

April 29, 2022

**VIA ELECTRONIC MAIL**

Luly E. Massaro, Commission Clerk  
Rhode Island Public Utilities Commission  
89 Jefferson Boulevard  
Warwick, RI 02888

**RE: Docket 3628 – 2021 Service Quality Report (Electric Operations)**

Dear Ms. Massaro:

On behalf of The Narragansett Electric Company d/b/a National Grid (National Grid or the Company), enclosed, please find an electronic version<sup>1</sup> of the Company's Annual Service Quality Report which assesses the quality of the Company's electric operations for the performance period of January 1, 2021 through December 31, 2021 (the 2021 Service Quality Report or Report). As indicated in the Report, the Company performance for both reliability and customer service was within acceptable levels and, as a result, the Company did not incur a penalty.

The 2021 Service Quality Report stems from the Company's electric Service Quality Plan (the SQ Plan) as approved by the Public Utilities Commission (the PUC or Commission) through Order Nos. 18294, 19020, and 22456.<sup>2</sup> The purpose of the SQ Plan is to ensure that customers receive a reasonable level of service. To this end, the SQ Plan establishes performance standards for service reliability, which includes the categories of interruption frequency and interruption duration, and for customer service, which includes the categories of customer contact and telephone calls answered. For each category, a benchmark or range representing acceptable performance is set forth. If the Company's performance falls below the acceptable range in any of the four categories, a penalty is assessed. The Company cannot earn a monetary award for exceeding expectations; however, it can accrue offsets for good performance in one category which may be used to offset a penalty incurred in the other categories. For additional details on the SQ Plan, please see Attachment 1 of the Settlement Agreement.<sup>3</sup>

---

<sup>1</sup> Per a communication from Commission counsel on October 4, 2021, the Company is submitting an electronic version of this filing followed by six (6) hard copies filed with the Clerk within 24 hours of the electronic filing.

<sup>2</sup> Through Order No. 18294, the PUC approved a Settlement Agreement between the Company and the Division of Public Utilities and Carriers (Division) which incorporated the SQ Plan to be effective January 1, 2005 (the Settlement Agreement). The SQ Plan also includes amendments made in 2007 (Order No. 19020) and 2016 (Order No. 22456).

<sup>3</sup> See [http://www.ripuc.ri.gov/eventsactions/docket/3628-NEC-Ord18294\(7-12-05\).pdf](http://www.ripuc.ri.gov/eventsactions/docket/3628-NEC-Ord18294(7-12-05).pdf)

Luly E. Massaro, Commission Clerk  
Docket 3628 – 2021 Service Quality Report  
April 29, 2022  
Page 2 of 2

For 2021, the Company did not incur a penalty. Specifically, the Company's performance fell within an acceptable range for each of the four categories, meaning there were no penalties assessed. Although not needed, the Company did not accrue any offsets for exemplary performance. For a summary of the results, please see Section 2 of the Report.

In addition, the Report: (1) References quarterly reports filed by the Company that detail the worst performing circuits; (2) References monthly reports filed by the Company that detail trouble/non-outages; (3) Calculates the Company's annual meter reading performance; and (4) Identifies Major Event Days. In accordance with the SQ Plan, Major Event Days are not factored into the Company's performance under this Report and are separately analyzed and reported. For additional details on these items, please see Section 3 of the Report.

Thank you for your attention to this filing. If you have any questions, please contact me at 401-784-4263.

Sincerely,

A handwritten signature in blue ink, appearing to read "Andrew S. Marcaccio".

Andrew S. Marcaccio

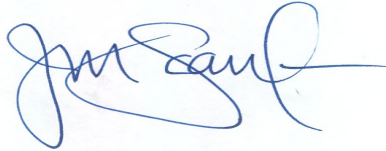
Enclosures

cc: Docket 3628 Service List  
Christy Hetherington, Esq.  
John Bell, Division

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.



\_\_\_\_\_  
Joanne M. Scanlon

April 29, 2022  
Date

**National Grid – Electric Service Quality Plan – Compliance - Docket 3628  
Service List Updated 4/29/2022**

<b>Name</b>	<b>E-mail Distribution List</b>	<b>Phone</b>
Jennifer Brooks Hutchinson Andrew Marcaccio National Grid 280 Melrose Street Providence, RI 02907-1438	<a href="mailto:jennifer.hutchinson@nationalgrid.com">jennifer.hutchinson@nationalgrid.com</a> ;	401-784-7288
	<a href="mailto:Celia.obrien@nationalgrid.com">Celia.obrien@nationalgrid.com</a> ;	
	<a href="mailto:Andrew.marcaccio@nationalgrid.com">Andrew.marcaccio@nationalgrid.com</a> ;	
	<a href="mailto:Joanne.scanlon@nationalgrid.com">Joanne.scanlon@nationalgrid.com</a> ;	
Leticia C. Pimentel, Esq. Steven J. Boyajian, Esq. Robinson & Cole LLP One Financial Plaza, 14 <sup>th</sup> Floor Providence, RI 02903	<a href="mailto:lpimentel@rc.com">lpimentel@rc.com</a> ;	401-709-3337
	<a href="mailto:Sboyajian@rc.com">Sboyajian@rc.com</a> ;	
Leo Wold, Esq. Division of Public Utilities & Carriers 89 Jefferson Boulevard Warwick, RI 02888  Tiffany Parenteau, Esq. Dept. of Attorney General Office	<a href="mailto:Leo.wold@dpuc.ri.gov">Leo.wold@dpuc.ri.gov</a> ;	
	<a href="mailto:John.bell@dpuc.ri.gov">John.bell@dpuc.ri.gov</a> ;	
	<a href="mailto:Robert.Bailey@dpuc.ri.gov">Robert.Bailey@dpuc.ri.gov</a> ;	
	<a href="mailto:Joseph.Shilling@dpuc.ri.gov">Joseph.Shilling@dpuc.ri.gov</a> ;	
	<a href="mailto:Al.contente@dpuc.ri.gov">Al.contente@dpuc.ri.gov</a> ;	
	<a href="mailto:Michelle.Barbosa@dpuc.ri.gov">Michelle.Barbosa@dpuc.ri.gov</a> ;	
	<a href="mailto:Machaela.Seaton@dpuc.ri.gov">Machaela.Seaton@dpuc.ri.gov</a> ;	
	<a href="mailto:Al.contente@dpuc.ri.gov">Al.contente@dpuc.ri.gov</a> ;	
	<a href="mailto:Paul.roberty@dpuc.ri.gov">Paul.roberty@dpuc.ri.gov</a> ;	
	<a href="mailto:Margaret.L.Hogan@ri.gov">Margaret.L.Hogan@ri.gov</a> ;	
	<a href="mailto:gschultz@riag.ri.gov">gschultz@riag.ri.gov</a> ;	
<a href="mailto:Egolde@riag.ri.gov">Egolde@riag.ri.gov</a> ;		

Gregory L. Booth, PLLC 14460 Falls of Neuse Rd. Suite 149-110 Raleigh, N. C. 27614	<a href="mailto:gboothpe@gmail.com">gboothpe@gmail.com</a> ;	919-441-6440
<b>Original &amp; 9 copies file w/:</b> Luly E. Massaro, Commission Clerk Public Utilities Commission 89 Jefferson Boulevard Warwick, RI 02888	<a href="mailto:Luly.massaro@puc.ri.gov">Luly.massaro@puc.ri.gov</a> ;	401-780-2107
	<a href="mailto:Todd.bianco@puc.ri.gov">Todd.bianco@puc.ri.gov</a> ;	
	<a href="mailto:Cynthia.WilsonFrias@puc.ri.gov">Cynthia.WilsonFrias@puc.ri.gov</a> ;	
	<a href="mailto:Alan.nault@puc.ri.gov">Alan.nault@puc.ri.gov</a> ;	
PPL Electric Utilities Ronald Reybitz Stephen Breininger	<a href="mailto:rjreybitz@pplweb.com">rjreybitz@pplweb.com</a> ;	
	<a href="mailto:skbreininger@pplweb.com">skbreininger@pplweb.com</a> ;	

The Narragansett Electric Company  
d/b/a National Grid

# **2021 Service Quality Report**

April 29, 2022

Submitted to:  
Rhode Island Public Utilities Commission  
RIPUC Docket No. 3628

Submitted by:

**nationalgrid**

**TABLE OF CONTENTS**

Section 1: Reliability and Customer Service Performance Standards ..... 1  
Section 2: Calculation of Penalty/Offset..... 5  
Section 3: Additional Reporting Criteria ..... 6

**SECTION 1**  
**RELIABILITY AND CUSTOMER SERVICE PERFORMANCE STANDARDS**

**Interruption Frequency and Duration**

Under the Service Quality Plan, an interruption is defined as the loss of electric service to more than one customer for more than one minute. The interruption duration is defined as the period of time, measured in minutes, from the initial notification of the interruption event to the time when service has been restored to the customers. Interruptions are tracked using System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI). SAIFI is calculated by dividing the total number of customers interrupted by the total number of customers served. SAIFI measures the number of times per year the average customer experienced an interruption. This is an average, so in any given year some customers will experience no interruptions, and some will experience several interruptions. SAIDI measures the length of interruption time that the average customer experienced for the year. It is calculated by dividing the total customer minutes of interruption by the total number of customers served.

Certain events are defined as Major Event Days and are excluded from the calculation of reliability performance standards for penalty and offset assessment. There were four Major Event Days that occurred during 2021. The Major Event Days are March 2, August 22, October 27, and November 13. On May 10, 2021, the Company received support from the Division of Public Utilities and Carriers (“Division”) to treat March 1-2, 2021 storm as Major Event Days under the Electric Service Quality Plan. On July 8, 2021, the Company filed a Petition with the Public Utilities Commission (“PUC”) seeking advance approval and confirmation from the PUC that March 1-2, 2021 could be treated as Major Event Days under the Electric Service Quality Plan. On January 12, 2022, the PUC found that “the Commission does not need to rule on this request and that National Grid should follow the stated terms of the Service Quality Plan when it files its Annual Report on May 1, 2022.” The Company is filing this Annual Report excluding March 2, 2021 only. However, the Company believes that it would be appropriate and consistent with the intent of the Electric Service Quality Plan and the Division’s prior handling of similar events to exclude March 1, 2021. Under either calculation, the Company would not be in a penalty position for 2021.

<u>2021 Total Frequency Standard</u>		<u>2021 Frequency (SAIFI) Results</u>	
<u>Frequency of Interruptions per Customer</u>	<u>(Penalty)/Offset</u>	<u>Frequency of Interruptions per Customer</u>	<u>Annual (Penalty)/Offset</u>
Greater than 1.18	(\$916,000)		
1.06-1.18	linear interpolation		
0.84-1.05	\$0	0.949	\$0
0.75-0.83	linear interpolation		
Less than 0.75	\$229,000		

<u>2021 Duration (SAIDI) Standard</u>		<u>2021 Duration (SAIDI) Results</u>	
<u>Duration of Interruptions</u> <u>(minutes)</u>	<u>(Penalty)/Offset</u>	<u>Duration of</u> <u>Interruptions</u> <u>(minutes)</u>	<u>Annual</u> <u>(Penalty)/Offset</u>
Greater than 89.9	(\$916,000)		
72.0-89.9	linear interpolation		
45.9-71.9	\$0	68.8	\$0
36.7-45.8	linear interpolation		
Less than 36.7	\$229,000		



**CUSTOMER SERVICE PERFORMANCE STANDARDS**

**Customer Contact Survey**

The customer contact survey results are based on responses from National Grid’s Rhode Island Electric customers from a survey performed by an independent third-party consultant, Praxis Research Partners. Praxis surveys a random sample of customers who have contacted National Grid recently to determine their level of satisfaction with their most recent contact with the Company regarding any call reason. Survey results are based on a composite measure of two questions from National Grid’s internal contactor survey: (1) Overall, on a scale from 1 to 10, where 1 means “dissatisfied”, and 10 means “satisfied”, how satisfied are you with the services provided by National Grid? (2) Overall, on a scale from 1 to 10, where 1 means “dissatisfied”, and 10 means “satisfied”, how satisfied are you with the quality of service provided by the telephone representative? The individual score for each question is the percentage of respondents who provided a rating of “8”, “9”, or “10” on a 10-point scale, where 1 means “dissatisfied”, and 10 means “satisfied”. The “percent satisfied” composite score is a simple arithmetic average of the satisfaction score from each question.

<b><u>2021 Customer Contact Standard</u></b>		<b><u>2021 Customer Contact Results</u></b>	
<u>Percent Satisfied</u>	<u>(Penalty)/Offset</u>	<u>Percent Satisfied</u>	<u>Annual (Penalty)/Offset</u>
Less than 74.4%	(\$184,000)		
74.4%-78.7%	linear interpolation		
78.8%-87.6%	\$0	85.5%	\$0
87.7%-92.0%	linear interpolation		
More than 92.0%	\$46,000		

**Telephone Calls Answered Within 20 Seconds**

The calls answered performance standard reflects the annual percentage of calls answered within 20 seconds. “Calls answered” include calls answered by a customer service representative (CSR) and calls completed within the Voice Response Unit (VRU). The time to answer is measured once the customer selects to either speak with a CSR or use the VRU.

<b><u>2021 Calls Answered Standard</u></b>		<b><u>2021 Calls Answered Results</u></b>	
<u>% Answered Within 20 Seconds</u>	<u>(Penalty)/Offset</u>	<u>% Answered Within 20 Seconds</u>	<u>Annual (Penalty)/Offset</u>
Less than 53.5%	(\$184,000)		
53.5% - 65.7%	linear interpolation		
65.8% - 90.4%	\$0	81.82%	\$0
90.5% - 100.0%	linear interpolation, to maximum of \$46,000		

**SECTION 2: CALCULATION OF PENALTY/OFFSET**

**National Grid**  
2021 Results of Service Quality Plan  
Calculation of Penalty/Offset

<u>Performance Standard</u>	<u>Potential Penalty</u> (a)	<u>Potential Offset</u> (b)	<u>2021 Results</u> (c)	<u>Maximum Penalty</u> (d)	<u>One Std Dev. Worse Than Mean</u> (e)	<u>Mean</u> (f)	<u>One Std Dev. Better Than Mean</u> (g)	<u>Maximum Offset</u> (h)	<u>Annual (Penalty)/Offset</u> (i)
Reliability - Frequency	\$ 916,000	\$ 229,000	0.95	1.18	1.05	0.94	0.84	0.75	\$0
Reliability - Duration	\$ 916,000	\$ 229,000	68.8	89.9	71.9	57.5	45.9	36.7	\$0
Customer Service - Customer Contact Survey	\$ 184,000	\$ 46,000	85.5%	74.4%	78.8%	83.2%	87.6%	92.0%	\$0
Customer Service - Telephone Calls Answered	\$ 184,000	\$ 46,000	81.8%	53.5%	65.8%	78.1%	90.4%	100.0%	\$0
Total Penalty/Offset	\$ 2,200,000	\$ 550,000							\$0

**Notes:**

Columns (a), (b), and (d)-(h) are per the Amended Electric Service Quality Plan, RIPUC Docket No. 3628.

Column (c) represents the actual 2021 annual results for the performance standards listed in the first column.

Column (i) is calculated as follows:

- For Reliability Standards:

If Column (c) is between Column (g) and Column (e): \$0

If Column (c) is between Column (h) and Column (g):  $[\text{Column (g)} - \text{Column (c)}] \div [\text{Column (g)} - \text{Column (h)}] \times \text{Column (b)}$

If Column (c) is between Column (e) and Column (d):  $[\text{Column (c)} - \text{Column (e)}] \div [\text{Column (d)} - \text{Column (e)}] \times \text{Column (a)}$

If Column (c) is greater than Column (d): 100% of Column (a)

If Column (c) is less than Column (h): 100% of Column (b)

- For Customer Service Standards:

If Column (c) is between Column (e) and Column (g): \$0

If Column (c) is between Column (g) and Column (h):  $[\text{Column (c)} - \text{Column (g)}] \div [\text{Column (e)} - \text{Column (d)}] \times \text{Column (b)}$

If Column (c) is between Column (d) and Column (e):  $[\text{Column (e)} - \text{Column (c)}] \div [\text{Column (e)} - \text{Column (d)}] \times \text{Column (a)}$

If Column (c) is less than Column (d): 100% of Column (a)

If Column (c) is greater than Column (h): 100% of Column (b)

### SECTION 3 ADDITIONAL REPORTING CRITERIA

Under the Company's Service Quality Plan, the following additional reporting criteria are required to be filed with the PUC.

1. **Reporting Requirement:** Each quarter, the Company will file a report of 5% of all circuits designated as worst performing on the basis of customer frequency. Included in the report will be:
  1. The circuit ID and location.
  2. The number of customers served.
  3. The towns served.
  4. The number of events.
  5. The average duration.
  6. The total customer minutes.
  7. A discussion of the cause or causes of events.
  8. A discussion of the action plan for improvements including timing.

**Results:** The Company filed its first quarter 2021 feeder ranking results on July 30, 2021, the second quarter results on February 17, 2022, the third quarter results on March 16, 2022, and fourth quarter results on March 29, 2022.

2. **Reporting Requirement:** The Company will track and report monthly the number of calls it receives in the category of Trouble, Non-Outage. This includes inquiries about dim lights, low voltage, half-power, flickering lights, reduced TV picture size, high voltage, frequently burned-out bulbs, motor running problems, damaged appliances and equipment, computer operation problems, and other non-interruptions related inquiries.

**Results:** The Company filed the required Trouble, Non-Outage reports during 2021, with the final report for the 13 months ended December 2021 filed on January 21, 2022.

3. **Reporting Requirement:** The Company will report its annual meter reading performance as an average of monthly percentage of meters read.

**Results:** During 2021, the Company’s annual meter reading performance (as an average of monthly percentage of meters read) was 98.6%, compared to 98.19% during 2020, and 99.15% during 2019. The following table details the percentage of meters read per month for 2021, 2020, and 2019.

**Monthly Percentage of Meters Read**

	<b>2021</b>	<b>2020</b>	<b>2019</b>
January	98.59%	99.01%	99.21%
February	98.53%	99.07%	99.23%
March	98.63%	98.72%	99.26%
April	98.70%	97.85%	99.29%
May	98.70%	97.88%	99.32%
June	98.75%	97.67%	99.29%
July	98.66%	97.92%	99.24%
August	98.36%	97.05%	99.22%
September	98.83%	98.27%	99.12%
October	98.57%	98.32%	98.70%
November	98.18%	98.38%	99.03%
December	98.69%	98.17%	98.94%
YTD Average	98.60%	98.19%	99.15%

4. **Reporting Requirement:** For each event defined as a Major Event Day, the Company will prepare a report, which will be filed annually as part of the annual Service Quality filing, detailing the following information:
1. Start date/Time of event
  2. Number/Location of crews on duty (both internal and external crews)
  3. Number of crews assigned to restoration efforts
  4. The first instance of mutual aid coordination
  5. First contact with material suppliers
  6. Inventory levels: pre-event/daily/post-event
  7. Date/Time of request for external crews
  8. Date/Time of external crew assignment
  9. # of customers out of service by hour
  10. Impacted area
  11. Cause
  12. Weather impact on restoration
  13. Analysis of protective device operation
  14. Summary of customers impacted

**Results:** IEEE Std. 1366-2012<sup>1</sup> identifies reliability performance during both day-to-day operations and Major Event Days. Major Event Days represent those few days during the year on which the energy delivery system experienced stresses beyond that normally expected, such as severe weather. A day is considered a Major Event Day if the daily SAIDI exceeds a threshold value, calculated using the IEEE methodology. For 2021 the T<sub>MED</sub> value was 6.67 minutes of SAIDI (using IEEE Std. 1366-2012 methodology). There were four days during four separate storms that exceeded this threshold in 2021. These storms occurred on March 2, August 22, October 27, and November 13. The storms are described below.

---

<sup>1</sup> RIPUC Order No 19020 refers to IEEE Std. 1366-2003. This standard has been superseded by IEEE Std. 1366-2012. The updated standard requires no changes for identifying Major Event Days or calculating thresholds.

## **March 2, 2021 Storm**

### **1. Start date/Time of event:**

The storm began at 2:00 p.m. on March 1 with scattered interruptions starting at approximately at 12:00 a.m., March 2. The storm peaked around 1:51 a.m., March 2. The peak reached 9,563 customers interrupted.

### **2. Number/Location of crews on duty (both internal and external crews):**

The Company secured 255 internal and external field crews to restore power to customers, consisting of approximately 89 external crews and 166 internal crews. The field crews included transmission and distribution overhead line, forestry, substation, and underground personnel.

### **3. Number of crews assigned to restoration efforts:**

At peak, the Company had the following crews performing restoration activities throughout the impacted areas in the State.

#### **Crew Type**

Internal Overhead Line - 137 crews  
External Overhead Line - 41 crews  
Internal Wire Down - 112 crews  
Internal Transmission - 2 crews  
Internal Underground - 25 crews  
Internal Substation - 78 crews  
Contractor Forestry - 147 crews  
Damage Appraiser - 10 crews

### **4. The first instance of mutual aid coordination:**

The first call for mutual aid coordination started at 8:30 a.m. on March 2.

### **5. First contact with material suppliers:**

The first contact with material suppliers was on March 2.

**6. Inventory levels: pre-event/daily/post-event:**

PLANT#	1107	1108	1115	1120	1101 Alloc.	Total RI LOCATION Inventory Balances
LOCATION	LINCOLN	PROVIDENCE	NORTH KINGST	MIDDLETOWN	RI Allocated Inventory Balance @ NEDC	
3/2/2021	\$ 9,985	\$ 583,926	\$ -	\$ 230,034	\$ 6,997,483	\$ 7,821,428

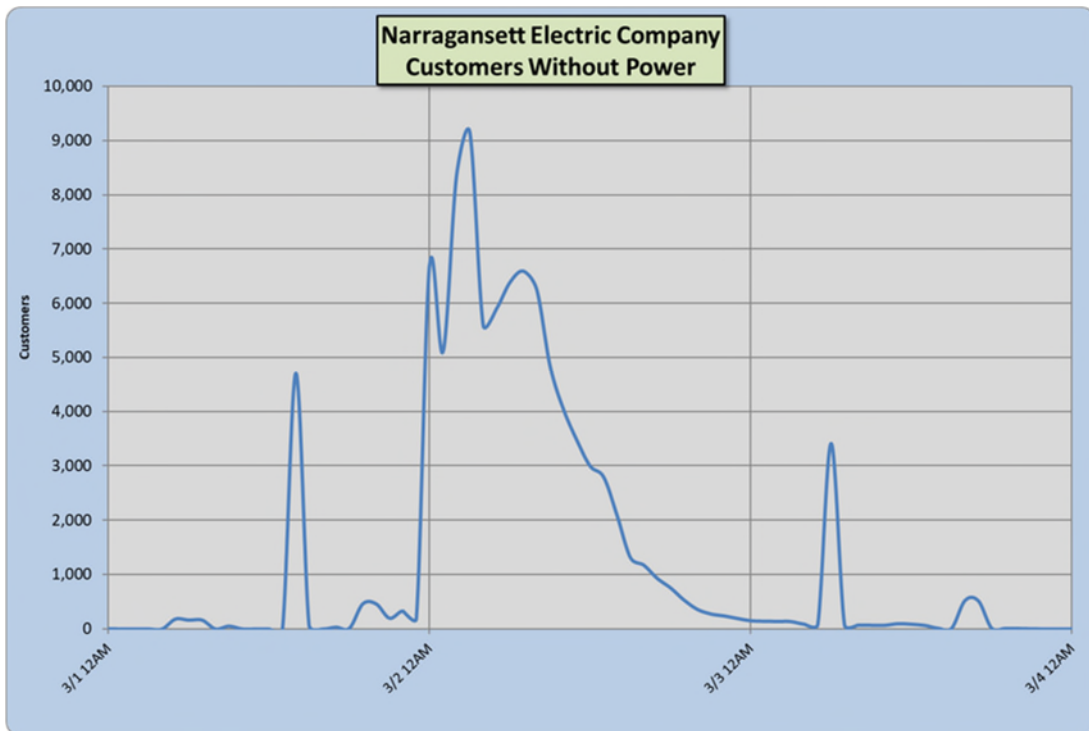
**7. Date/Time of request for external crews:**

Given the potential magnitude of the Storm and a forecast of hazardous winds, the Company secured crews in advance from its contractors of choice and other outside contractors to support restoration efforts for all New England as part of its regional preparation for the Storm, consistent with its Emergency Response Plan.

**8. Date/Time of external crew assignment:**

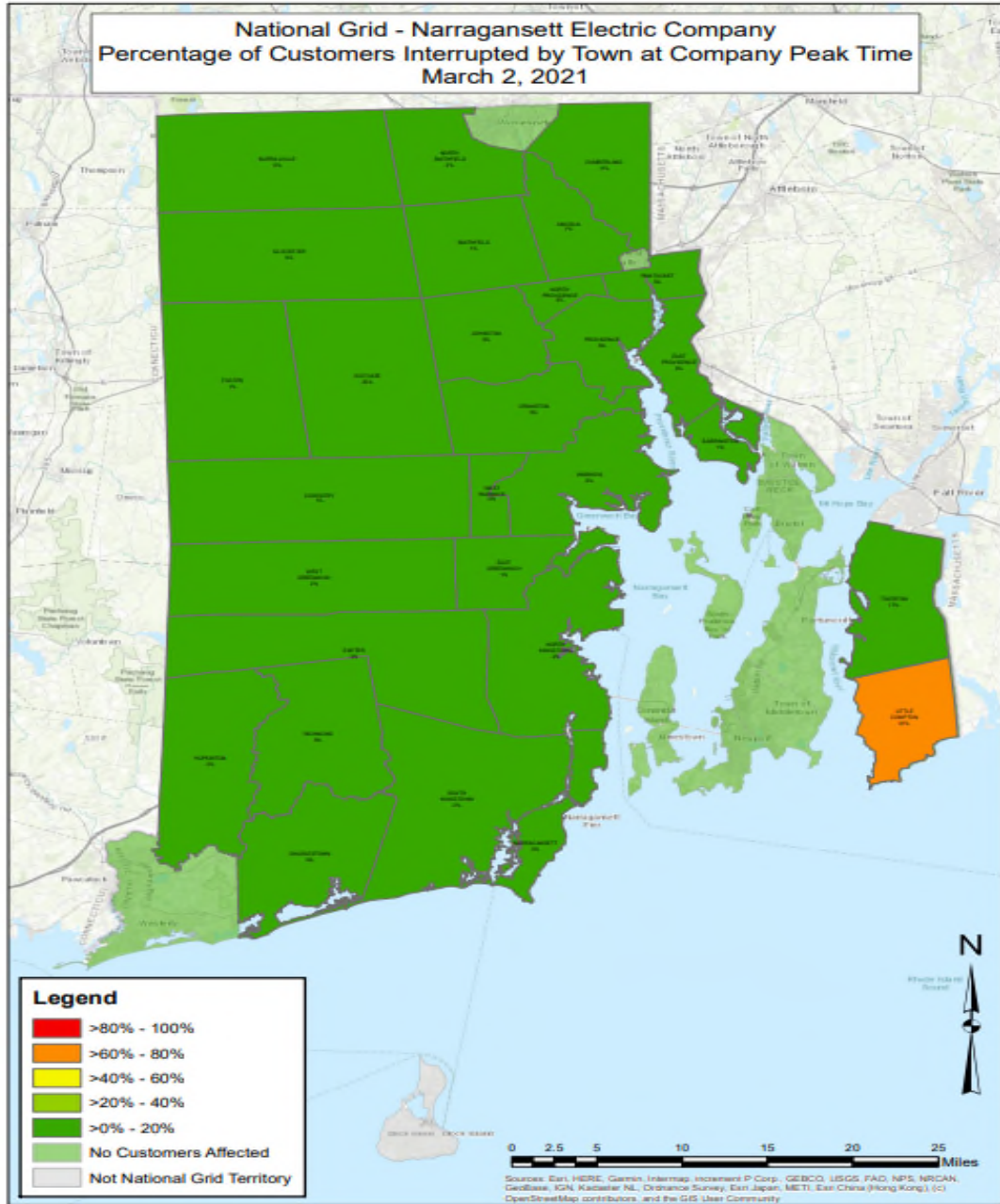
External crews were assigned to work the night shift on March 1.

**9. # of customers out of service by hour:**

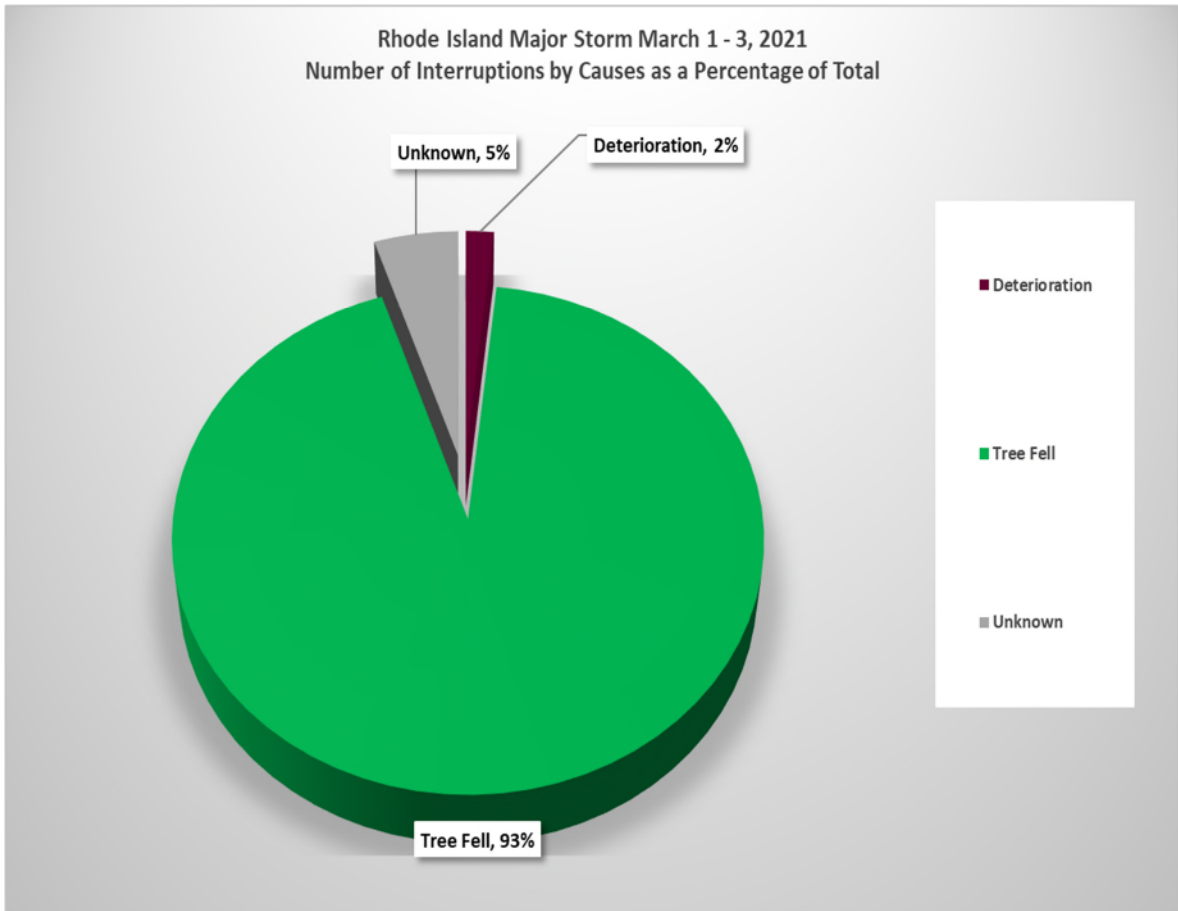




10. Impacted area:



**11. Cause:**



**12. Weather impact on restoration:**

The March 1-2, 2021 Storm was a strong weather event that resulted in significant damage to the Company's electrical system. The Storm brought a cold front with hazardous wind gusts to portions of the Company's service territory. These strong wind gusts continued from late Monday morning through much of the day on Tuesday, March 2. Peak wind gusts were generally in the 45–50 mph range, with both Newport and North Kingstown experiencing a peak gust of 53 mph. The Town of Little Compton was affected most heavily with approximately 62 percent of its customers impacted by the event.

**13. Analysis of protective device operation:**

National Grid maintains a wide array of protection and interrupting devices designed to separate faulted components from the electrical system while containing outages to the smallest area practicable. On the distribution system, those devices include fuse cutouts, reclosers, and circuit breakers of various designs. On the transmission system, interrupting devices include circuit breakers, air-break switches, and circuit switchers. Protection relays are used to detect the faults and operate the interrupting device(s) to isolate a faulted component(s).

For the distribution system, design standards exist that indicate how protection devices are to be deployed and coordinated with other devices. Distribution engineers evaluate such devices under normal and fault conditions. Where recent performance may indicate a need for improvement, National Grid performs engineering studies and makes improvements. During a major storm like this event, outages in the distribution system may be far too extensive to assess the function and coordination of individual protection devices in detail, as the focus of storm response is on service restoration. A meaningful analysis would be difficult to perform unless there were specific indications of protection equipment mis-operation.

Protection standards, guides and practices also exist and are followed in the design of the National Grid's transmission system. Post-event analysis of all interruptions in the National Grid Bulk Electric System (BES) is performed to confirm proper operation of protection systems. If an improper operation is identified, further analysis is conducted to identify the cause and to propose and implement a solution. In addition, National Grid undertakes analysis of transmission and substation protection devices and coordination where there is evidence of mis-operation.

**14. Summary of customers impacted:**

**March 1, 2021**

On March 1, Rhode Island experienced 42 interruptions that affected 18,136 customers and 1,510,836 customer minutes of interruption. On average these interruptions resulted in 0.0363 SAIFI, 3.025 minutes of SAIDI. Since a SAIDI value of 3.025 minutes does not exceed the threshold value of 6.67 minutes, March 1 is not qualified as a Major Event Day under the IEEE methodology. As noted in Section 1, on May 10, 2021, the Company received support from the Division of Public Utilities and Carriers (“Division”) to treat March 1-2, 2021 storm as Major Event Days under the Electric Service Quality Plan. On July 8, 2021, the Company filed a Petition with the Public Utilities Commission (“PUC”) seeking advance approval and confirmation from the PUC that March 1-2, 2021 could be treated as Major Event Days under the Electric Service Quality Plan. On January 12, 2022, the PUC found that “the Commission does not need to rule on this request and that National Grid should follow the stated terms of the Service Quality Plan when it files its Annual Report on May 1, 2022.” The Company is filing this Annual Report excluding March 2, 2021 only. However, the Company believes that it would be appropriate and consistent with the intent of the Electric Service Quality Plan and the Division’s prior handling of similar events to exclude March 1, 2021. Under either calculation, the Company would not be in a penalty position for 2021.

**March 2, 2021**

On March 2, Rhode Island experienced 185 interruptions that affected 16,459 customers and 4,217,391 customer minutes of interruption. On average these interruptions resulted in 0.0330 SAIFI, 8.45 minutes of SAIDI. Since a SAIDI value of 8.45 minutes exceeds the threshold value of 6.67 minutes, March 2 is qualified as a Major Event Day under the IEEE methodology.

**March 3, 2021**

On March 3, Rhode Island experienced a total of 16 interruptions that affected 4,162 customers and 74,303 customer minutes of interruption. On average these interruptions resulted in 0.008 SAIFI and 0.15 minutes of SAIDI. Since a SAIDI value of 0.15 minutes is less than the threshold value of 6.67 minutes, March 3 does not qualify as a Major Event Day under the IEEE methodology.

## **August 22, 2021 Storm Henri**

### **1. Start date/Time of event:**

The storm began in the early morning on Sunday, August 22 with scattered interruptions starting at approximately 6:00 a.m. and peaked around 2:00 p.m. on August 22. The peak reached 76,867 customers interrupted.

### **2. Number/Location of crews on duty (both internal and external crews):**

The Company secured a total of 1,022 internal and external field crews to restore power to customers, consisting of approximately 696 external crews and 326 internal crews. The field crews included transmission and distribution overhead line, forestry, substation, underground, wires down, and damage assessment personnel.

### **3. Number of crews assigned to restoration efforts:**

At peak, the Company had the following crews performing restoration activities throughout impacted areas of the State.

#### **Crew Type**

Internal Overhead Line - 206 crews

External Overhead Line - 1,108 crews

Internal Wire Down - 557 crews

Internal Transmission - 6 crews

Internal Underground - 33 crews

Internal Substation - 114 crews

Contractor Forestry - 601 crews

Internal Damage Appraiser - 75 crews

### **4. The first instance of mutual aid coordination:**

The first call for mutual aid coordination started at 6:00 p.m. on August 20.

### **5. First contact with material suppliers:**

The first contact with material suppliers was on August 22.

**6. Inventory levels: pre-event/daily/post-event:**

PLANT#	1107	1108	1115	1120	1101 Alloc.	Total RI LOCATION Inventory Balances
LOCATION	LINCOLN	PROVIDENCE	NORTH KINGST	MIDDLETOWN	RI Allocated Inventory Balance @ NEDC	
8/22/2021	\$ 9,985	\$ 420,346	\$ -	\$ 230,034	\$ 7,984,546	\$ 8,644,911

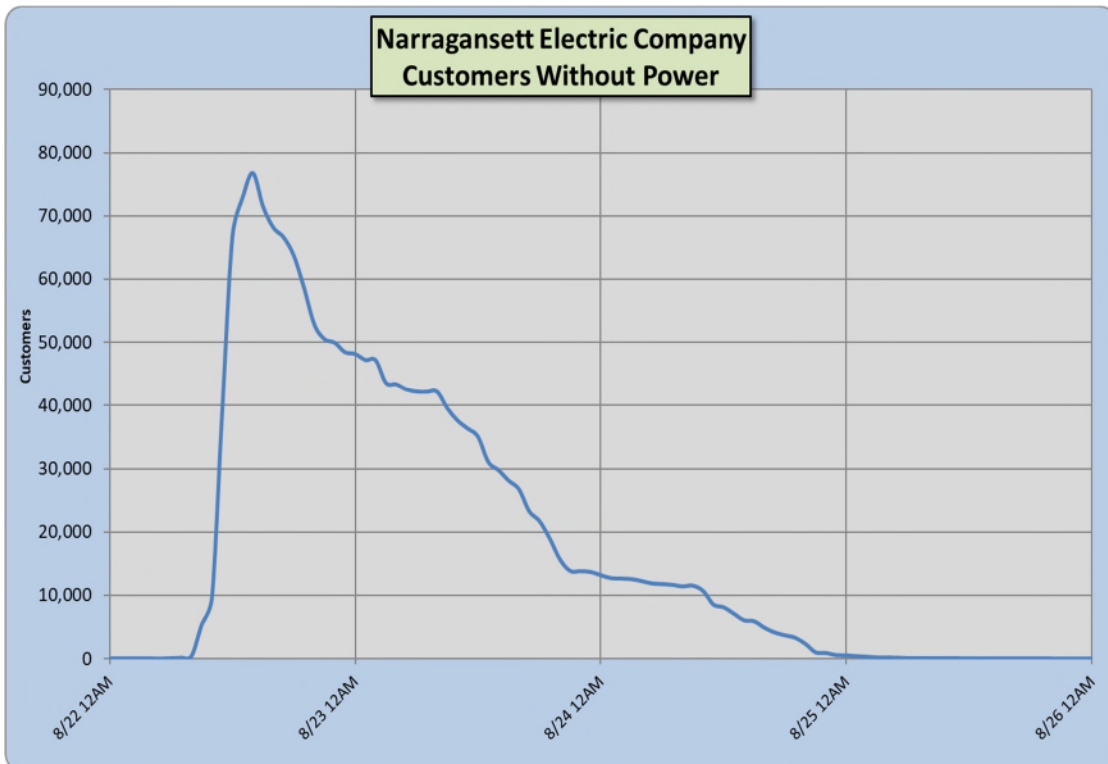
**7. Date/Time of request for external crews:**

Given the potential magnitude of the Storm and forecast of hazardous winds, the Company secured crews in advance from its contractors of choice and other outside contractors to support restoration efforts for all New England as part of its regional preparation for the Storm, consistent with its Emergency Response Plan.

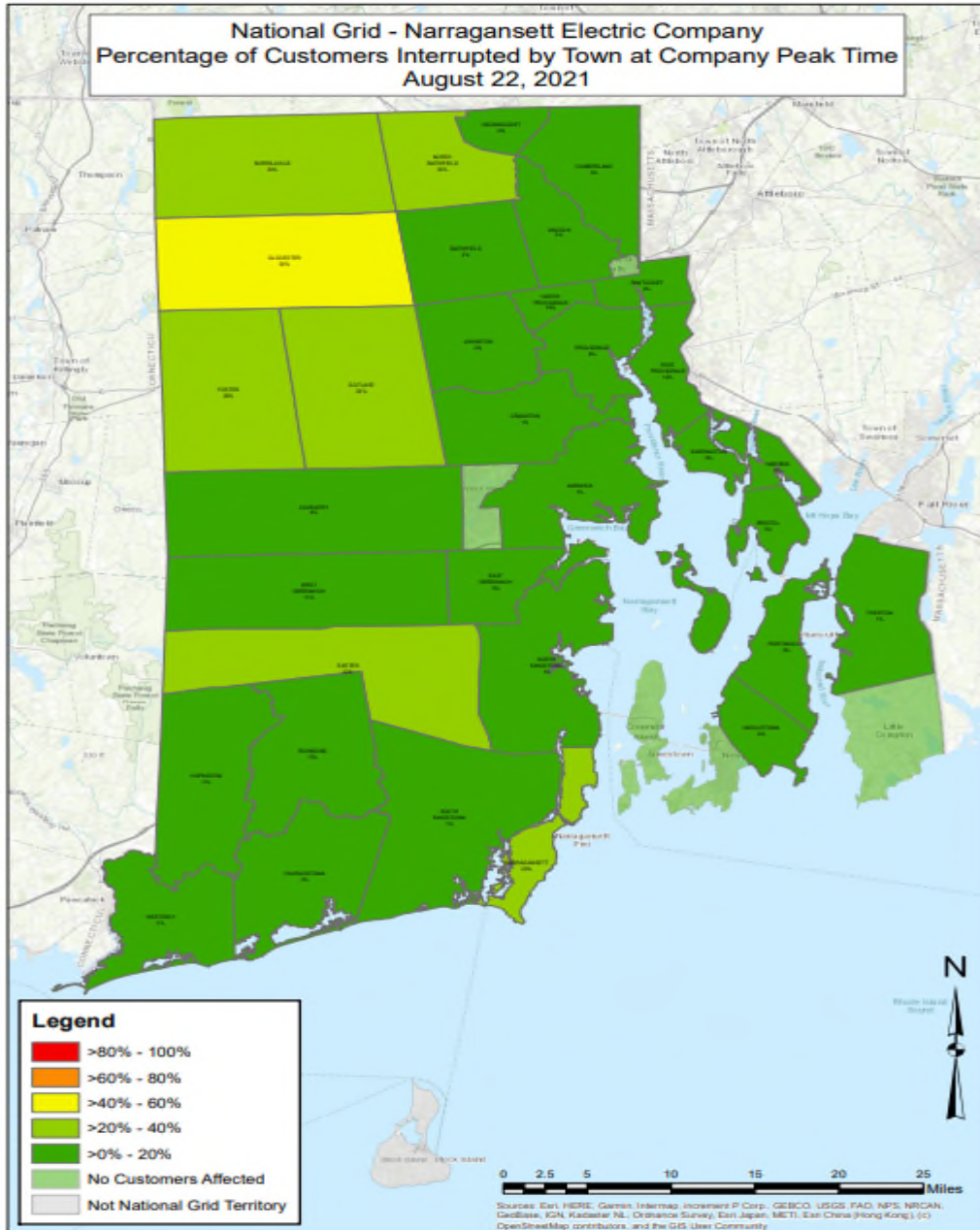
**8. Date/Time of external crew assignment:**

External crew were assigned to duty starting August 22.

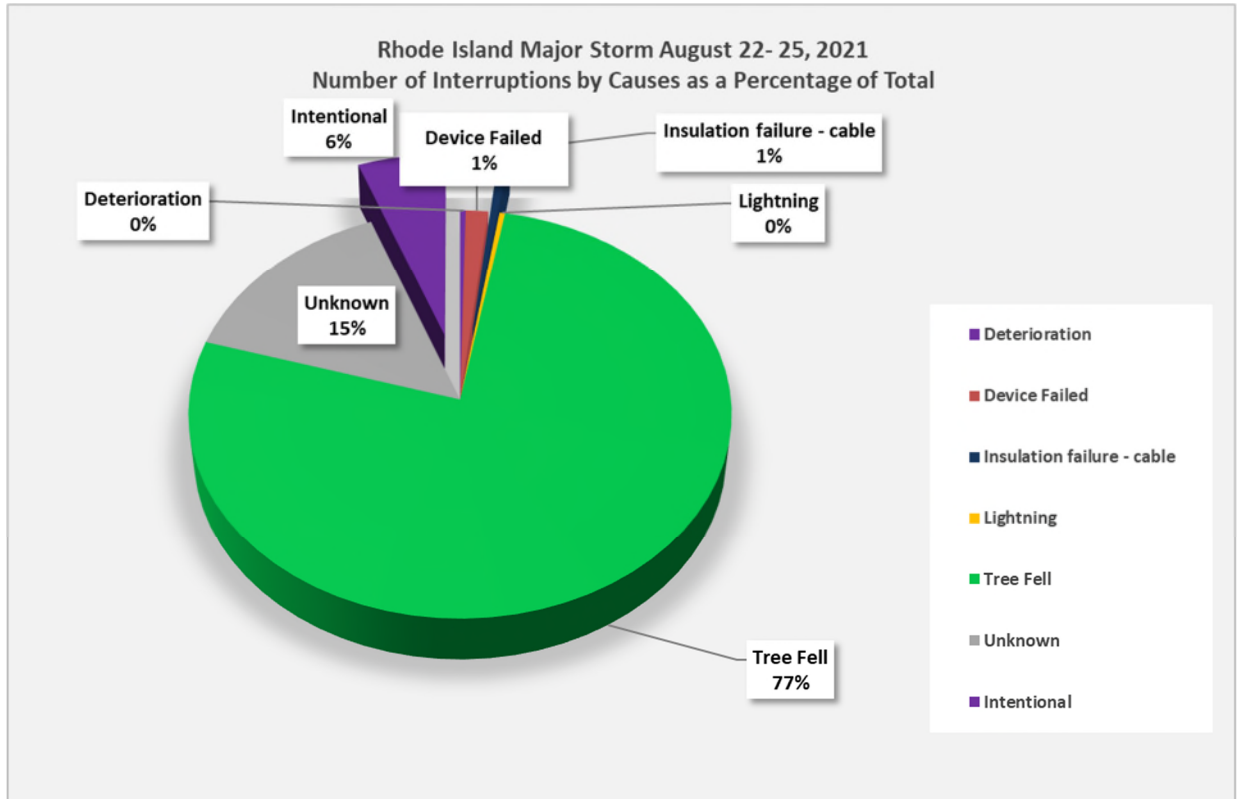
**9. # of customers out of service by hour:**



10. Impacted area:



**11. Cause:**





**12. Weather impact on restoration:**

The Storm was a major weather event that resulted in significant damage to the Company's electrical system. The Storm brought heavy rain and strong wind gusts to the Company's service territory. Peak wind gusts were generally in the 50-60 mph range, with Point Judith experiencing a peak gust of 70 mph. The Towns of South Kingstown and Coventry were affected most heavily with approximately 76 and 56 percent of customers impacted by the event, respectively.

**13. Analysis of protective device operation:**

National Grid maintains a wide array of protection and interrupting devices designed to separate faulted components from the electrical system while containing outages to the smallest area practicable. On the distribution system, those devices include fuse cutouts, reclosers, and circuit breakers of various designs. On the transmission system, interrupting devices include circuit breakers, air-break switches, and circuit switchers. Protection relays are used to detect the faults and operate the interrupting device(s) to isolate a faulted component(s).

For the distribution system, design standards exist that indicate how protection devices are to be deployed and coordinated with other devices. Distribution engineers evaluate such devices under normal and fault conditions. Where recent performance may indicate a need for improvement, National Grid performs engineering studies and makes improvements. During a major storm like this event, outages in the distribution system may be far too extensive to assess the function and coordination of individual protection devices in detail, as the focus of storm response is on service restoration. A meaningful analysis would be difficult to perform unless there were specific indications of protection equipment mis-operation.

Protection standards, guides and practices also exist and are followed in the design of the National Grid's transmission system. Post-event analysis of all interruptions in the National Grid Bulk Electric System (BES) is performed to confirm proper operation of protection systems. If an improper operation is identified, further analysis is conducted to identify the cause and to propose and implement a solution. In addition, National Grid undertakes analysis of transmission and substation protection devices and coordination where there is evidence of mis-operation.

**14. Summary of customers impacted:**

**August 22, 2021**

On August 22, Rhode Island experienced 428 interruptions that affected 94,730 customers and 105,389,853 customer minutes of interruption. On average these interruptions resulted in 0.19 SAIFI and 211.77 minutes of SAIDI. Since a SAIDI value of 211.77 minutes exceeded the threshold value of 6.67 minutes, August 22 qualified as a Major Event Day under the IEEE methodology.

**August 23, 2021**

On August 23, Rhode Island experienced 86 interruptions that affected 4,315 customers and 775,585 customer minutes of interruption. On average these interruptions resulted in 0.0087 SAIFI and 1.56 minutes of SAIDI. Since a SAIDI value of 1.56 minutes is less than the threshold value of 6.67 minutes, August 23 did not qualify as a Major Event Day under the IEEE methodology. The restoration continued on August 23.

**August 24, 2021**

On August 24, Rhode Island experienced 80 interruptions that affected 1,858 customers and 180,958 customer minutes of interruption. On average these interruptions resulted in 0.0037 SAIFI and 0.36 minutes of SAIDI. Since a SAIDI value of 0.36 minutes is less than the threshold value of 6.67 minutes, August 24 did not qualify as a Major Event Day under the IEEE methodology. The restoration continued on August 24.

**August 25, 2021**

On August 25, Rhode Island experienced 30 interruptions that affected 175 customers and 26,515 customer minutes of interruption. On average these interruptions resulted in 0.0004 SAIFI and 0.053 minutes of SAIDI. Since a SAIDI value of 0.053 minutes is less than the threshold value of 6.67 minutes, August 25 did not qualify as a Major Event Day under the IEEE methodology. The restoration continued on August 25.

## **October 27, 2021 Storm**

### **1. Start date/Time of event:**

The storm began at 10:00 p.m. on October 26 with scattered interruptions starting at approximately 1:00 a.m. and peaked around 8:44 a.m. on October 27. The peak reached 83,524 customers interrupted.

### **2. Number/Location of crews on duty (both internal and external crews):**

The Company secured 532 internal and external field crews to restore power to customers, consisting of approximately 316 external crews and 216 internal crews. The field crews included transmission and distribution overhead line, forestry, substation, underground, wires down and damage assessment personnel.

### **3. Number of crews assigned to restoration efforts:**

At peak, the Company had the following crews performing restoration activities throughout the impacted areas in the State.

#### **Crew Type**

Internal Overhead Line - 305 crews

External Overhead Line - 748 crews

Internal Wire Down - 300 crews

Internal Transmission - 5 crews

Internal Underground - 60 crews

Internal Substation - 178 crews

Contractor Forestry - 453 crews

Internal Damage Appraiser - 170 crews

### **4. The first instance of mutual aid coordination:**

The first call for mutual aid coordination was at 10:30 a.m. on October 26.

### **5. First contact with material suppliers:**

The first contact with material suppliers was on October 27.

**6. Inventory levels: pre-event/daily/post-event:**

PLANT#	1107	1108	1115	1120	1101 Alloc.	Total RI LOCATION Inventory Balances
LOCATION	LINCOLN	PROVIDENCE	NORTH KINGST	MIDDLETOWN	RI Allocated Inventory Balance @ NEDC	
10/27/2021	\$ 9,985	\$ 375,179	\$ -	\$ 221,263	\$ 7,890,922	\$ 8,497,349

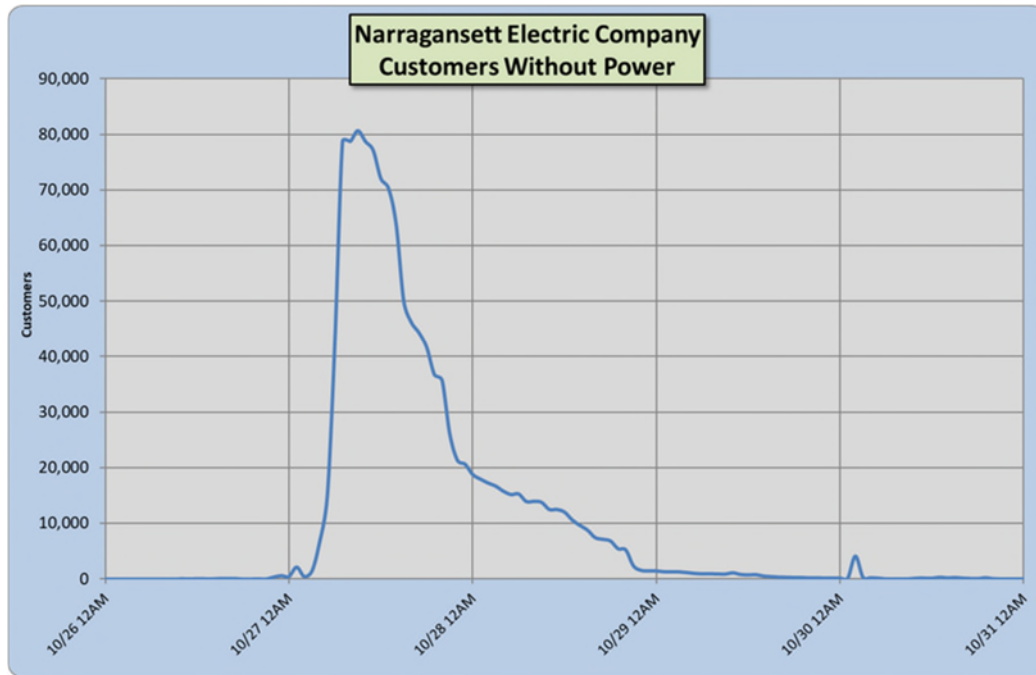
**7. Date/Time of request for external crews:**

The Company requested mutual assistance from companies in the North Atlantic Mutual Assistance Group (“NAMAG”) to support restoration for this event. The first North Atlantic Mutual Assistance Group call was at 10:30 a.m. on October 26.

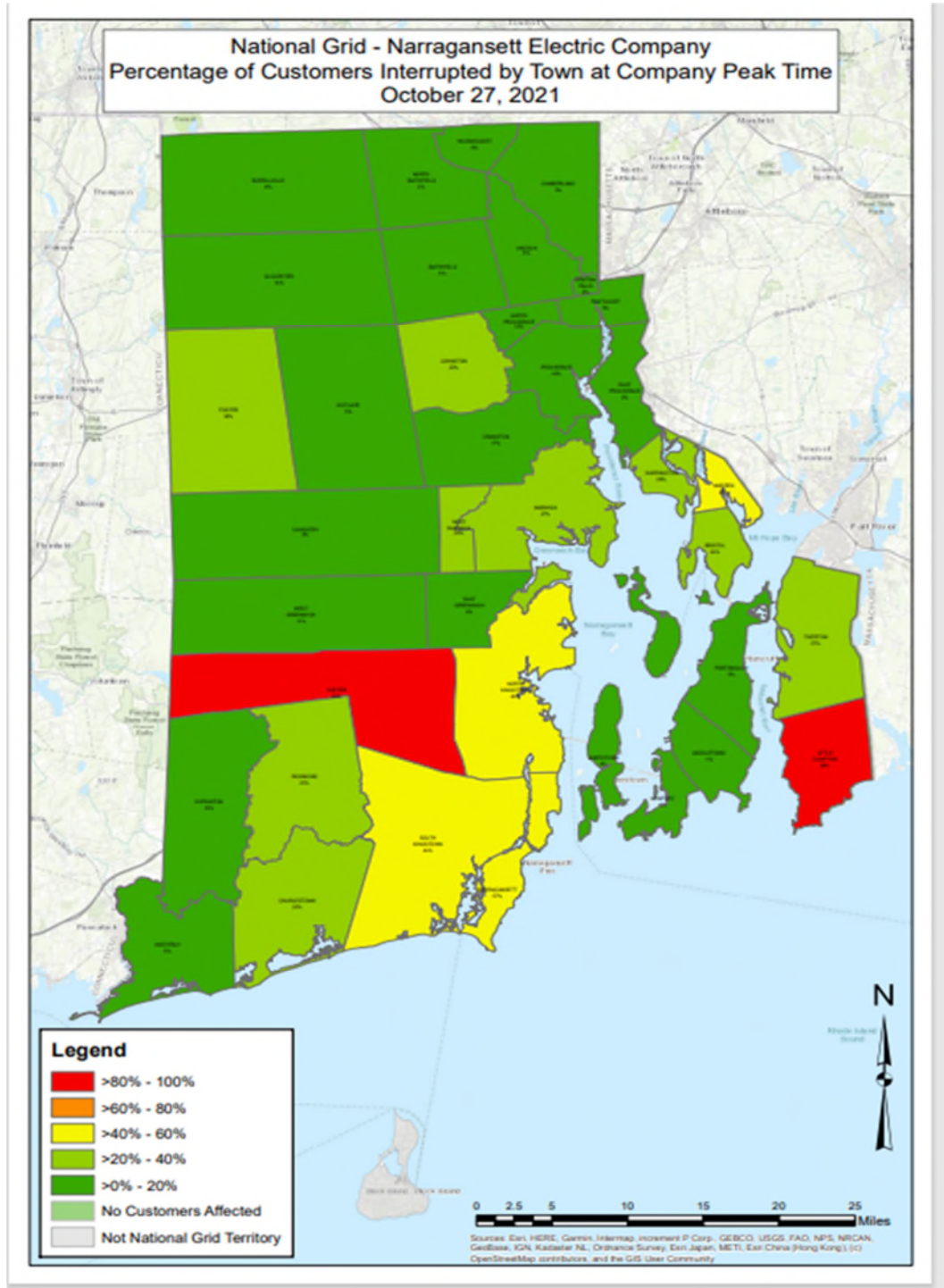
**8. Date/Time of external crew assignment:**

Mutual Assistance was assigned to duty starting October 26.

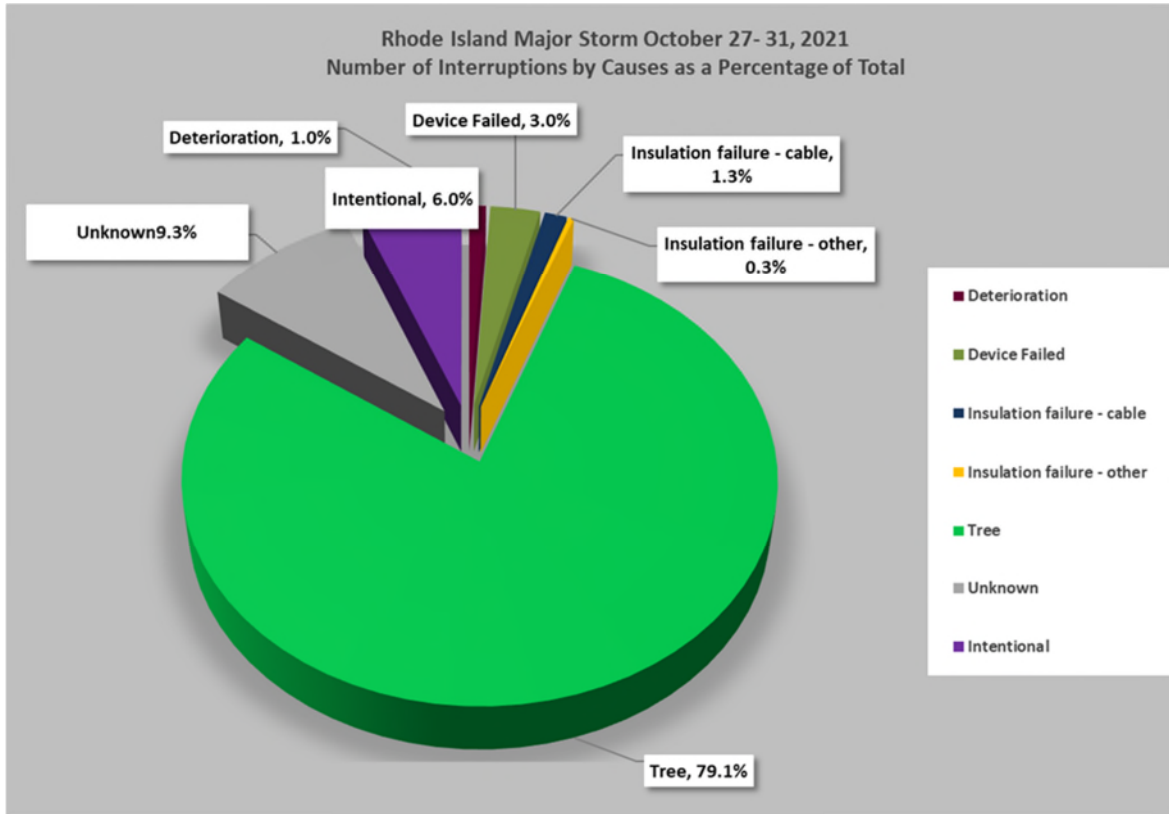
**9. # of customers out of service by hour:**



10. Impacted area:



11. Cause:



**12. Weather impact on restoration:**

The Storm was a major weather event that resulted in significant damage to the Company's electrical system. The Storm brought heavy rain and strong wind gusts to the Company's service territory. Peak wind gusts were generally in the 50-60 mph range, with Block Island experiencing a peak gust of 73 mph. The Towns of Little Compton and Narragansett were affected most heavily with approximately 100% percent of customers impacted by the event.

**13. Analysis of protective device operation:**

National Grid maintains a wide array of protection and interrupting devices designed to separate faulted components from the electrical system while containing outages to the smallest area practicable. On the distribution system, those devices include fuse cutouts, reclosers, and circuit breakers of various designs. On the transmission system, interrupting devices include circuit breakers, air-break switches, and circuit switchers. Protection relays are used to detect the faults and operate the interrupting device(s) to isolate a faulted component(s).

For the distribution system, design standards exist that indicate how protection devices are to be deployed and coordinated with other devices. Distribution engineers evaluate such devices under normal and fault conditions. Where recent performance may indicate a need for improvement, National Grid performs engineering studies and makes improvements. During a major storm like this event, outages in the distribution system may be far too extensive to assess the function and coordination of individual protection devices in detail, as the focus of storm response is on service restoration. A meaningful analysis would be difficult to perform unless there were specific indications of protection equipment mis-operation.

Protection standards, guides and practices also exist and are followed in the design of the National Grid's transmission system. Post-event analysis of all interruptions in the National Grid Bulk Electric System (BES) is performed to confirm proper operation of protection systems. If an improper operation is identified, further analysis is conducted to identify the cause and to propose and implement a solution. In addition, National Grid undertakes analysis of transmission and substation protection devices and coordination where there is evidence of mis-operation.

**14. Summary of customers impacted:**

**October 26, 2021**

On October 26, Rhode Island experienced 44 interruptions that affected 1,260 customers and 246,650 customer minutes of interruption. On average these interruptions resulted in 0.0025 SAIFI and 0.49 minutes of SAIDI. Since a SAIDI value of 0.49 minutes is less than the threshold value of 6.67 minutes, October 26 did not qualify as a Major Event Day under the IEEE methodology.

**October 27, 2021**

On October 27, Rhode Island experienced 528 interruptions that affected 113,718 customers and 75,911,178 customer minutes of interruption. On average these interruptions resulted in 0.227 SAIFI and 151.78 minutes of SAIDI. Since a SAIDI value of 151.78 minutes exceeds the threshold value of 6.67 minutes, October 27 qualified as a Major Event Day under the IEEE methodology.

**October 28-30, 2021**

On October 28, Rhode Island experienced 81 interruptions that affected 1,501 customers and 516,742 customer minutes of interruption. On average these interruptions resulted in 0.003 SAIFI and 1.03 minutes of SAIDI. Since a SAIDI value of 1.03 minutes is less than the threshold value of 6.67 minutes, October 28 did not qualify as a Major Event Day under the IEEE methodology. The restoration continued on October 29 and October 30, although neither day qualified as a Major Event Day.



## **November 13, 2021 Storm**

### **1. Start date/Time of event:**

The storm began early morning on Saturday, November 13 with scattered interruptions starting at approximately 10:00 a.m. and peaked around 5:48 p.m. The peak reached 11,268 customers interrupted.

### **2. Number/Location of crews on duty (both internal and external crews):**

The Company secured 287 internal and external field crews to restore power to customers, consisting of approximately 71 external crews and 216 internal crews. The field crews included transmission and distribution overhead line, forestry, substation, underground, wires down.

### **3. Number of crews assigned to restoration efforts:**

At peak, the Company had the following crews performing restoration activities throughout the impacted areas in the State.

#### **Crew Type**

Internal Overhead Line - 183 crews  
External Overhead Line - 119 crews  
Internal Wire Down - 150 crews  
Internal Transmission - 3 crews  
Internal Underground - 33 crews  
Internal Substation - 100 crews  
Contractor Forestry - 90 crews

### **4. The first instance of mutual aid coordination:**

No mutual aid was called for this storm.

### **5. First contact with material suppliers:**

The first contact with material suppliers started on November 13.

**6. Inventory levels: pre-event/daily/post-event:**

PLANT#	1107	1108	1115	1120	1101 Alloc.	Total RI LOCATION Inventory Balances
LOCATION	LINCOLN	PROVIDENCE	NORTH KINGST	MIDDLETOWN	RI Allocated Inventory Balance @ NEDC	
11/13/2021	\$ 9,985	\$ 639,792	\$ -	\$ 221,263	\$ 8,169,082	\$ 9,040,122

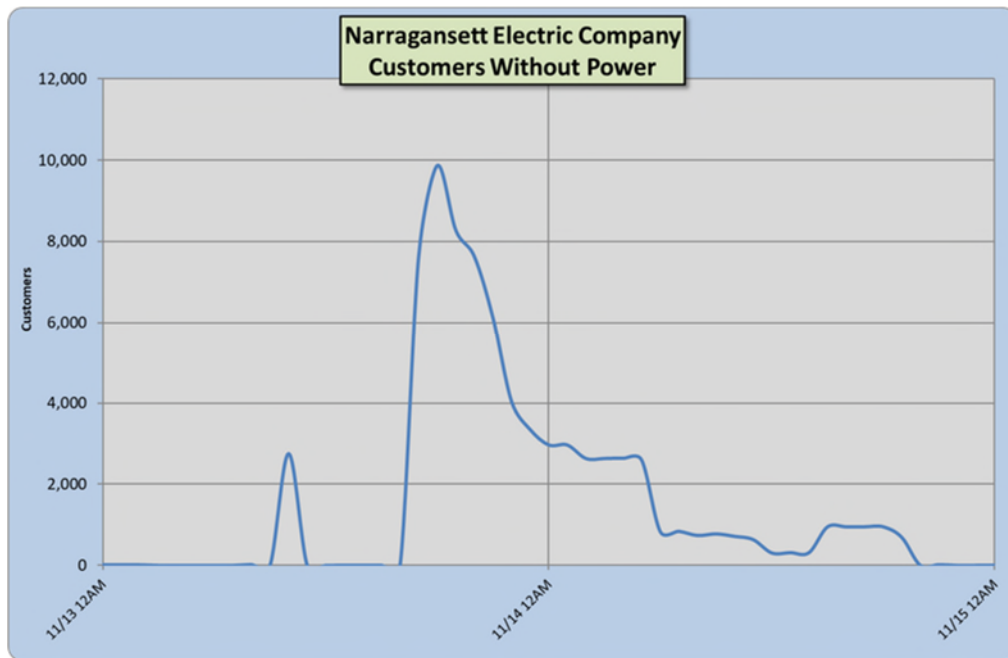
**7. Date/Time of request for external crews:**

The Company did not request mutual assistance from companies in the North Atlantic Mutual Assistance Group (“NAMAG”) to support restoration for this event. The Company requested external crews on November 10.

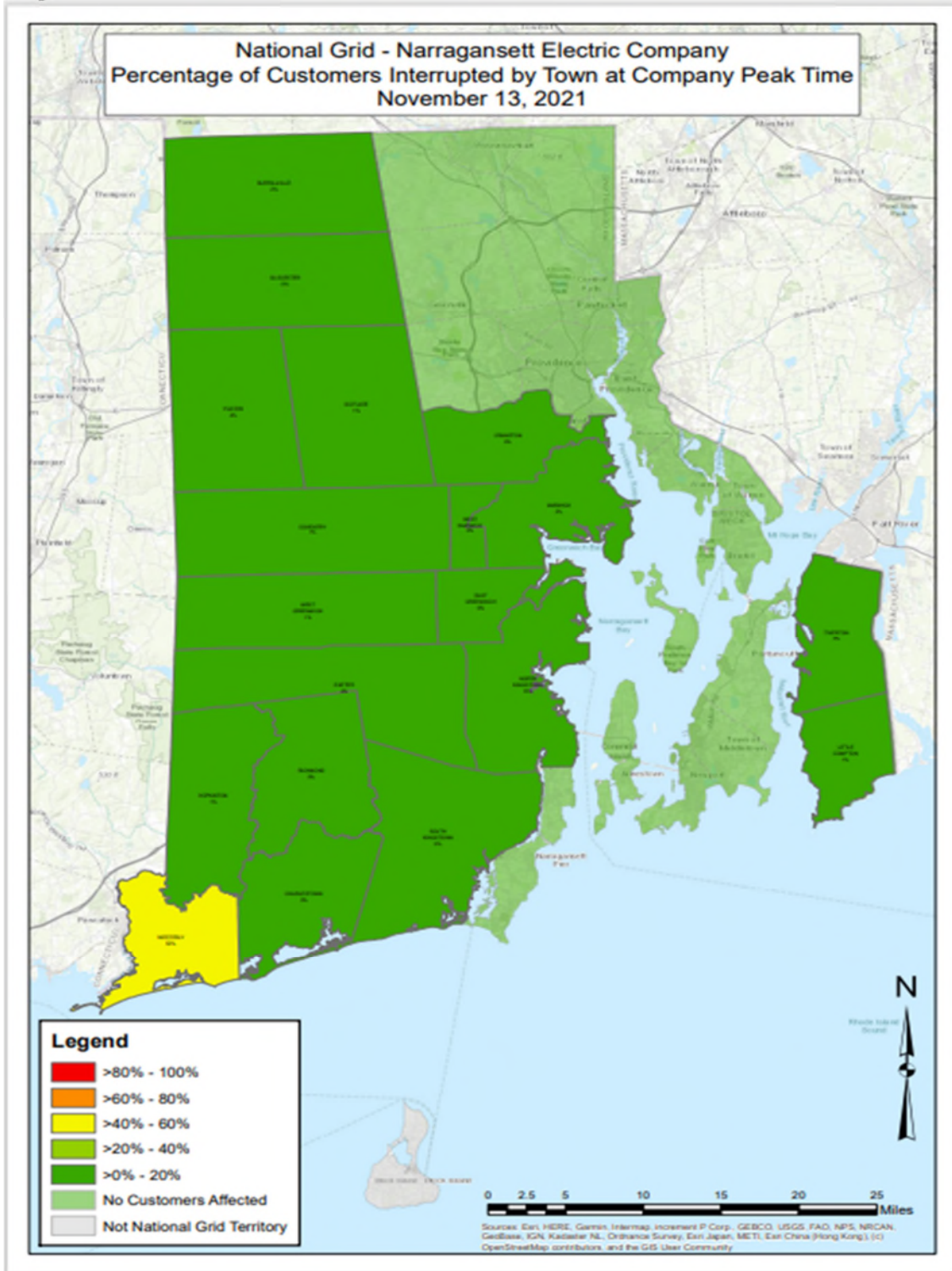
**8. Date/Time of external crew assignment:**

External crews were assigned to work starting November 12.

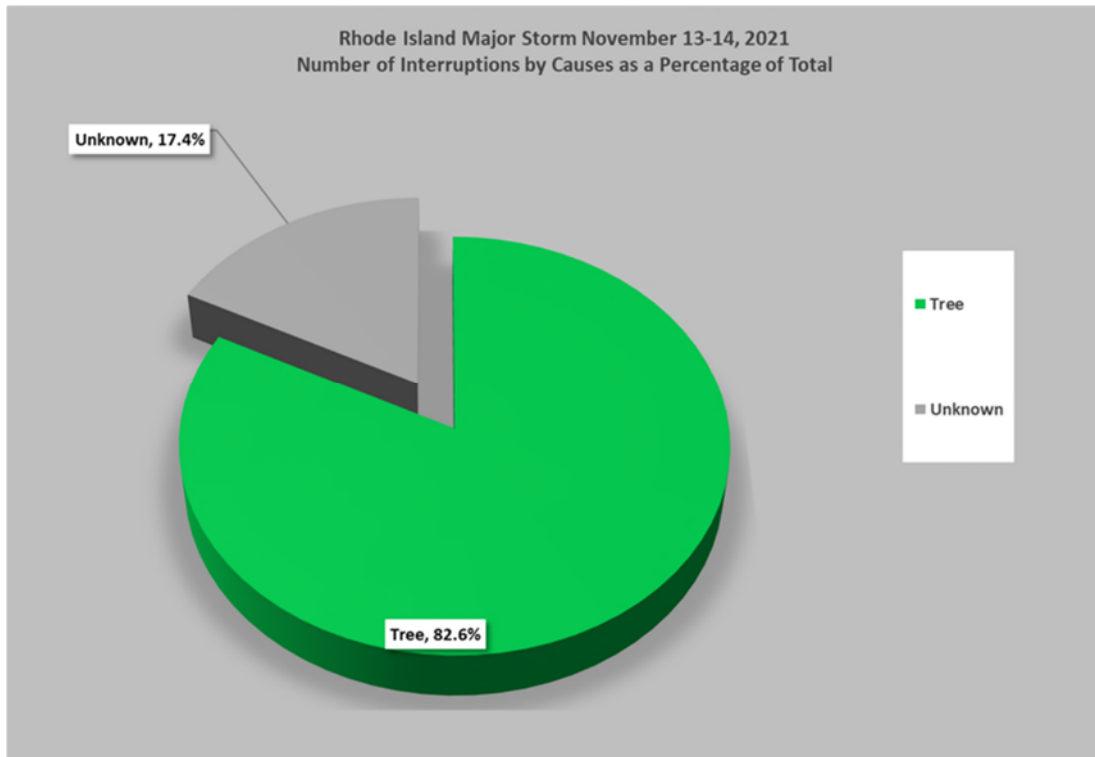
**9. # of customers out of service by hour:**



10. Impacted area:



**11. Cause:**



**12. Weather impact on restoration:**

The Storm was a moderate weather event that resulted in significant damage to the Company's electrical system. The Storm brought rain and strong wind gusts to the Company's service territory. The Storm also brought three tornadoes that touched down in Rhode Island (first recorded tornadoes in November in Rhode Island since at least 1950, according to NWS Boston, which services Rhode Island) demonstrating the uniqueness and intensity of the front. Peak wind gusts were generally in the 45-50 mph range, with Conimicut Point experiencing a peak gust of 59 mph. The Town of Westerly was affected most heavily with approximately 72 percent of customers impacted.

**13. Analysis of protective device operation:**

National Grid maintains a wide array of protection and interrupting devices designed to separate faulted components from the electrical system while containing outages to the smallest area practicable. On the distribution system, those devices include fuse cutouts, reclosers, and circuit breakers of various designs. On the transmission system, interrupting devices include circuit breakers, air-break switches, and circuit switchers. Protection relays are used to detect the faults and operate the interrupting device(s) to isolate a faulted component(s).

For the distribution system, design standards exist that indicate how protection devices are to be deployed and coordinated with other devices. Distribution engineers evaluate such devices under normal and fault conditions. Where recent performance may indicate a need for improvement, National Grid performs engineering studies and makes improvements. During a major storm like this event, outages in the distribution system may be far too extensive to assess the function and coordination of individual protection devices in detail, as the focus of storm response is on service restoration. A meaningful analysis would be difficult to perform unless there were specific indications of protection equipment mis-operation.

Protection standards, guides and practices also exist and are followed in the design of the National Grid's transmission system. Post-event analysis of all interruptions in the National Grid Bulk Electric System (BES) is performed to confirm proper operation of protection systems. If an improper operation is identified, further analysis is conducted to identify the cause and to propose and implement a solution. In addition, National Grid undertakes analysis of transmission and substation protection devices and coordination where there is evidence of mis-operation.

**14. Summary of customers impacted:**

**November 13, 2021**

On November 13, Rhode Island experienced 67 interruptions that affected 15,312 customers and 4,207,206 customer minutes of interruption. On average these interruptions resulted in 0.030 SAIFI and 8.4 minutes of SAIDI. Since a SAIDI value of 8.4 minutes exceeds the threshold value of 6.67 minutes, November 13 qualified as a Major Event Day under the IEEE methodology.

**November 14, 2021**

On November 14, Rhode Island experienced 20 interruptions that affected 193 customers and 30,664 customer minutes of interruption. On average these interruptions resulted in 0.0004 SAIFI and 0.15 minutes of SAIDI. Since a SAIDI value of 0.15 minutes is less than the threshold value of 6.67 minutes, November 14 does not qualify as a Major Event Day under the IEEE methodology.