

July 9, 2018

VIA HAND DELIVERY & ELECTRONIC MAIL

Luly E. Massaro, Division Clerk
Rhode Island Division of Public Utilities and Carriers
89 Jefferson Boulevard
Warwick, RI 02888

**RE: Docket D-11-94 – Review of Preparedness and Restoration Efforts by the State’s Electric Utility Companies Related to Tropical Storm Irene
March 7, 2018 Summary Report**

Dear Ms. Massaro:

In accordance with Order No. 20814 (November 20, 2012) in Docket D-11-94, enclosed please find four copies of National Grid’s¹ summary report on the planning and restoration activities associated with the March 7, 2018 storm event (Winter Storm Quinn). Order No. 20814 directs National Grid to file a final written report with the Division of Public Utilities and Carriers within 90 days following major storm events.² Winter Storm Quinn will likely qualify for inclusion in National Grid’s Storm Contingency Fund. Accordingly, National Grid has also filed this summary report with the Public Utilities Commission in Docket No. 2509.

Thank you for your attention to this matter. If you have any questions regarding this filing, please contact me at 401-784-7415.

Very truly yours,



Robert J. Humm

Enclosure

cc: Leo Wold, Esq.
John Spirito, Esq.
Kevin Lynch, Division
Al Mancini, Division
John Bell, Division
Greg Booth, Division

¹ The Narragansett Electric Company d/b/a National Grid (National Grid).

² On June 1, 2018, the Company submitted a request for an extension of time through July 9, 2018 to submit the summary report for Winter Storm Quinn, to which the Division stated it had no objection.

National Grid

The Narragansett Electric Company

**Report on
March 7, 2018 Winter Storm
Quinn Damage Assessment and
Service Restoration**

July 9, 2018

Docket No. 2509

Submitted to:
Rhode Island Public Utilities Commission

Submitted by:

nationalgrid

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**REPORT ON BEHALF OF
THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID
ON THE MARCH 7, 2018 STORM DAMAGE ASSESSMENT AND SERVICE
RESTORATION EFFORTS**

I. EXECUTIVE SUMMARY

The Narragansett Electric Company d/b/a National Grid (National Grid or the Company) presents the following report on the planning and restoration activities associated with the March 7, 2018 winter storm Quinn (Winter Storm Quinn or the Storm), which impacted Rhode Island and other states in the Mid-Atlantic and Northeast regions of the United States. Winter Storm Quinn was the second of several winter weather events the Company prepared for and/or experienced within three weeks. For pre-planning purposes, the Company classified Winter Storm Quinn as a National Grid Type 4 emergency event, meaning that the Company estimated that restoration activities would generally be accomplished within a 24 hour period and the event would typically result in up to three percent of customers interrupted. Winter Storm Quinn was projected to bring hazardous winds, rain, and wet snow that could potentially cause significant damage to the Company's electric infrastructure. Ultimately, Winter Storm Quinn brought widespread winter storm conditions to Central New England inland to upstate Maine and nearby states. The heaviest amounts of snow impacted Western Massachusetts and portions of Southern Vermont, while Southern New England experienced heavy, wet snowfall. Northwestern Rhode Island experienced 10 to 12 inches of heavy, wet snow, with much of Rhode Island receiving two to four inches of snow. Peak wind gusts of 40 miles per hour (mph) occurred in Providence. As soon as the actual impact of Winter Storm Quinn became evident, the Company quickly elevated its response to a National Grid Type 3 event, meaning that the Company estimated that restoration activities would generally be accomplished within a 72 hour period and the event would typically result in up to nine percent of customers interrupted. The mix of wind, rain, and heavy, wet snow caused damage to the Company's electric infrastructure across much of Rhode Island, interrupting power to approximately 34,595 (approximately 17,936 at peak) of the Company's customers. Overall, 7 percent of the Company's customers in Rhode Island experienced outages, with 37 of the 38 communities served in Rhode Island impacted.

The Company began monitoring the weather around Winter Storm Quinn on Saturday, March 3, 2018 – while dealing with the significant outages caused by the March 2, 2018 winter storm Riley (Winter Storm Riley) – and preparing for another potential storm impact to customers on Tuesday, March 6 by conducting a Pre-Event Briefing Call at 1:00 p.m., as the New England Incident Commander declared the event classification as a Type 4. As of Wednesday, March 7 at 9:00 a.m., the Providence Storm Room was already opened and operational, as the Company's response to Winter Storm Riley was still ongoing. The Company followed its Emergency Response Plan, and mobilized employees and contractors for the restoration using a damage forecast based on its experience in previous storms. As part of its preparation efforts, the Company also contacted contractors from outside the Company's service territory to secure resources to help with restoration. Using its own crews and contractor

resources, the Company restored power to 90 percent of its customers impacted in less than 32 hours from the time of peak impact. The final customer from Winter Storm Quinn was restored on March 11 at approximately 9:30 p.m., just two days before the third storm in less than two weeks, Winter Storm Skylar, impacted Rhode Island.

The Company is grateful for the support of customers, employees, state and local officials, and public safety officials, who experienced the effects of Winter Storm Quinn and were an integral part of the Company's restoration efforts.

II. INCIDENT ANTICIPATION

A. Determination of Incident Classification

The Company conducted regular System Level Briefings throughout Winter Storm Quinn, but did not officially activate the System Level Emergency Response Organization. The Company opened its Regional Emergency Operations Center in Worcester, Massachusetts on Friday, March 8, 2018 at approximately 7:00 a.m. For its response to Winter Storm Riley, the Company had also established a Branch Storm Room in Providence on Friday, March 2 at approximately 5:00 a.m., which remained open for Winter Storm Quinn. While the Company continued its response to Winter Storm Riley, the Company also named a New England Incident Commander for Winter Storm Quinn, who was primarily responsible for establishing the projected and actual incident classification level for Winter Storm Quinn.

As set forth in the Company's Emergency Response Plan, factors considered in initially establishing or revising the expected incident classification level included the following:

- Expected number of customers without service;
- Expected duration of the restoration event;
- Recommendations of the State Planning Section Chief, Transmission and Distribution Control Centers, and other key staff;
- Current operational situation (such as number of outages, resources, and supplies);
- Current weather conditions;
- Damage appraisals;
- Forecasted weather conditions;
- Restoration priorities;
- Forecasted resource requirements; and
- Forecasted scheduling and pace of restoration work crews.

Through the system and operations storm conference calls, the New England Incident Commander communicated the incident classification to Company leadership and organizations that the Company expected to engage in restoration or support activities. On Thursday, March 8 at approximately 12:00 a.m. – as soon as the actual impact of Winter Storm Quinn became evident – the New England Incident Commander elevated the Company's response from a National Grid Type 4 event to a National Grid Type 3 event.

B. Activation of Incident Command System

The Company utilizes the Incident Command System, a component of the National Incident Management System, which is a comprehensive national approach to incident management applicable at all levels of the Company's Emergency Response Organization and addresses the operation of Company Emergency Operation Centers.

In the days leading up to Winter Storm Quinn, the Company's Operations management personnel had already been activated to respond to Winter Storm Riley and remained in place for Winter Storm Quinn. Beginning March 6, 2018 at 1:00 p.m., operational calls were held to discuss planning efforts for the possibility of yet another severe snow, rain, and wind storm forecasted to bring hazardous conditions to New England. As a result of these calls, and in accordance with the Company's Emergency Response Plan and anticipated Type 4 event, the Company decided to continue the activation of the Branch Level Emergency Response Organization in Rhode Island, which was already responding to Winter Storm Riley.

At that time, the Company planned to keep open the Rhode Island Storm Room in Providence to support Rhode Island restoration as Winter Storm Quinn would make its impact. The New England Incident Commander also kept the Rhode Island Branch Director activated, who was in charge of Rhode Island restoration and located in the Providence Storm Room.

Thereafter, the Company activated a number of other positions at the discretion of the Incident Commander and Branch Directors, considering the level of response expected for Winter Storm Quinn in their respective areas, including Rhode Island, and the ongoing impacts of Winter Storm Riley. The Company also planned to keep open the Regional Emergency Operations Center in Worcester, Massachusetts during the ongoing efforts to restore areas impacted from Winter Storm Riley.

C. Determination of Crew Needs and Pre-Staging

Given the potential magnitude of Winter Storm Quinn and forecast of winds and heavy precipitation, the Company secured crews in advance from its contractors of choice and other outside contractors to support restoration efforts for all of New England as part of its regional preparation for Winter Storm Quinn, consistent with its Emergency Response Plan. Many of these external resources were already secured for the Company's response to Winter Storm Riley – with final restoration from Winter Storm Riley occurring the evening of March 6, 2018 – so such resources were already in Rhode Island and at staging sites. As of March 7 at 9:00 a.m., the Company had 62.5 internal overhead line crews, 130 external overhead line crews, 72 forestry crews (external), 7 internal underground crews, 41 internal substation resources, 4 internal transmission crews, and 56 internal wires down resources at its disposal to respond to Winter Storm Quinn. The Company also had 30 damage assessment crews available at that time, ready to be deployed to Rhode Island as needed.

III. THE STORM AND ITS IMPACT

A. Forecast

The Company monitors the weather forecast obtained from its weather provider, DTN, through detailed emails received three times daily. Throughout the day, the Company also monitors the forecast from various weather websites.

On Saturday, March 3, 2018, the forecast anticipated that a second Nor'easter within a week would make an impact across the Company's service territory later in the week. A building storm was forecast to occur in a somewhat similar fashion to Winter Storm Riley, which impacted Rhode Island beginning March 2. The forecast for the second storm indicated that a storm system would trek across the Great Lakes region, splitting some of its energy at the base of a large trough that would quickly deepen offshore. The second storm system would stay close enough to shore to produce heavy precipitation, but forecast models disagreed on the timing, track of the offshore low, precipitation type, and snowfall amounts across the Northeast region. Confidence grew each day with respect to expected heavier snowfall totals. By March 5, DTN forecasted maximum snowfall amounts in the range of 5 to 10 inches for Pennsylvania and New Jersey, 6 to 12 inches for southeastern New York, and 8 to 18 inches for New England, but concerns existed that these areas could receive even higher amounts of snowfall.

The forecasts also noted concern over the placement of the rain/snow line, which looked to occur approximately along the heavily populated Interstate-95 corridor from the Mid-Atlantic to the Northeast regions of the United States. This would create a very sharp gradient in snowfall, where snow could go from several inches to near nothing in a short distance. There were considerable differences in the forecast models as of March 5, especially over New England. In comparison to the previous Nor'easter (Winter Storm Riley), this second system was forecasted to have a weaker wind field, with winds being stronger over the ocean then wrapping back inwards toward the coastlines. The notable exception was for Southeastern Massachusetts and parts of Rhode Island, which were estimated to experience possible moderate wind gusts, in the range of 40-55 mph.

On Tuesday, March 6, weather forecast models began to indicate that the surface low pressure system would track closer to the coast, along with an increase in precipitation from the New Jersey/Pennsylvania border across the Hudson Valley in New York and the Berkshires of Western Massachusetts. Expected snowfall amounts increased across New Jersey and eastern New York, with the largest increases across Downstate New York. Forecast models continued the very sharp gradient of snowfall across eastern Massachusetts, Rhode Island, and eastern Connecticut. By Wednesday, March 7, the forecast models continued to disagree where the rain/snow line would set up across southern New England, but were beginning to come into better agreement as to where the heaviest snowfall would occur. Thus, expected snowfall increased by two to four inches across southeastern New York and New Jersey. Meanwhile, snowfall ranges were tightened across northern New Hampshire.

B. Impact

Winter Storm Quinn was a severe weather event that had strong potential to cause significant damage to the Company's electrical system. Beginning the evening of March 7, 2018, Winter Storm Quinn brought widespread winter storm conditions to Southern New England inland to New York and nearby states, up through Maine. Rhode Island experienced wind gusts of 40 mph across the state, with peak gusts of 43 mph in Providence. While Rhode Island did not experience the snowfall experienced by other areas in the Northeast, parts of the state received more than 12 inches of wet, heavy snow, causing many tree limbs to break and fall into energized lines and equipment.

Winter Storm Quinn impacted a total of approximately 34,595 customers in the Company's Rhode Island service territory. Winter Storm Quinn impacted approximately 17,936 customers at its peak, which occurred on Thursday, March 8, 2018 at approximately 4:50 a.m. The Company restored power to all customers by March 11 at approximately 9:30 p.m. The Company experienced interruptions in 37 of the 38 Rhode Island communities it serves, with a total of 64 distribution feeders affected. Communities in the northwestern part of Rhode Island experienced the highest amounts of snowfall and the greatest percentage of outages.

Figure 1 below shows the number of customers interrupted and restored during Winter Storm Quinn, by hour, from Wednesday, March 7 through Monday, March 12.

Figure 1

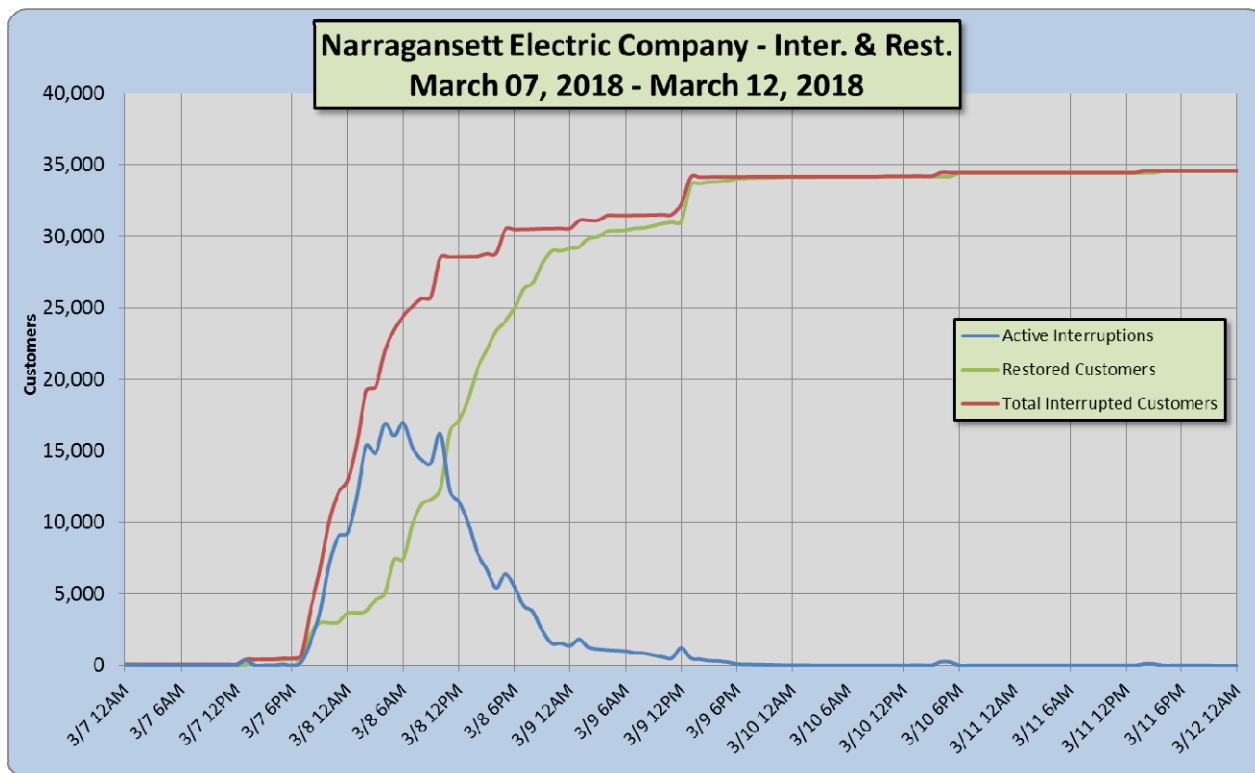


Figure 2 below shows all municipalities that experienced interruptions during Winter Storm Quinn.

Figure 2

Town Name	Customers Served	Total Customers Interrupted	Percent of Total
BARRINGTON	6,863	64	0.93%
BRISTOL	10,404	11	0.11%
BURRILLVILLE	2,618	2,295	87.66%
CENTRAL FALLS	7,328	1	0.01%
CHARLESTOWN	5,748	378	6.58%
COVENTRY	13,802	1,012	7.33%
CRANSTON	31,732	1,735	5.47%
CUMBERLAND	15,279	5,101	33.39%
EAST GREENWICH	6,120	74	1.21%
EAST PROVIDENCE	22,143	12	0.05%
EXETER	3,019	705	23.35%
FOSTER	2,028	1,414	69.72%
GLOCESTER	4,565	3,123	68.41%
HOPKINTON	3,941	516	13.09%
JAMESTOWN	3,331	1	0.03%
JOHNSTON	13,691	420	3.07%
LINCOLN	10,174	679	6.67%
LITTLE COMPTON	2,568	71	2.76%
MIDDLETOWN	8,345	1	0.01%
NARRAGANSETT	10,575	2	0.02%
NEWPORT	15,016	25	0.17%
NORTH KINGSTOWN	13,411	436	3.25%
NORTH PROVIDENCE	16,067	9	0.06%
NORTH SMITHFIELD	5,732	2,122	37.02%
PAWTUCKET	33,552	299	0.89%
PORTSMOUTH	9,205	119	1.29%
PROVIDENCE	72,205	1,261	1.75%
RICHMOND	3,439	1,044	30.36%
SCITUATE	4,551	1,975	43.40%
SMITHFIELD	8,832	930	10.53%
SOUTH KINGSTOWN	14,702	1,404	9.55%
TIVERTON	8,234	3	0.04%
WARWICK	40,359	2,677	6.63%
WEST GREENWICH	2,633	433	16.45%
WEST WARWICK	13,559	394	2.91%
WESTERLY	14,454	23	0.16%
WOONSOCKET	18,909	3,442	18.20%

The following sections contain additional details and context regarding the Company's Winter Storm Quinn restoration efforts.

IV. RESTORATION

A. Timing and Priority of Service

The Company implemented the system of prioritization for restoration found in its Emergency Response Plan, focusing first on public safety and then on customer restoration that maximized restoration when lines were energized. The Company gave priority and consideration to critical facilities and concentrated efforts to restore service to its life support customers as quickly as conditions warranted, also as set forth in the Emergency Response Plan.

B. Restoration Coordination

The Company dispatched new outages caused by Winter Storm Quinn from the Providence Storm Room beginning on Wednesday, March 7, 2018 at approximately 8:00 p.m. through the end of Winter Storm Quinn. Consistent with the Emergency Response Plan, the Company activated Police and Fire Coordinators for Winter Storm Quinn. These employees reported to the Storm Room Leads and were responsible for communicating the estimated times for restoration on all police and fire calls, with a standby condition noted. The Company also activated and coordinated six Task Force teams in accordance with the Emergency Response Plan, consisting of Company and municipal personnel utilized to clear roads during emergencies.

On March 7 at 7:00 p.m., the Company also mobilized the Providence wires down room with approximately 56 internal resources available, including wires down appraisers, cut and clear restoration resources, and standby resources.

C. Personnel Resources

As part of its planning process, the Company prepared for a Type 4 event in Rhode Island based on the forecasts. The Company's plan remained consistent throughout the pre-event call on Tuesday, March 6, 2018 and the operational planning calls on Wednesday, March 7. At approximately 12:00 a.m. on Thursday, March 8, the State Incident Commander elevated the response to Winter Storm Quinn to a National Grid Type 3 event as he monitored the impacts of Winter Storm Quinn on the Company's electric distribution system.

The Company had initially secured 403.5 internal and external field crews¹ to restore power to customers in Rhode Island, consisting of approximately 202 external crews and 201.5 internal crews, including damage assessment crews. Many of these field crews were already secured for the Company's response to Winter Storm Riley, so were able to immediately assist restoration efforts for Winter Storm Quinn. The internal and external field crew numbers

¹ Crews typically include two or three people, although there may be some one-person crews in damage assessment, wires down, distribution line (troubleshooters), and substation personnel. Transmission crews typically include 6-10 resources.

included transmission and distribution overhead line, forestry, wires down, substation, underground, and damage assessment personnel.

D. Safe Work Practices

Safety is always at the forefront of Company operations, including and especially during activities associated with storm restoration. For each storm event, both the System and Regional Incident Command System structure designate a lead position for a Safety, Health, and Environment Officer. Safety messages are delivered on all calls to heighten awareness during preparation and restoration.

As with any storm, for Winter Storm Quinn, National Grid assembled a safety team with area responsibilities, established the reporting hierarchy, and prepared and communicated organization charts. The safety team prepared safety notices and delivered them to all Company employees through corporate communications. Safety personnel were deployed to assist in specific geographic areas and delivered on-site safety orientations to National Grid workers and contractors prior to the start of each day. During Winter Storm Quinn, safety personnel visited work sites to advise Company personnel and contractors of safety issues and best practices. In addition, prior to the start of each new job, the work was reviewed by assigned crews, with a focus on safe working conditions for the specific job. These safety efforts helped the Company experience no injuries during Winter Storm Quinn.

V. COMMUNICATIONS DURING AND AFTER THE EVENT

A. Communication Regarding Estimated Times of Restoration

The Company posted Estimated Times of Restoration (ETRs) on its website during Winter Storm Quinn using Outage Central, which provided real time ETR updates approximately every 15 minutes.

As crews were assigned and reported ETR updates based on their actual findings in the field, the Company uploaded the updated ETRs into Outage Central. The Company continued to update ETRs throughout the restoration process as information became available to the Company.

B. Intra-Company

The Company began preparing for Winter Storm Quinn on Monday, March 5, 2018 by reviewing the weather forecast and beginning planning efforts for the possibility that Winter Storm Quinn would impact the Company's electric distribution system in New England on the heels of Winter Storm Riley.

The Company held Pre-Event Stage Briefing Calls for Winter Storm Quinn on Tuesday, March 6 at 1:00 p.m. and Wednesday, March 7 at 9:00 a.m. The Company also held Restoration Stage Briefing Calls twice daily throughout the event beginning on Thursday, March 8 at 9:00 a.m., with the final call for Winter Storm Quinn being conducted on Sunday, March 11 at 9:00 a.m.

Additionally, the Company issued communications to field crews with both restoration and safety information throughout Winter Storm Quinn.

C. Public Officials

1. Governor's Office

The Company's Jurisdictional President communicated regularly with the Governor's office during Winter Storm Quinn.

2. Rhode Island Public Utilities Commission, Division of Public Utilities and Carriers (Division), Rhode Island Office of Energy Resources (OER), and Rhode Island Emergency Management Agency (RIEMA)

The Company's Manager of Regulatory Affairs first reached out to the Division and OER on Tuesday, March 6, 2018 regarding the Company's preparation for Winter Storm Quinn, and provided regular updates through Thursday, March 8. Additionally, the Company virtually activated its RIEMA liaisons on March 7 at approximately 7:00 p.m. The Company utilized RIEMA's WebEOC to remotely facilitate communications with Emergency Support personnel throughout the event.

3. Municipalities

The Company opened a Municipal Room in Providence on Wednesday, March 7, 2018 at 7:00 p.m. The purpose of the Company's Municipal Room was to effectively manage and communicate with any potentially impacted communities in Rhode Island. The Municipal Room was located together with the Company's Branch Emergency Response Organization personnel. This arrangement afforded efficient access to key restoration personnel in researching and communicating the priorities of municipalities, including regarding critical customers such as hospitals, nursing homes, and schools. The Company deactivated the Municipal Room on Friday, March 9 at 2:00 p.m.

The Company also assigned Community Liaisons to work with each Rhode Island city or town's emergency, Department of Public Works, and/or public officials as a dedicated liaison. The Company's Community Liaisons served as full-time resources supporting impacted communities and enabled direct communications back into the Company's Branch Municipal Room, public information coordinators, and Branch operations personnel. Community Liaisons requested the communities to prioritize their requests on blocked roads and other local emergencies, which, in turn, were forwarded to the Storm Room Leads in order to provide Task

Force Teams with prioritized work. Throughout the duration of Winter Storm Quinn, the Community Liaisons contacted each of the communities in the Company's Rhode Island service territory a minimum of three times each day, and were deployed in the field for the communities impacted the most.

D. Customers

The Company constantly communicated with customers during and after Winter Storm Quinn through its call center, website, direct email, and social media. The Company monitored social media channels every day throughout Winter Storm Quinn from 6:00 a.m. through 11:00 p.m. and posted messages, shared resources, and responded to customer issues. This included, but was not limited to, communications in the following subject areas: information on how customers could stay safe during Winter Storm Quinn; information on what the Company was doing to respond to Winter Storm Quinn; information on how customers could contact the Company; information on how customers could receive text message alerts and updates from the Company; updates on the Company's damage assessment and restoration efforts; and updates on ETRs.

On Tuesday, March 6, 2018 at 11:00 a.m., the Company made an outbound call to all life-support customers to notify them of the upcoming weather and to recommend taking necessary precautions and preparations to ensure their wellbeing in the event of an outage. The outbound call also informed life-support customers to contact 911 or their local public safety officials in the event of an emergency. The Company's Customer Contact Center secured additional staffing to respond to incoming life-support calls for those affected by outages, as well as additional staff to support an expected high call volume. Outages from Winter Storm Quinn affected a total of four life-support customers. The Company continued to make proactive calls to these customers until power was restored.

E. Media

The Company activated its Public Information Officer and related support staff for the event, and participated in the Pre-Event and Restoration Stage Briefing Calls throughout the event. The Company distributed one Winter Storm Quinn-related news release on March 7, 2018, to all Rhode Island news media outlets. The Company engaged both traditional and social media channels to distribute the news releases, as well as additional Storm, restoration, and safety-related information. The Company's Strategic Communications Department fielded 19 media requests for information and interviews related to Winter Storm Quinn in Rhode Island. Overall sentiment was generally positive as feedback and comments from media outlets and social media were received and regularly monitored.

VI. CONCLUSION

Winter Storm Quinn impacted the Company's electrical system on March 7, 2018 – on the heels of restoring all customers impacted by Winter Storm Riley by the evening of March 6 – and resulted in power outages to more than 34,000 of the Company's customers. The damage to the Company's distribution infrastructure was widespread, mostly due to trees and limbs coming

into contact with the Company's poles and wires. The Company was fully prepared to respond to Winter Storm Quinn, having secured all necessary resources and outside contractors to aid in the restoration effort required for the forecast predicted.

Through use of the Company's own distribution line resources and transmission line crews, contractor distribution and transmission line crews, and contractor tree crews, the Company restored service to 90 percent of its customers impacted in less than 32 hours from the time of peak impact in a safe and expeditious manner. The Company restored the final customer by March 11 at approximately 9:30 p.m.

The Company understands the impact that electrical outages have on its customers, and is continually seeking to improve the restoration time for all outages. The Company is proud of the restoration work that it accomplished during Winter Storm Quinn, and is grateful for the support of customers, employees, state and local officials, and public safety officials, who experienced the effects of Winter Storm Quinn and were an integral part of the Company's restoration efforts.