a.m.[51] In addition, Orange & Rockland failed in six instances to update its IVR messaging within one hour: on August 4, 2020, when it issued a press release at 7:00 p.m. but did not update its IVR until 9:21 p.m.; the same day, when it issued a press release at 10:00 p.m. but did not update its IVR until 11:54 p.m.; on August 5, 2020, when it issued a press release at 10:00 p.m. but did not update its IVR until 11:30 p.m.; on August 6, 2020, when it issued a press release at 10:00 p.m. but did not update its IVR until 11:19 p.m.; on August 8, 2020, when it issued a press release at 10:00 p.m. but did not update its IVR until 11:33 p.m.; and, on August 10, 2020 when it issued a press release at noon but did not update its IVR until 1:21 p.m. Lastly, Orange & Rockland failed to update the IVR messaging altogether after it issued a press release on August 8, that corrected the address of where dry ice and water would be provided.[52]

6.6 Con Edison Failed To Effectively Use Operator Assisted Service During Municipal Calls

The use of municipal calls is just one of the tools used by utilities to provide government officials with pertinent information during a major outage event. Utilities also use municipal liaisons, press releases, emails, and/or texts to assist in this effort. Municipal calls, however, are intended to provide high-level information to these officials that is not generally available publicly. The specific information shared by the utility during the municipal calls include, but are not limited to, the type and severity of system damage experienced; actions being taken by the utility to effectuate restoration, i.e., mutual assistance, staging areas, etc.; and, ways in which officials can communicate with the utility throughout the event. Municipal calls are not designed to provide information about when specific customers or

[51] Matter 20-01633, supra, Consolidated Edison's Scorecard Report (filed September 11, 2020) p. 51.

[52] Orange & Rockland's Response to Information Request DPS-22.

facilities will be restored or to address road clearing concerns. That more specific level of communication should be happening between municipal liaisons and other utility personnel through regular communications outside of municipal calls. Providing government officials with frequent and accurate information through these other channels should, in theory, keep the municipal calls shorter in duration because officials are receiving consistent and accurate communications from the utility.

Con Edison's Westchester County municipal calls have been pointedly criticized during significant outage events in the past. The calls often lasted for hours because of the exhaustive "roll call" process done at the end of each call, which alternated between alphabetical and reverse alphabetical order, and the calls generally revolved around the extreme frustration of the officials with the lack of adequate communications with Con Edison. Following Winter Storms Riley and Quinn, Staff recommended the utilities all conduct municipal calls by using an outside vendor to manage the calls, which should create a more orderly and efficient call experience for government officials.[53]

With the operated-assisted service, attendance is taken by an operator, which the utility has access to see, saving precious time during a major outage event; and, the operator presents participants with directions on how to ask questions. According to design, questions should be placed in a queue and the operator presents only those participants who wish to ask a question of the host, in this case Con Edison. This eliminates the need for the utility to give each official on the call the floor, instead only those who intentionally have the need to actually speak or wish to ask a question. Con Edison, however, does not use this important feature of operator-assisted calls during its Westchester County municipal calls. Rather, Con Edison continues to employ using its roll call, alternating between alphabetical and reverse-alphabetical, requesting all participants to speak even if it's to say: "no questions." When called on, however, the participants appear to provide comment regardless rather then

[53] Case 19-M-0285, supra, 2018 Winter and Springs Storms Investigation Report (issued April 18, 2018) p. 129.

using alternative methods, such as a liaison. This defeats the purpose of using the operator-assisted tool. The length of Con Edison's Westchester County municipal calls continues to be extraordinarily long, at times in excess of two hours, which is not an efficient use of the time of government officials or Con Edison employees on the calls. It is important to note that these same communication failures were identified in the 2018 Winter and Springs Storms Investigation Report, and it is concerning that Con Edison has not fully implemented Staff's recommendation by taking full advantage of operator-assisted service as designed. Accordingly, Con Edison failed to use the operator-assisted service to its fullest during Tropical Storm Isaias when it did not to use the vendor to organize the questions and efficiently present each caller to the utility to answer their question.

6.7 Communications Regarding Ice Distribution Were Unclear

Each utility ERP requires dry ice be provided when outages are expected to exceed 48 hours. While the utilities properly attempted to fulfill this requirement during Tropical Storm Isaias, many of the utilities were unsuccessful in obtaining sufficient amounts of dry ice due to a shortage in the production of carbon dioxide, the main component of dry ice, that was a result of an industry-wide shortage resulting from the pandemic. In response, the utilities established locations to distribute wet ice and any amounts of dry ice that they could obtain.

Ineffective messaging regarding the type of ice being distributed led to confusion. PSEG LI, Con Edison, and Orange & Rockland issued press releases providing locations to obtain material to keep refrigerated products from spoiling, but customers and government officials were surprised to find the utilities were distributing wet ice rather than dry ice. Central Hudson was the only utility that clearly distinguished to customers that dry ice was limited and wet ice or "regular ice", as Central Hudson termed it, was being distributed when the small levels of dry ice procured was completely distributed. By contrast, PSEG LI simply stated that its distribution locations would "provide people with ice and water." Con Edison did not use dry ice in its August 5 press releases, as it was primarily distributing wet ice at that time.

Utilities should provide clear and accurate information to communicate to customers when the utilities are deviating from normal practices, and more emphasis was needed under these circumstances to ensure customers brought appropriately sized containers or coolers to accommodate wet ice. PSEG LI, Con Edison, and Orange & Rockland should seek to employ the messaging practices used by Central Hudson, which provided customers with a full understanding of how its practice was being changed, and why, during the event.