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March 1, 2021

Debra Howland  
Executive Director  
New Hampshire Public Utilities Commission  
21 South Fruit Street, Suite 10  
Concord, NH 03301-2429

RE: Docket No. DE 21-XXX  
Public Service Company of New Hampshire d/b/a Eversource Energy  
2021 Regulatory Reconciliation Adjustment

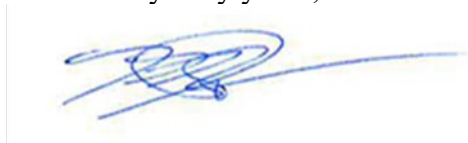
Dear Director Howland:

Pursuant to Section 9 of the October 9, 2020 settlement agreement on permanent rates which was approved by Order No. 25,433 on December 15, 2020 in Docket No. DE 19-057, by March 1 of each year Public Service Company of New Hampshire d/b/a Eversource Energy (“Eversource”) is to submit a filing containing reports its reliability statistics and vegetation management activities, and request the Commission open a new docket to consider the filing and other issues as part of the Regulatory Reconciliation Adjustment (“RRA”). Thereafter, on or by May 1 of each year, the Company is to update its RRA filing with information pertaining to all other components of the RRA filing, along with supporting testimony and exhibits for rates effective August 1 of that year.

Accordingly, enclosed for filing are the required reports on reliability statistics and vegetation management activities consistent with the settlement. Included with the enclosed are the testimony and supporting information of Lee G. Lajoie and Robert D. Allen, providing the relevant information and explanations of the Company’s reliability performance and vegetation management activities in calendar year 2020. Eversource requests that the Commission open a new docket to consider these matters in a manner that they will be complete in time for adjusted rates to be effective as of August 1 and provided in the Settlement.

If you have any questions, please do not hesitate to contact me. Thank you for your assistance with this matter.

Very truly yours,



Matthew J. Fossum  
Senior Regulatory Counsel

Enclosures  
CC: Office of Consumer Advocate

**STATE OF NEW HAMPSHIRE**  
**before the**  
**PUBLIC UTILITIES COMMISSION**

**Public Service Company of New Hampshire d/b/a Eversource Energy**

**2021 Regulatory Reconciliation Adjustment Mechanism Rate**

**Docket No. DE 21-XXX**

**PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE D/B/A EVERSOURCE**  
**ENERGY'S PETITION FOR APPROVAL OF CHANGE IN REGULATORY**  
**RECONCILIATION ADJUSTMENT MECHANISM RATE**

Pursuant to N.H. Code Admin. Rule Puc 202.01 and Puc 203.06, Public Service Company of New Hampshire d/b/a Eversource Energy (“Eversource” or the “Company”) petitions the Commission to establish a revised Regulatory Reconciliation Adjustment Mechanism (“RRA”) rate for effect on August 1, 2021. In support of this Petition, Eversource states as follows:

1. On March 22, 2019, Eversource filed with the Commission a Notice of Intent to File Rate Schedules pursuant to N.H. Code Admin. Rule Puc 1604.05 pertaining to a request for temporary rates in Docket No. DE 19-057. On April 26, 2019, the Company filed with the Commission proposed tariffs and rate schedules, testimony, attachments and other information supporting that request as well as a Notice of Intent to File Rate Schedules pertaining to its request for permanent rates. On May 28, 2019, the Company submitted its permanent rate filing.
2. Following discovery and a technical session, on June 13, 2019, Eversource filed a settlement agreement on temporary rates and on June 27, 2019, the Commission issued Order No. 26,265 approving that settlement agreement.
3. On June 28, 2019, the Commission approved an initial procedural schedule for adjudication of the Company’s permanent rate request that anticipated Commission order by

May 20, 2020. On March 24, 2020, the Staff filed a letter in the docket describing the status of the matter and the agreement of the Company to a three-month extension of the procedural schedule to account for the state of emergency declared by Governor Sununu on March 13, 2020, regarding the COVID-19 pandemic. On April 24, 2020, Governor Sununu issued Exhibit D to Executive Order #29, pursuant to Executive Order 2020-04, extending the Commission's authority to suspend rate schedules by six months, from 12 to 18 months. During this extension the Commission suspended Eversource's permanent rate schedule for an additional 6 months and directed Eversource to file supplemental testimony.

4. In the weeks prior to and following the Commission's order extending the suspension period, the Company, Staff and OCA engaged in settlement discussions, which were subsequently expanded to include additional intervenors. Based upon these discussions, a comprehensive settlement (the "Settlement") was reached between all parties to the docket and hearings on that settlement were held on October 26, 27 and 29, 2020. On December 15, 2020, the Commission issued Order No. 25,433 approving the Settlement.

5. The Settlement established the RRA as a means for the Company to request recovery or refund of a limited set of costs identified specifically in the Settlement. The RRA is a component of the Company's distribution rate and, pursuant to the Settlement, is adjusted annually to account for any over or under recoveries occurring in prior year(s). Under the Settlement, the identified classes of costs included in the RRA are: (1) Regulatory Commission annual assessments and consultants hired or retained by the Commission and Office of Consumer Advocate; (2) calendar year over- or under-collections from the Company's Vegetation Management Program ("VMP"); (3) Property tax expenses, as compared to the

amount in base rates; (4) Lost-base distribution revenues associated with net metering; and (5) Storm cost amortization final reconciliation and annual reconciliation.

6. As described in Section 9.3 of the Settlement, by March 1 of each year the Company is to submit a filing containing reports on the Company's reliability statistics and vegetation management activities, and request the Commission open a new docket to consider the filing and other RRA issues. Thereafter, on or by May 1 of each year, the Company is to update its RRA filing with information pertaining to all other components of the RRA filing, along with supporting testimony and exhibits for rates effective August 1 of that year.

7. By this Petition, Eversource is providing the required reports on its reliability statistics and vegetation management activities consistent with the Settlement. Included with this petition are the testimony and supporting information of Lee G. Lajoie, the Company's Manager of System Resiliency, and Robert D. Allen, the Company's Manager of Vegetation Management, providing the relevant information and explanations of the Company's reliability performance and VMP activities in calendar year 2020.

8. The remaining components of the RRA shall be filed on or by May 1, 2021 consistent with the Settlement. Eversource requests that the Commission undertake its review as necessary and appropriate to assure that the review will be complete in time for adjusted rates to be effective as of August 1 and provided in the Settlement.

WHEREFORE, Eversource's respectfully requests that the Commission:

- A. Open a docket to review and approve Eversource's proposed RRA rate change;
- B. Commence any required review of the components of the RRA to assure approval for rates effective August 1, 2021; and
- C. Grant such further relief as is just and equitable.

Respectfully submitted,  
Public Service Company of New Hampshire d/b/a Eversource Energy  
By Its Attorney



Dated: March 1, 2021

By: \_\_\_\_\_

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**STATE OF NEW HAMPSHIRE**  
**BEFORE THE**  
**NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION**

**DOCKET NO. DE 21-XXX**  
**REGULATORY RECONCILIATION ADJUSTMENT**

**Vegetation Management and Reliability Reports**

**DIRECT TESTIMONY OF**  
**ROBERT D. ALLEN and LEE G. LAJOIE**

**On behalf of Public Service Company of New Hampshire**  
**d/b/a Eversource Energy**

**March 1, 2021**

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**STATE OF NEW HAMPSHIRE**  
**BEFORE THE NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION**

**DIRECT TESTIMONY OF**  
**ROBERT D. ALLEN and LEE G. LAJOIE**

**REGULATORY RECONCILIATION ADJUSTMENT**

**Vegetation Management and Reliability Reports**

**March 1, 2021**

**Docket No. DE 21-XXX**

---

1 **I. INTRODUCTION**

2 **Q. Mr. Allen, please state your full name, position and business address.**

3 A. My name is Robert D. Allen. I am employed by Eversource Energy Service  
4 Company as Manager of Vegetation Management and in that role I provide support  
5 to Public Service Company of New Hampshire d/b/a Eversource Energy  
6 (“Eversource” or the “Company”). My business address is 780 N. Commercial  
7 Street Manchester, NH 03105.

8 **Q. Please summarize your educational background.**

9 A. I have an Associate of Science in Arboriculture from Stockbridge School of  
10 Agriculture, University of Massachusetts Amherst, MA

11 **Q. Please summarize your professional experience.**

12 A. I was appointed to my current position at Eversource Energy in August 2013. From



1 2009 to 2013, I held the position of Supervisor of Vegetation Management for the  
2 Company. From 1992 to 2009, I was Arborist for The Connecticut Light and Power  
3 Company. Overall, I have approximately 40 years of experience in Arboriculture.

4 **Q. Have you previously testified before the Commission?**

5 A. Yes, I have testified before the New Hampshire Public Utilities Commission (the  
6 “Commission”) before, in Eversource’s last Reliability Enhancement Program  
7 (“REP”) submission in Docket No. DE 18-177 and in Eversource’s recent rate case  
8 in Docket No. DE 19-057.

9 **Q. Mr. Lajoie, please state your full name, position and business address.**

10 A. My name is Lee G. Lajoie. I am employed by Eversource Energy Service Company  
11 as Manager of System Resiliency. My business address is 780 North Commercial  
12 Street, Manchester, New Hampshire.

13 **Q. What are your principal responsibilities in this position?**

14 A. As the Manager of System Resiliency, I am responsible for the Company’s capital  
15 budgeting process. In recent years, I have also had responsibility for the REP plan,  
16 which supported up to \$40 million of capital investment annually targeted at  
17 reliability projects. As that program has matured and tapered off, I have taken on  
18 broader responsibility for the capital budgeting process going forward. In addition,  
19 there are two internal groups that report to me, which are the reliability reporting  
20 group and the distribution automation group.

1 **Q. Please summarize your professional experience and educational background.**

2 A. I graduated from Northeastern University in Boston, Massachusetts in 1985 with a  
3 Bachelor of Science in Electrical and Computer Engineering, Power Systems, and  
4 from Southern New Hampshire University in Manchester, New Hampshire in 2016  
5 with a Master of Business Administration degree. Upon graduation from  
6 Northeastern University, I was hired by Public Service Company of New  
7 Hampshire (now Eversource) and have held various positions in Distribution  
8 Engineering, Field Engineering, New Service, and Distribution Maintenance with  
9 increasing responsibility through my current position as Manager of System  
10 Resiliency.

11 **Q. Have you previously testified before the Commission?**

12 A. Yes, I have testified before the Commission in past proceedings, including Docket  
13 No. DE 17-076, Motion for Approval of Reconciliation and Continuation of  
14 Reliability Enhancement Program, Docket No. DE 17-176, Petition for  
15 Continuation of Reliability Enhancement Program, and in the Company's recent  
16 rate case in Docket No. DE 19-057.

17 **Q. What is the purpose of your testimony?**

18 A. The purpose of our testimony is to present the Company's reports on its vegetation  
19 management and reliability performance for calendar year 2020 and contemplated  
20 in the settlement in the Company's rate case, Docket No. DE 19-057 (the  
21 "Settlement"), as approved by the Commission in Order No. 26,433 (December 15,

1 2020). Specifically, the settlement set out the requirements for a series of reports  
 2 and information to be filed by March 1 of each year as the first step in the  
 3 Company's annual Regulatory Reconciliation Adjustment ("RRA") filing. This  
 4 submission is providing the required reports.

5 **Q. Could you describe the specific reports that are included?**

6 A. Yes. In the Settlement, Section 9.3 says this:

7 By March 1 of each year the Company shall submit a filing  
 8 containing reports on PSNH's reliability statistics and vegetation  
 9 management activities, and requesting the Commission open a new  
 10 docket to consider the filing and other RRA issues. Such reports  
 11 shall include information on reliability and vegetation management  
 12 activities similar to information historically included in the  
 13 Company's Reliability Enhancement Plan filings. Further detail  
 14 regarding the report contents is provided in Appendix 4. The  
 15 Company shall also include as part of this annual filing the proposed  
 16 adjustment to the August 1 RRA associated with prior calendar year  
 17 vegetation management activities, as described in Section 9.1(b)  
 18 above.

19  
 20 In line with that requirement, this testimony includes the reports identified in  
 21 Appendix 4 to the settlement agreement.

22 **Q. Are you presenting any exhibits in addition to your testimony?**

23 A. Yes, we are presenting the following six exhibits in support of this testimony:

Exhibit Designation	Purpose/Description
Exhibit RDA/LGL-1	Reliability Report
Exhibit RDA/LGL-2	2020 Vegetation Management Plan and Performance Report
Exhibit RDA/LGL-3	2021 Vegetation Management Plan Proposal

24

25 We note that the exhibit, RDA/LGL-3 includes the Company's 2021 vegetation  
 26 management plan proposal which is not among the reports specified in Appendix

1 4. Consistent with 6.2 and Appendix 3 of the Settlement, that plan was submitted  
2 to the Commission Staff on November 13, 2020. Since that time, and based partly  
3 upon feedback and questions from the Staff, as well as on additional information  
4 from the contracted vegetation management crews performing work for  
5 Eversource, that plan has been refined and updated. In the interest of responding  
6 to the Staff's questions as well as assuring the availability of the information, the  
7 updated version of that plan has been included here.

8 **Q. How is your testimony organized?**

9 A. In addition to this introductory section, our testimony is organized into the  
10 following sections:

- 11 • Section II provides an overview of Eversource's vegetation management  
12 program ("VMP"), including its key initiatives, objectives and performance;
- 13 • Section III discusses the Company's vegetation management activities and  
14 performance in 2020;
- 15 • Section IV discusses the Company's vegetation management activities plan for  
16 2021;
- 17 • Section V testimony discusses the Company's reliability performance in 2020;  
18 and
- 19 • Section VI provides the conclusion to our testimony.

1 **II. VEGETATION MANAGEMENT PROGRAM – MR. ALLEN**

2 **Q. What is the overall design of the vegetation management work performed**  
3 **under the Eversource VMP?**

4 A. As discussed in the Company’s recent rate case, the Eversource VMP is structured  
5 as a comprehensive effort involving multiple departments and significant amounts  
6 of data analysis. The plan is coordinated on an individual circuit basis with the  
7 distribution engineering group and targets specific areas to improve reliability and  
8 resiliency. The execution of the actual tree work is managed by Eversource’s  
9 Vegetation Management department utilizing a staff of Company arborists, contract  
10 arborists and tree trimming and removal contractors. The program covers all  
11 primary wires, with scheduling developed on the basis of a combination of  
12 performance and circuit-specific cycle-based trimming.

13 There are four aspects of the VMP. First, the program includes Scheduled  
14 Maintenance Trimming (“SMT”) which follows an established trim cycle to ensure  
15 that all circuits, regardless of current performance, are trimmed at least once every  
16 four to five years, subject to circuit-specific considerations. Second, the Company  
17 performs Enhanced Tree Trimming (“ETT”) to manage vegetation along the main  
18 backbone of the circuit. In contrast to standard trimming, ETT expands the zones  
19 of tree pruning activity to create additional clearances between tree growth and  
20 electrical facilities. With respect to ETT, the Company employs reliability-based  
21 prioritization methods to schedule vegetation management activity on specific  
22 circuits. The Company targets up to 150 miles per year on circuits with the worst  
23 tree-related reliability experienced in the previous year (i.e., the top 50 list). If the

1 Company determines that a poorly performing circuit is scheduled to be included  
2 in the SMT cycle for that year, the Company will consider including the circuit  
3 backbone under ETT. Third, the program includes hazard tree removal which  
4 involves the identification, and complete removal, of trees determined to be in ill-  
5 health, or which otherwise pose a threat to electrical facilities or public safety, both  
6 within and outside standard trimming zones. The Company seeks to remove trees  
7 that are identified by trained arborists as a hazard to primary conductors. During  
8 the SMT cycle, the Company identifies trees that may fail and, because the  
9 Company usually will not revisit that circuit for another four to five years, includes  
10 the identified trees in the hazard tree removal program. Lastly, with respect to full-  
11 width ROW clearing, the Company researches its easements to confirm the  
12 easement boundaries and then works to clear the rights-of way to the full extent  
13 allowed under the easement. More specifically, full-width ROW clearing involves  
14 the reclamation of existing rights-of-way by the enhanced clearing of trees and  
15 brush to extend the clearances between vegetation and the Company's electrical  
16 facilities located in rights-of-way.

17 **Q. What are the program specifications for SMT?**

18 A. The SMT is conducted on a four to five year cycle and the clearance specifications  
19 are 8 feet to the side, and 15 feet above and 10 feet below. This work is  
20 competitively bid to ensure it is performed in a cost-effective manner. The  
21 Company enters into longer term contracts for SMT work to ensure that contractor  
22 crew resources are available to do the work. As of the fourth quarter of 2020, the

1 Company entered into new four-year contracts for SMT. The SMT is the core of  
2 the VMP and there are approximately ninety crews on the Company's distribution  
3 system every day performing this critical baseline clearance work.

4 **Q. What are the specifications for ETT and hazard tree removal?**

5 A. As noted above, the ETT is focused on circuit backbones and the specification are  
6 8 feet to the side from "ground-to-sky," though there can be equipment limitations  
7 that prevent workers from safely achieving the clearance. This aggressive clearance  
8 program targets overhanging branches that could break and fall onto the Company's  
9 power lines.

10 The ETT work is released for competitive bid annually and over the past decade  
11 this work has been awarded to five different tree contractors. The ETT work is  
12 discussed in-person with impacted tree owners before any work is commenced.  
13 There are occasions where the ETT clearance work is not or cannot be achieved for  
14 reasons that can include but are not limited to: tree owner refusal of permission,  
15 equipment limitations, geographic logistics or access.

16 Hazard tree removal is conducted in parallel with scheduled cycle miles and  
17 priority is placed upon identifying risk and hazard trees along the three-phase  
18 primary, or circuit backbone for removal. The Company may also evaluate single  
19 and two-phase lateral primary for hazard tree removal if the area has been identified  
20 as poor performing or during the performance of SMT work.

1 **Q. Does the Company monitor the performance of its vegetation management**  
2 **contractors to ensure compliance with the Company's specifications?**

3 A. Yes. The Company routinely audits all vegetation management work performed on  
4 its system and reviews contractor work for adherence to the standards for vegetation  
5 management. Arborists conduct field reviews of all work areas and document any  
6 areas of non-compliance by location, correlating the locations onto circuit maps.  
7 This information is sent to the contractors performing the work and they are  
8 required to complete any necessary re-work in accordance with the standards. All  
9 the SMT miles are audited for quality control annually. In the event proper  
10 clearances have not been achieved, the contractor is responsible for re-trimming at  
11 no additional cost for a period of 12 months

12 **III. 2020 VEGETATION MANAGEMENT PROGRAM – MR. ALLEN**

13 **Q. Please explain the Company's vegetation management activities for 2020 and**  
14 **its performance.**

15 A. As reflected in Exhibit RDA/LGL-2, the Company trimmed 2,053 miles of SMT in  
16 2020 at a cost of \$13,381,261. The original budgeted miles were 2,450. Overall,  
17 Eversource's plan was successfully executed to keep the Company on track for  
18 meeting the cycle trimming requirements of the Commission.

19 Of note, the Company's SMT contracts were up for renewal in 2020 and were put  
20 out to bid consistent with past practice. The responses received were significantly



1 higher than past years reflecting the tight market for people to perform this kind of  
2 work. In the interest of trying to expand the pool of qualified people for this work,  
3 Eversource has encouraged its tree contractors to host job fairs and increase their  
4 social media presence. The Company has also asked its contractors to explore new  
5 and different types of tree clearing/trimming equipment to be used on scheduled  
6 work. Currently, however, the new contracts have put significant pressure on the  
7 budgets for 2021 and forward and will likely result in significant adjustments to the  
8 Company's plans in the future to assure that the SMT continues to meet the  
9 Commission's requirements.

10 Within Exhibit RDA/LGL-2 the Company has included information on its ETT,  
11 Hazard Tree Removal, and ROW clearing activities, including on its budgets and  
12 actual spending on those programs, as well as the amount of work completed.

13 **Q. The Settlement provides that Eversource is to include a proposed adjustment**  
14 **to the August 1 RRA associated with prior calendar year vegetation**  
15 **management activities. Do you have that proposed adjustment?**

16 A. I am not the Company's rate or revenue requirements person, but certain  
17 information has been shared with me on that item. I understand that the Company's  
18 full RRA adjustment will be filed later in 2021 and this filing only provides  
19 preliminary information. For preliminary information, in January-June 2020 there  
20 was an over recovery of \$135,393. That over-recovery, however, was addressed as  
21 part of the recoupment in the rate case and will not be included in the RRA.

1 For July-December 2020, there was an under-recovery of (\$3,482,426) which will  
2 be addressed in the RRA filing. The reason for this under-recovery is that the  
3 Company began 2020 with a budget of \$6 million for the first six months of the  
4 year consistent with the settlement on temporary rates in the rate case. At that time,  
5 there was no budget listed for July through December based on the understanding  
6 that the rate case would be decided before June 30, and that the funding for  
7 vegetation management activities would be determined as part of that decision.  
8 With the adjustments required because of the pandemic, the schedules for the rate  
9 case decision were altered and it was not until later in the year that there was  
10 confirmation about the available funds for ETR, ETT and Full Width Clearing for  
11 July-December. As a result of that delay, vegetation management activities fell  
12 behind the planned levels and the number of crews available to complete the work  
13 scheduled in the SMT, ETT and ETR programs did not reach the total number of  
14 crews needed. This budgeting issue made it so that the Company was unable to  
15 complete all planned work for the year. Additionally, the Company's contracted  
16 tree crews spent several weeks in 2020 on storm work, both in New Hampshire and  
17 in other states. This resulted in a budget variance on each of these programs which  
18 will be addressed in the broader RRA filing.

19 **IV. 2021 VEGETATION MANAGEMENT PROGRAM PLAN – MR. ALLEN**

20 **Q. Please describe the Company's vegetation management program plan for**  
21 **2021.**

22 **A.** As reflected in Exhibit RDA/LGL-3, the Company anticipates trimming 2,675

1 miles of SMT in 2021 at a cost of \$16,605,110. This plan achieves a 4.5 year trim  
2 cycle. As noted above, the major and minor storms that hit New England in 2020  
3 prevented the contracted tree crews from completing the scheduled miles that  
4 calendar year. While the Company is still within the Commission's mandate of a  
5 60-month cycle schedule for SMT, the 2020 scheduled miles that were not achieved  
6 are being included in the 2021 plan to get back on track.

7 The last 4-year contract for SMT ended in December 2020. The new 4-year contract  
8 has resulted in a significant increase in the cost per mile for all the awarded work.  
9 This has resulted in a larger budget needed to complete the anticipated tree work  
10 than the one that was agreed to in the rate case settlement. The Company will invest  
11 in Vegetation Management at the necessary level to complete the programs that it  
12 believes are foundational to a strong VMP. These programs include SMT, METT,  
13 Hazard Tree, ETT, and Full Width Clearing of ROWs. This investment will also  
14 consider the current operating procedures with the various telephone companies,  
15 along with the 10% "overage" identified in the settlement agreement.

16 **V. 2020 RELIABILITY PERFORMANCE – MR. LAJOIE**

17 **Q. Please describe the Company's reliability performance in 2020.**

18 A. For many years as part of the Company's REP filings, Eversource provided  
19 information on numerous reliability statistics and performance metrics. Those  
20 reports showed the impact of the REP and the general improving trends in reliability  
21 performance that came from the REP as well as other company initiatives aimed at

1 improving the reliability and resiliency of the Company's distribution system.

2 Included as Exhibit RDA/LGL-1, are reports and information similar to, but more  
3 expansive than, what had previously been included in the REP reports.

4 Pages 5 through 17 of Exhibit RDA/LGL-1 contain the various graphs and charts  
5 agreed to by Eversource and others, particularly the Commission Staff, as part of  
6 the Settlement to demonstrate the general trends and outcomes in 2020. The graphs  
7 and charts show various reliability indices as specified in Appendix 4 of the  
8 settlement agreement and based on IEEE reporting criteria.

9 Pages 18 to 31 of Exhibit RDA/LGL-1 explain the various O&M activities  
10 conducted by the Company in 2020 aimed at reliability issues. These activities  
11 include patrols of overhead distribution lines, inspections of underground  
12 developments and padmounted equipment, inspections of wood distribution poles  
13 for decay, and repairs of non-capital items on distribution lines related to the  
14 National Electrical Safety Code. These activities are intended to identify potential  
15 problems or failures so that they may be addressed before they impact customers.

16 Pages 32 to 44 of Exhibit RDA/LGL-1, contain the capital expenditures on various  
17 reliability-related activities. This report provides information on "routine" capital  
18 projects targeting reliability as well as specific projects, with information on the  
19 replacement of wooden distribution poles found to be defective through inspection,  
20 replacement of direct buried underground cable with new cable in conduit, and  
21 other capital reliability projects with spending greater than \$100,000 in the calendar

1 year. This last category is further broken down into new projects initiated in 2020,  
2 and projects with spend in 2020 over the threshold but which were established in  
3 prior years.

4 Lastly, pages 45 and 46 of Exhibit RDA/LGL-1 contain the Company's "Worst  
5 Performing Circuits" list, previously referred to at times as the "Hit List." This list  
6 is adjusted annually to track the circuits with the worst reliability performance and  
7 helps to set some of the Company's priorities for reliability work to ensure the best  
8 reliability possible for the greatest number of customers at the lowest reasonable  
9 cost.

10 **VI. CONCLUSION**

11 **Q. Do you have any concluding remarks?**

12 A. We believe that the included reports and information show that the Company was  
13 generally successful in its vegetation management activities in 2020 and that the  
14 Company has also demonstrated continuing improvement in customer reliability  
15 over time, all of which are beneficial to customers in New Hampshire.

16 **Q. Does this conclude your testimony?**

17 A. Yes, it does.

**EVERSOURCE**  
2020 Reliability Report

**EVERSOURCE**

**Annual Reliability Report**

**2020 Report to the NH Public Utilities Commission**

**March 1, 2021**

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Eversource  
2020 Reliability Report  
Executive Summary

# EVERSOURCE

## 2020 Reliability Report

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### Executive Summary

This report has been prepared in accordance with the terms of the October 9, 2020 settlement agreement for Docket No. DE 19-057 as well as Appendix 4 to that settlement agreement. It provides information on the distribution system reliability and activities undertaken by Public Service of New Hampshire d/b/a Eversource Energy (“Eversource” or the “Company”) in calendar year 2020 focused on reliability.

Section 1 provides graphs of various reliability indices as specified in Appendix 4 of the settlement agreement. All graphs are based on IEEE reporting criteria, which was adopted by the NH Public Utilities Commission in 2015.

Section 2 provides a summary of specific O&M Activities undertaken in 2020 which are generally targeted at maintaining or improving reliability. These activities include patrols of overhead distribution lines, inspections of underground developments and padmounted equipment, inspections of wood distribution poles for decay, and repairs of non-capital items on distribution lines related to the National Electrical Safety Code.

Section 3 provides information on Capital projects targeting reliability, with information on the replacement of wooden distribution poles found to be defective through inspection, replacement of direct buried underground cable with new cable in conduit, and other capital reliability projects with spending greater than \$100,000 in the calendar year. This last category is further broken down into new projects initiated in 2020, and projects with spend in 2020 over the threshold but which were established in prior years. Projects established in 2020 also have project descriptions included. Projects included in Section 3 include any locations where reliability was listed as an objective of the project, even if the project had other justifications such as replacing obsolete assets or safety concerns. Spending in 2020 on defective pole replacements totaled \$1.6M. Spending on a single project replacing direct buried cable totaled \$1.1M. Spending on new reliability projects totaled \$29.9M, and on continued projects from prior years amounted to \$21.8M

Section 4 contains the Company’s annual report on the 50 worst performing circuits for the previous year.

As depicted on page 7, the Company’s reliability has improved over time, with reductions in the overall frequency of outages (SAIFI), the duration of outages (SAIDI), and the number of customers impacted when outages do occur (CIII). Improvements in SAIFI and CIII have led to a general increase in CAIDI.

Preventing outages from occurring and reducing the number of customers impacted by those outages are methods to improve SAIFI and CIII. Company work in areas such as tree trimming, the installation of covered wire, pole top distribution automation, and other activities have resulted in the improvements shown. The increasing penetration of pole top distribution automation has the unfortunate impact of resulting in a general increase in CAIDI, as the outages that require lineworkers to effect repairs are now the more complicated and require more time. Company initiatives to reduce CAIDI include the addition of Troubleshooters to provide 24 hour coverage, establishment of the System Operations Center to manage the distribution system at the less than 34 kV level, adding SCADA control to lower voltage substations, and continued penetration of pole top Distribution Automation which can help identify a fault location while crews are en route to the outage.



# Section 1

## Distribution System Reliability

# EVERSOURCE

## 2020 Reliability Report

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The following is a brief description of the reliability graphs contained in this section. All graphs represent data for the time period 2016 through 2020 and reflect IEEE criteria, adopted by the NH PUC in the second quarter of 2015. 2016 was the first full year of the Company's adoption of its current Outage Management System.

1. Page 7 shows Eversource SAIFI, CAIDI, SAIDI, and CIII. All graphs are based on IEEE criteria, and include only outages on the Distribution system. The Company SAIFI, SAIDI, and CII have all shown improvement over the time period 2016 through 2020, although all did experience an uptick in 2020 versus 2019, which was the best year out of the last five. 2019 SAIDI of 82.8 is comparable to 1991 and 1992 which have been the best years since at least 1989 and is the first time since 1993 that SAIDI has been under 100.

Eversource tracks minor storms when 100 or more primary power outages occur within a storm timeframe and are not deemed a NH PUC major storm (IEEE MED). Eversource experienced a total of 26 minor storm days in 2020 compared to 17 in 2019, 21 in 2018, 25 in 2017, and 20 in 2016. The results of these storms are included in the reported statistics. These storms contributed 26 minutes to Eversource's SAIDI performance in 2020, compared to 25 minutes in 2019, 33 minutes in 2018, 50 minutes in 2017, and 53 minutes in 2016.

2. Page 8 depicts CAIFI and CTAIDI over the 2017 through 2020 time period. These are new indices for Eversource reporting. CAIFI is designed to show trends in customers interrupted and helps to show the number of customers affected out of the whole customer base. It is calculated by dividing the total number of customer interruptions by the number of distinct customers interrupted. CTAIDI is the average total duration of interruption for customers who had at least one interruption during the period of analysis and is calculated by dividing the total number of customer minutes of interruptions in the period by the number of distinct customers interrupted. Therefore, both CAIFI and CTAIDI indices refer only to customers who have experienced a service interruption in the period. Since 2017 CAIFI has been in the range of 2.17 to 2.5. Similarly, CTAIDI has been reasonably stable since 2017, ranging from 3.95 to 4.64.

3. Page 9 depicts Eversource Tree Related statistics. The largest cause group for outages is trees and limbs, primarily from outside of the clearance area, thus all four indices closely follow the total distribution system indices shown on page 1. All four metrics increased in 2020 compared to 2019, but only CAIDI is on an upward trend over the five years.

4. Page 10 shows Eversource Equipment Related statistics, not including substation equipment. Equipment failures have been the second or third leading cause for SAIDI and SAIFI since 2016, falling to fourth in 2020. SAIFI, SAIDI, and CIII have all been on a downward trend since 2016, with CAIDI on a slight upward trend, although 2020 results were improved over 2018 and 2019.

5. Page 11 shows results for Substation equipment failures. Power outages caused by equipment failures inside substations are typically large and widespread. There was one Equipment Failure event in 2020, compared to three in 2019, one in 2018, one in 2017, and none in 2016. The 2020 event was a potential transformer failure at Rimmon substation, which impacted three customers for 154 minutes until manual switching could be completed. The other 2,849 customers originally impacted were restored in two minutes through the use of pole top Distribution Automation devices.

6. Page 12 shows total SAIDI and Equipment Failure SAIDI associated with IEEE Major Exclusion Days (MEDs). The reliability impact of these MEDs is not included in Eversource statistics shown elsewhere.

7. Pages 13 through 17 show SAIDI and SAIFI broken down by cause for each year 2016 through 2020. Tree related outages are the top driver of both statistics for the entire period. Equipment failures and Action by Others, which includes items such as motor vehicle accidents, customers and contractors digging into underground cables, vandalism, etc., are the second or third place contributors for the period,

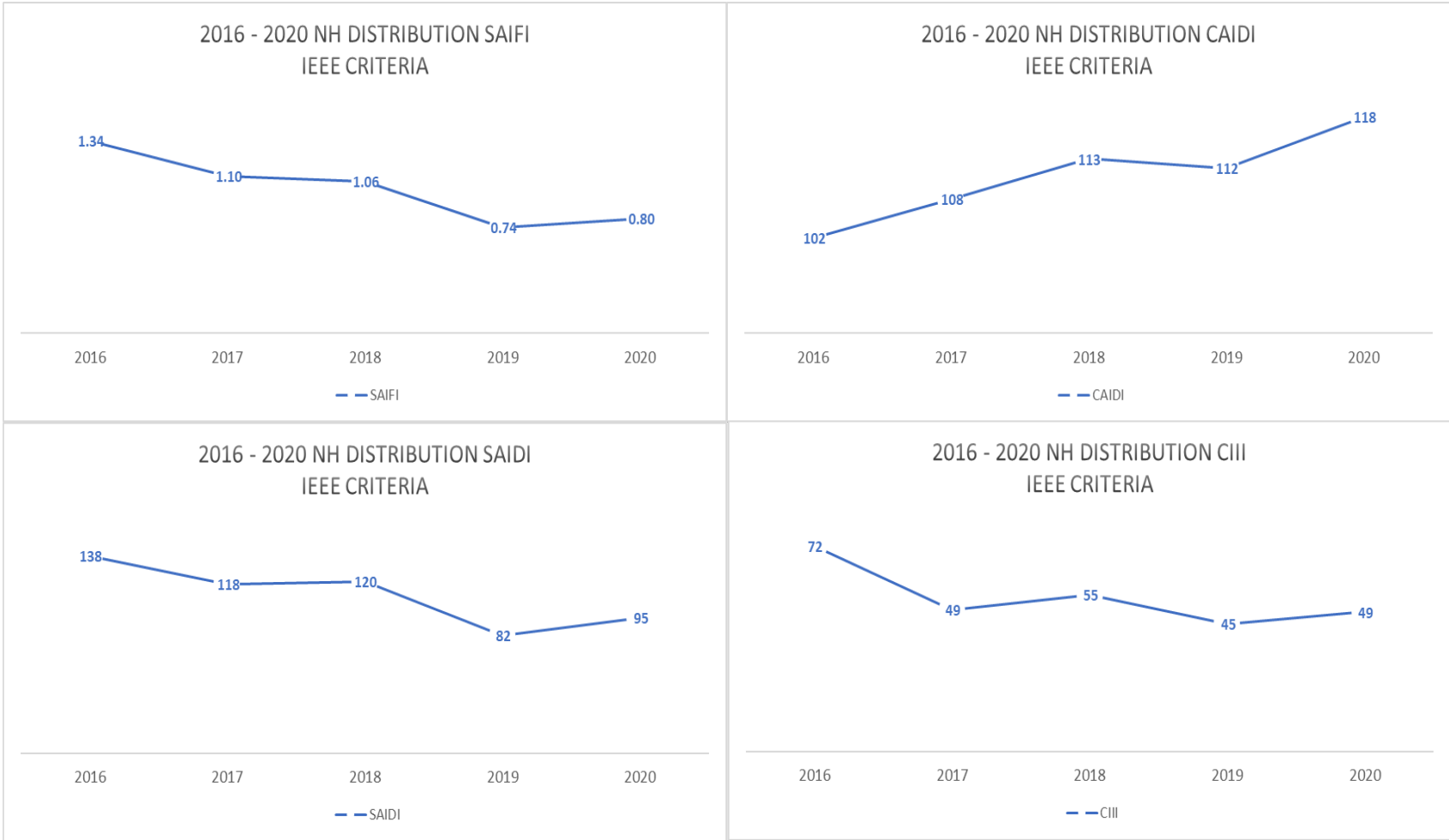
# EVERSOURCE

2020 Reliability Report

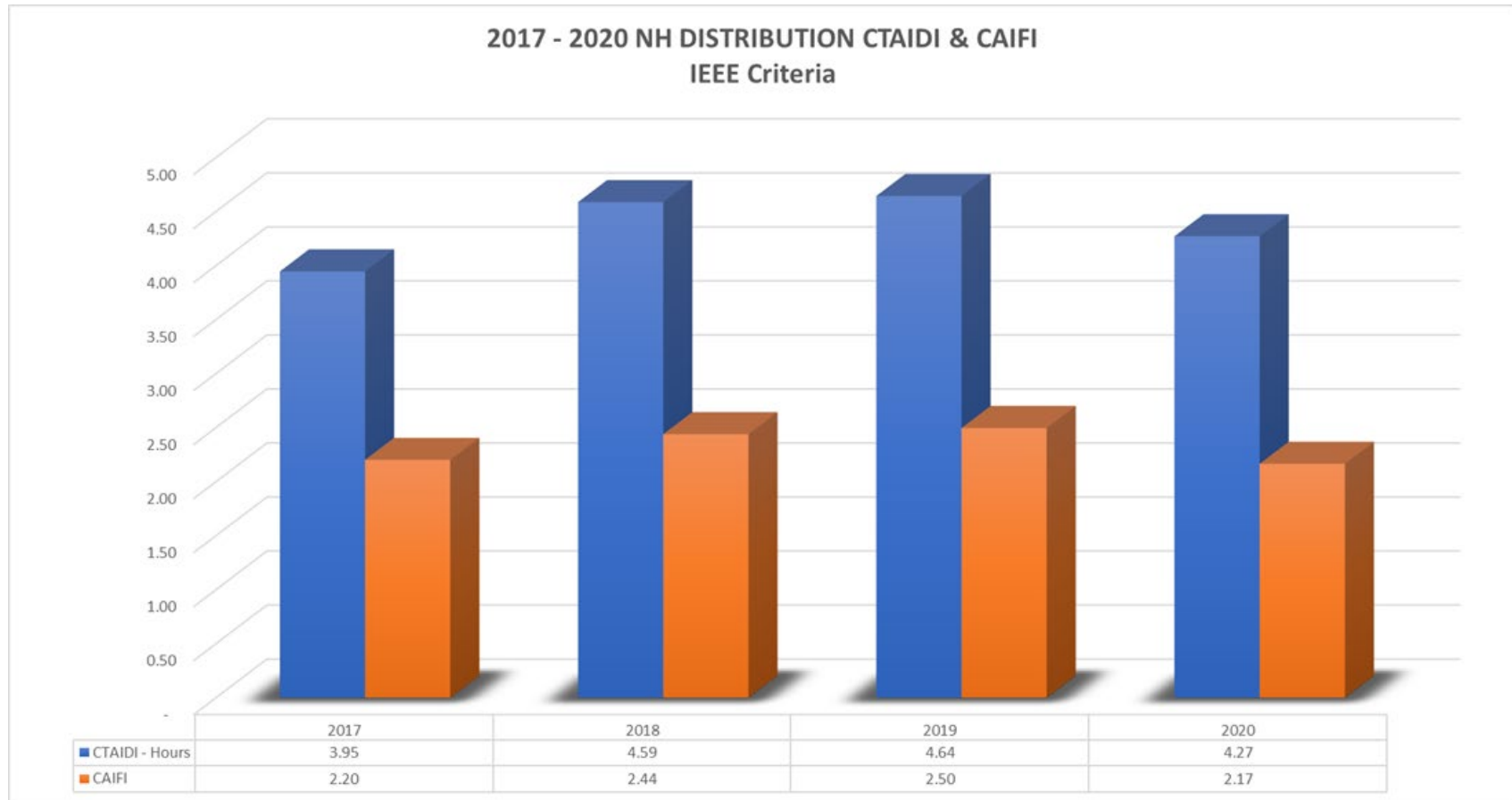
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with the exception of 2020. In 2020, "Other", which includes Intentional operations, Public Safety Intentional Outage, Miscellaneous, and Load Shedding, was second, dropping Action by Others and Equipment Related to third and fourth, respectively.

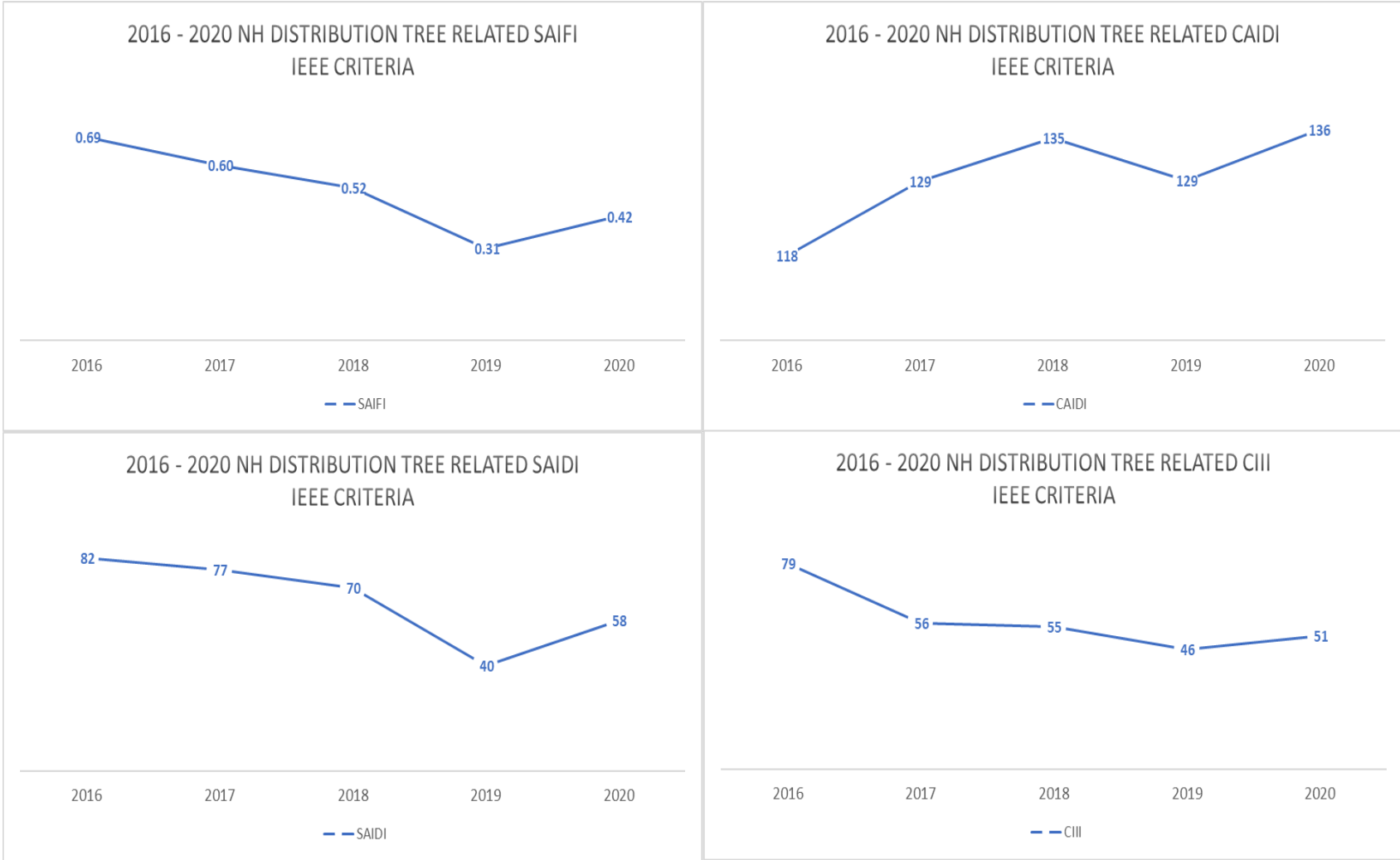
SAIFI, SAIDI, CAIDI, CIII – Distribution System Only



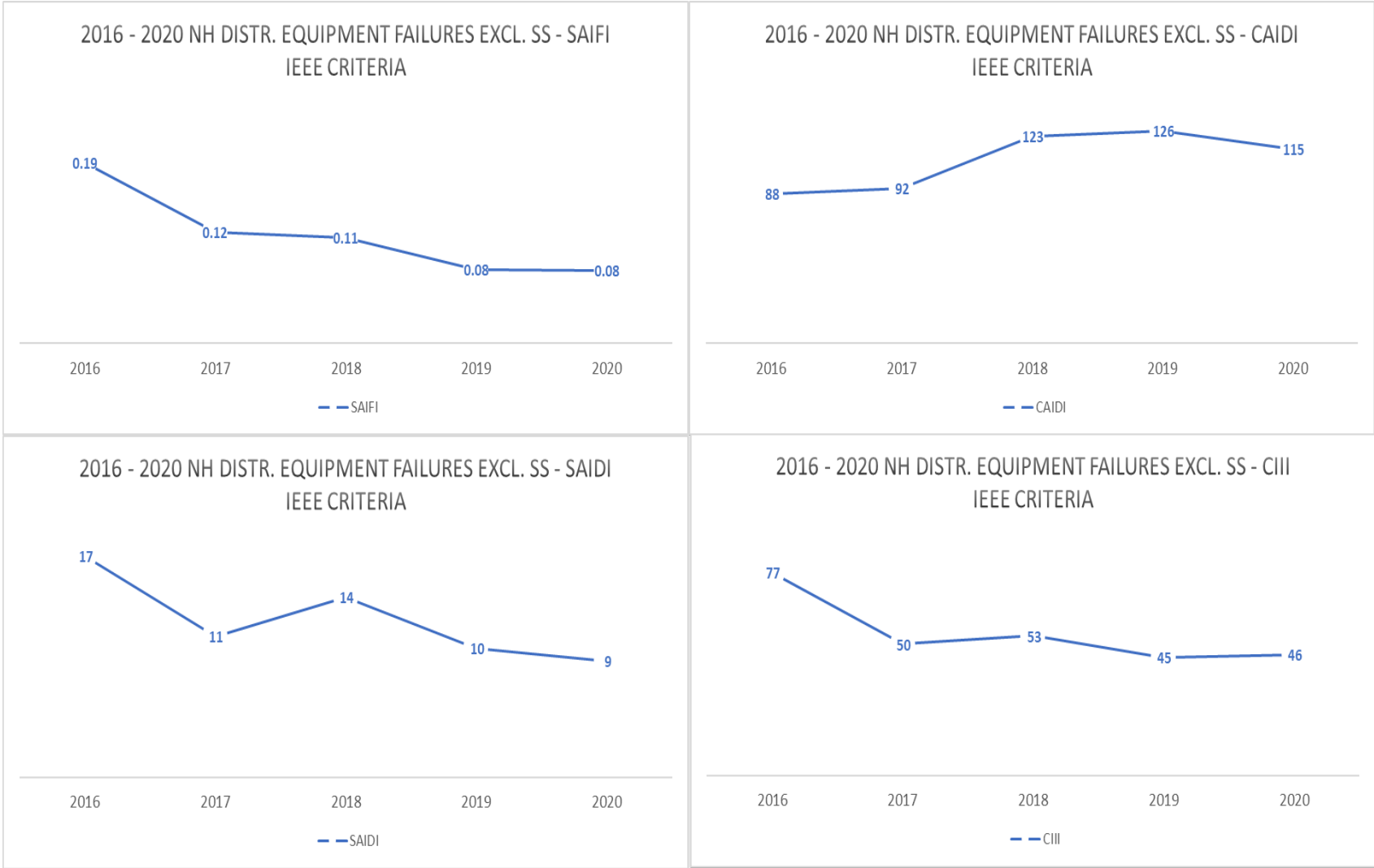
CAIFI, CTAIDI – Distribution System Only



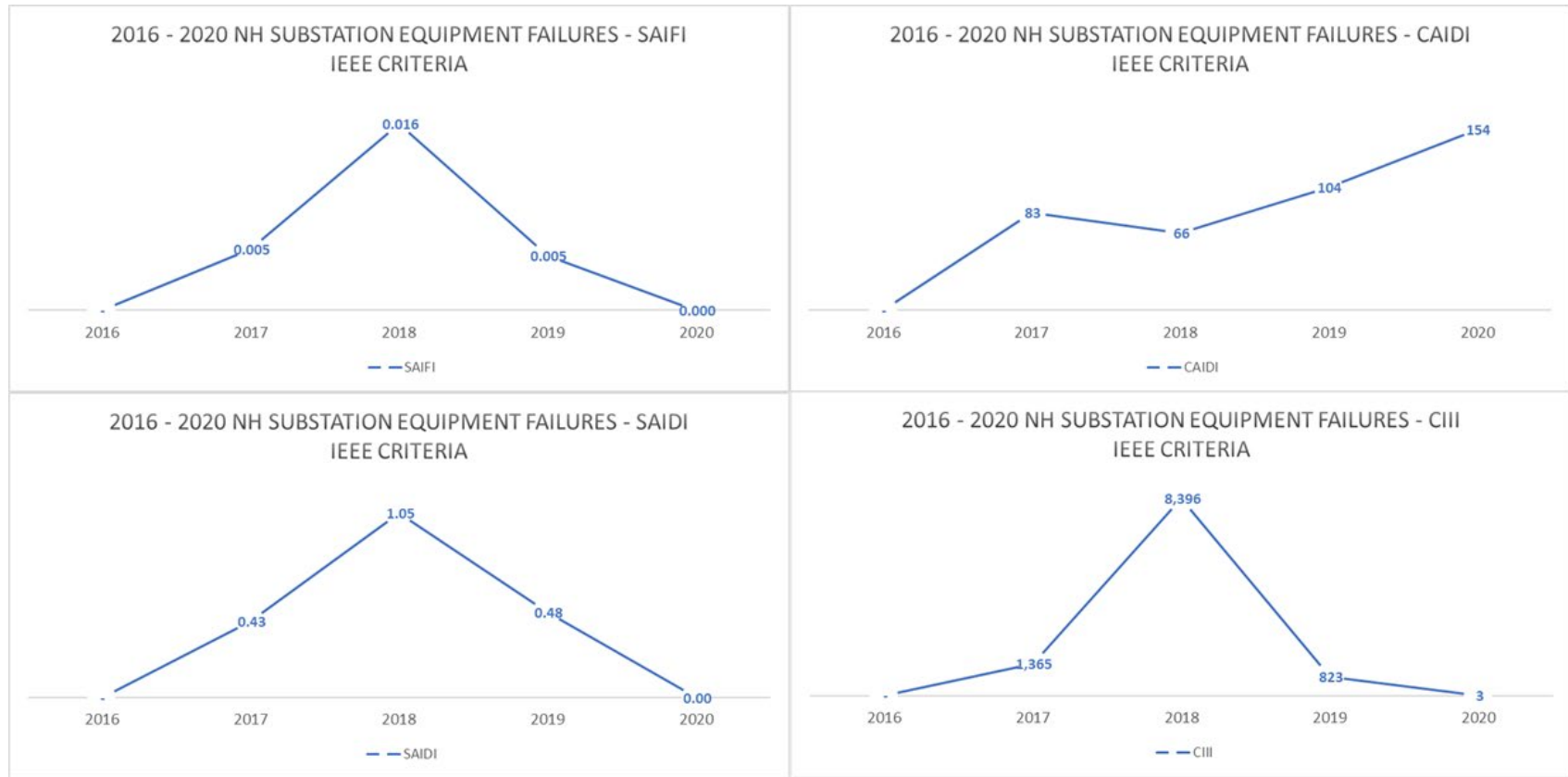
SAIFI, SAIDI, CAIDI, CIII – Distribution System – Tree Related



SAIFI, SAIDI, CAIDI, CIII – Distribution (excluding Substation) Equipment Failure

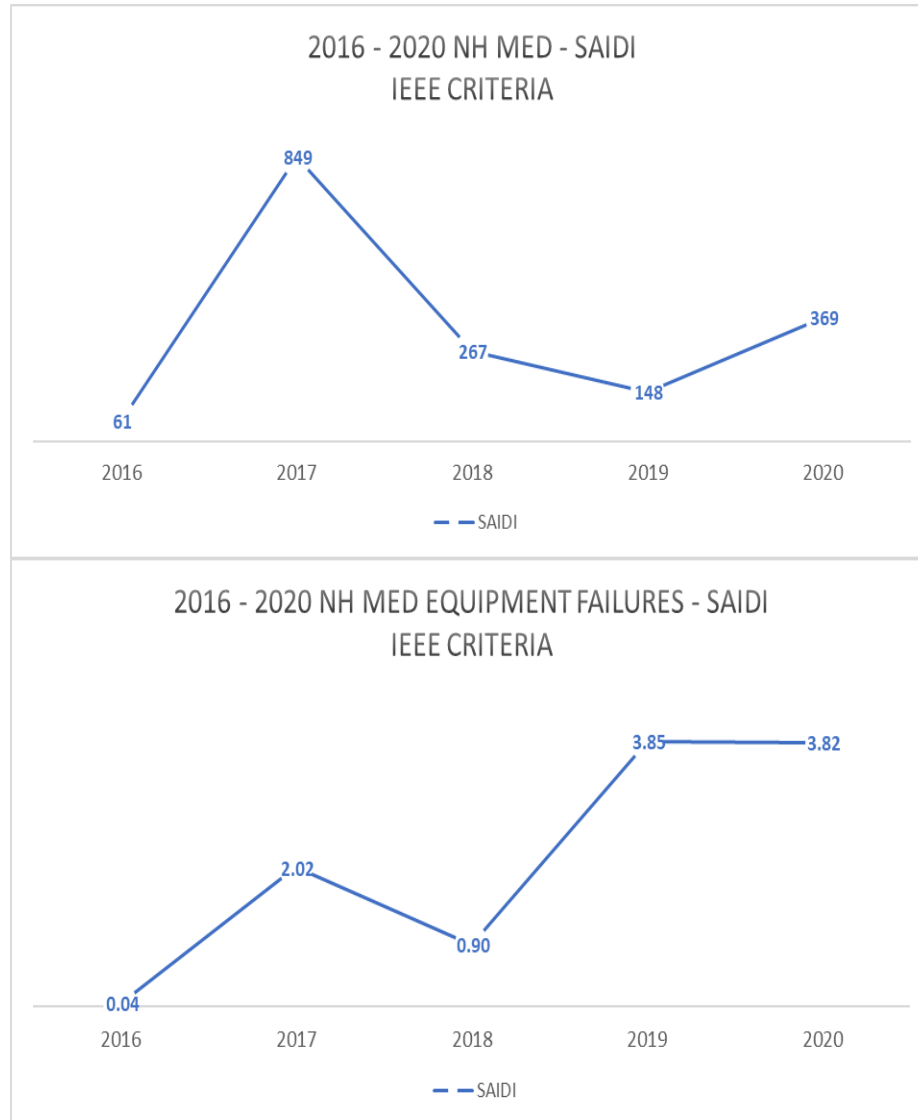


## SAIFI, SAIDI, CAIDI, CIII –Substation Equipment Failures

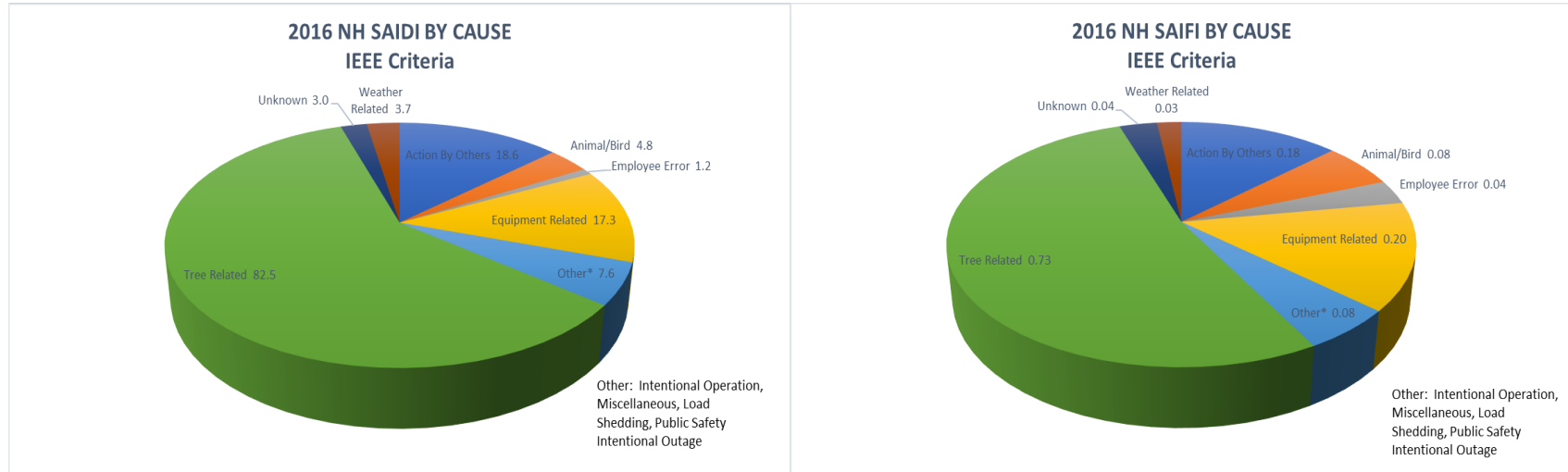




## SAIDI (MED) – Storm MED; Equipment Failure MED



## SAIDI and SAIFI by cause (2016)



Cause	SAIDI
Tree Related	82.5
Action By Others	18.6
Equipment Related	17.3
Other	7.6
Animal/Bird	4.8
Weather Related	3.7
Unknown	3.0
Employee Error	1.2

Cause	SAIFI
Tree Related	0.73
Equipment Related	0.20
Action By Others	0.18
Animal/Bird	0.08
Other	0.08
Employee Error	0.04
Unknown	0.04
Weather Related	0.03

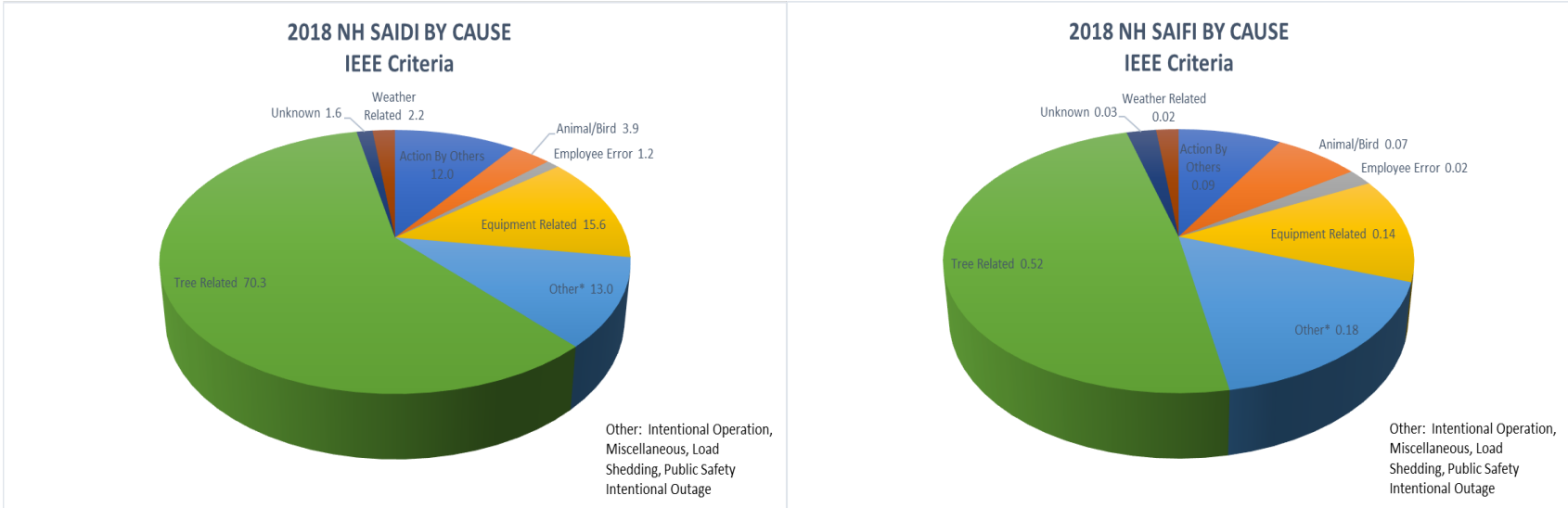
SAIDI and SAIFI by cause (2017)



Cause	SAIDI
Tree Related	77.1
Equipment Related	11.4
Other	10.8
Action By Others	10.2
Animal/Bird	4.0
Unknown	2.0
Weather Related	1.8
Employee Error	1.0

Cause	SAIFI
Tree Related	0.60
Other	0.15
Equipment Related	0.13
Action By Others	0.09
Animal/Bird	0.07
Unknown	0.03
Employee Error	0.02
Weather Related	0.02

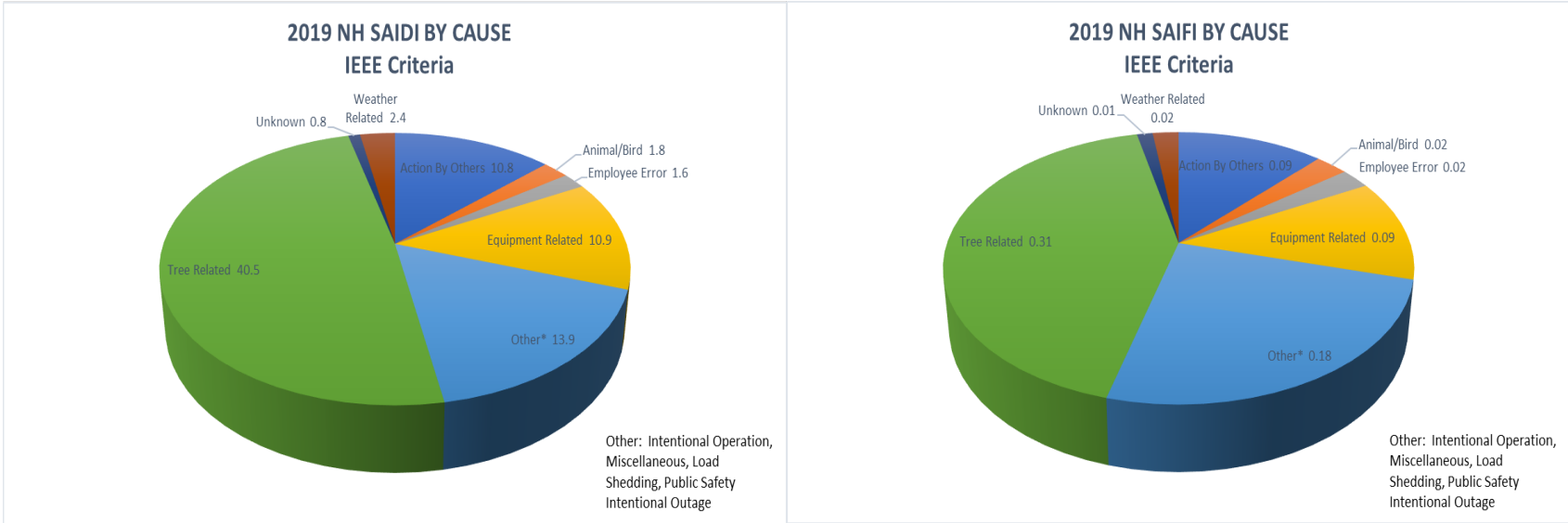
SAIDI and SAIFI by cause (2018)



Cause	SAIDI
Tree Related	70.3
Equipment Related	15.6
Other	13.0
Action By Others	12.0
Animal/Bird	3.9
Weather Related	2.2
Unknown	1.6
Employee Error	1.2

Cause	SAIFI
Tree Related	0.52
Other	0.18
Equipment Related	0.14
Action By Others	0.09
Animal/Bird	0.07
Unknown	0.03
Employee Error	0.02
Weather Related	0.02

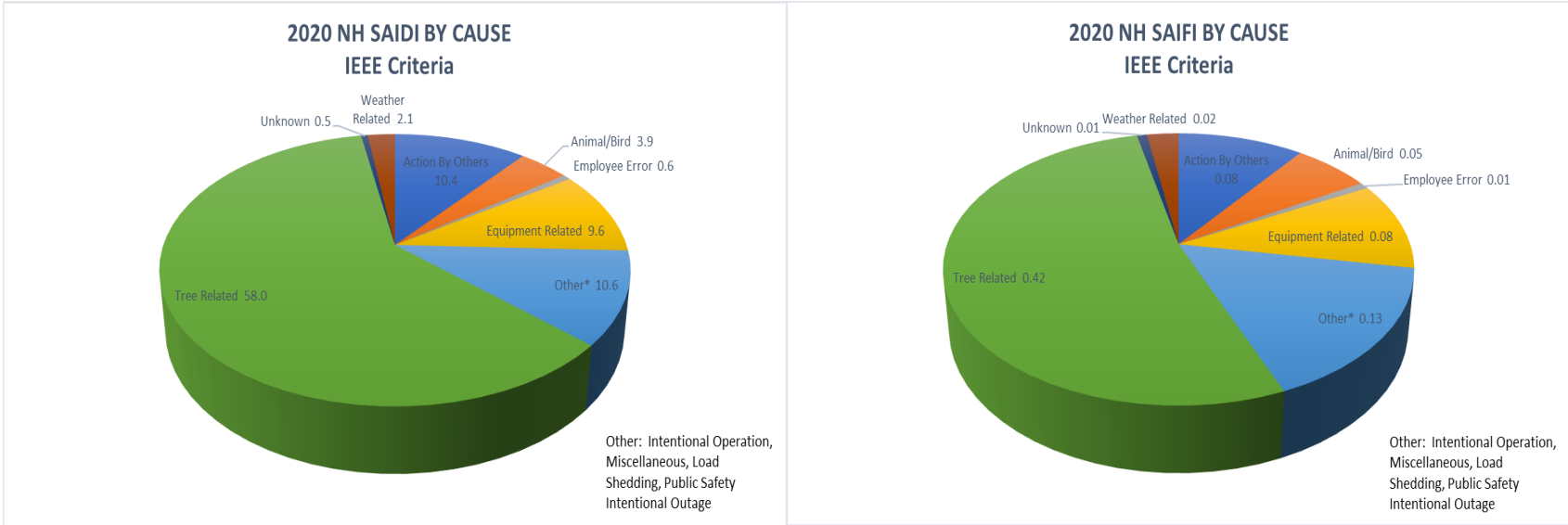
SAIDI and SAIFI by cause (2019)



Cause	SAIDI
Tree Related	40.5
Other	13.9
Equipment Related	10.9
Action By Others	10.8
Weather Related	2.4
Animal/Bird	1.8
Employee Error	1.6
Unknown	0.8

Cause	SAIFI
Tree Related	0.31
Other	0.18
Action By Others	0.09
Equipment Related	0.09
Animal/Bird	0.02
Employee Error	0.02
Weather Related	0.02
Unknown	0.01

SAIDI and SAIFI by cause (2020)



Cause	SAIDI
Tree Related	58.0
Other	10.6
Action By Others	10.4
Equipment Related	9.6
Animal/Bird	3.9
Weather Related	2.1
Employee Error	0.6
Unknown	0.5

Cause	SAIFI
Tree Related	0.42
Other	0.13
Action By Others	0.08
Equipment Related	0.08
Animal/Bird	0.05
Weather Related	0.02
Employee Error	0.01
Unknown	0.01

## Section 2

### O&M Activity Summary

January 1, 2020 – December 31, 2020

# EVERSOURCE

## 2020 Reliability Report

### Overhead Circuit Patrols

**Program Description:** Patrol overhead distribution lines. Patrols may be done for a variety of reasons including infrared patrols, post-storm patrols, or other reasons. Each reason for patrolling has different criteria for how far into the circuit is patrolled. For example, infrared patrols cover only the backbone while post-storm patrols may include all circuitry out to a certain size protective device.

**Total Unit Population:** Eversource has approximately 12,200 miles of overhead distribution line.

**Maintenance Cycle:** Overhead roadside distribution line backbones are inspected with infrared imaging equipment at least once annually in accordance with Eversource Maintenance Plan chapter 5.22. Aerial patrols of lines in rights-of-way (ROW) are completed at least once per year in accordance with the Eversource Maintenance Plan chapter 5.45

**Reliability Benefit:** Infrared patrols are intended to identify overheated equipment which may cause an outage or damage other equipment. Post-storm patrols are intended to find leftover damage not repaired during the storm or imminent dangers, either of which may cause an outage in the future. Aerial ROW patrols are intended to identify items needing repair which may cause an outage in the future.

**Results:** Patrols completed in 2020:

ROW aerial patrols: All ROW lines or line segments were patrolled in February, August, and twice in December of 2020, with additional patrols of certain lines over the course of the year associated with project work. A list of lines patrolled is shown on pages 22 and 23.

A full system patrol of roadside circuits was conducted in April and May of 2020. These patrols were completed on all circuits, from the source out to a fuse size of 20T or smaller at 34.5/19.9 kV, a 30T or smaller at 12.47/7.2 kV and a 50T at lower voltages. Specific items for which these patrols were conducted included bent pins, broken or cracked crossarms, broken or loose guy wires, broken poles, locations where temporary repairs had been made, broken insulator ties, damaged or broken insulators, primary conductor which had become unattached from the supporting insulator (floating primary), danger trees or branches hanging from primary conductors, and locations where vines were climbing a pole or guy wire. The circuits patrolled are shown on pages 24 through 31. Mileage shown in the table is the total circuit miles, not necessarily the number of miles patrolled on each circuit.

In addition, post storm circuit sweeps were conducted in February, August (after Hurricane Isaias), and December. Only circuits with moderate or higher impacts were patrolled. Three phase backbone and large single and three phase laterals were patrolled. These patrols were conducted looking for anything which might cause an imminent outage, a danger to public safety, Eversource debris left beside the road, limbs on or over the primary, and broken or uprooted trees leaning on or over the primary conductors. All items were addressed immediately by entry and tracking in OMS

Infrared patrols were not completed in 2020 due to COVID-19 precautions in place in the summer of 2020 (IR inspections require a camera operator and vehicle driver to occupy the cab of the same vehicle).

\$ Plan	\$ Actual	\$ Variance
n/a*	n/a*	n/a*

\*Budgets are not developed or tracked at this level or for this activity.



# EVERSOURCE

## 2020 Reliability Report

**Underground Circuit Inspections:**

- Program Description:** Inspect Direct Buried facilities including cable-in-conduit installations. Periodic inspections of Direct Buried and associated equipment at the specified interval allows preventative and corrective actions to be performed prior to situations becoming hazardous to the public or resulting in equipment failure.
- Total Unit Population:** Eversource is responsible for approximately 2,142 underground development system maps in addition to underground facilities providing service from the company’s overhead system totaling 1,994 miles of underground line.
- Maintenance Cycle:** Direct buried (including cable in conduit) facilities are inspected on a ten-year cycle, in accordance with Eversource Maintenance Plan chapter 5.11.
- Reliability Benefit:** Proactively inspect underground developments and padmounted transformers to identify potential issues and replace fault indicators on a scheduled basis to ensure they function when needed.
- Results:** In 2020, 229 underground developments were inspected.

\$ Plan	\$ Actual	\$ Variance
n/a*	n/a*	n/a*

\*Budgets are not developed or tracked at this level or for this activity. Inspection work is completed under a variety of Field Work Orders (FWOs).

**Pole Inspections:**

- Program Description:** Inspect for decayed or damaged poles to ensure reliable and safe use of this asset.
- Total Unit Population:** Eversource is responsible for ground line inspection of approximately 250,000 poles. Eversource performs ground line inspection of poles in Eversource set areas only. A visual overhead inspection is performed on all poles to which the Company is attached.
- Maintenance Cycle:** Wood poles are inspected on a ten-year cycle in accordance with Eversource Maintenance Plan chapter 5.61 and Intracompany Operating Procedures in place with joint owners in the State of NH.
- Reliability Benefit:** Replacement of decayed poles results in a more reliable and resilient distribution system.
- Results:** Pole inspection plans are developed based on the total number of poles in the towns to be inspected. CCA treated poles less than 20 years old, and those treated with other preservatives and less than 10 years old, are not checked for ground line decay (sound and bore and/or ground line excavation). In 2020, 24,716 poles were ground line inspected plus an additional 13,774 poles in joint owner maintenance area were visually inspected for overhead issues.

\$ Plan	\$ Actual	\$ Variance
\$662,117	\$577,241	(\$84,876)

Expenses were lower than anticipated due to the number of newer poles which did not require inspection, based on age, in the towns inspected in 2020.

# EVERSOURCE

## 2020 Reliability Report

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**NATIONAL ELECTRICAL SAFETY CODE (NESC) Repairs:**

**Program Description:** Repair non-capital items documented as part of circuit inspections or other NESC compliance surveys such as during surveys for third party attachments.

**Total Unit Population:** Eversource has approximately 12,200 miles of overhead distribution line and approximately 2,000 miles of underground distribution line.

**Results:** No NESC repair maintenance orders were completed in 2020. Thirty-four corrective maintenance orders are outstanding. Extensive repairs were completed as part of make-ready work for CATV expansion into the Lakes Region area.

\$ Plan	\$ Actual	\$ Variance
n/a*	n/a*	n/a*

\*Budgets are not developed or tracked at this level or for this activity. Work is completed under a variety of Field Work Orders (FWOs)

# EVERSOURCE

## 2020 Reliability Report

ROW Patrols

District	Line	ROW Miles
BEDFORD	311	17.62
BEDFORD	312	0.28
BEDFORD	322	6.14
BEDFORD	323	4.24
BEDFORD	327	4.22
BEDFORD	328	4.48
BEDFORD	334	15.6
BEDFORD	335	12.29
BEDFORD	354	0.08
BEDFORD	358	1.46
BEDFORD	359	1.46
BEDFORD	378	1.6
BEDFORD	3151	6.31
BEDFORD	3164	2.38
BEDFORD	3271	6.25
BEDFORD	3392	0.82
BEDFORD	3138X	0.91
BEDFORD	3143X	3.62
BEDFORD	317 TAP	1.73
BEDFORD	3194X1	5.62
BEDFORD	3212X	3.6
BEDFORD	335X56	1.56
BERLIN	352	5.88
BERLIN	3521	0.63
BERLIN	3525	2.24
BERLIN	350X	3.7
BERLIN	350X2	8
BERLIN	350X2P	2.19
CHOCORUA	346	18.92
CHOCORUA	347	10.2
CHOCORUA	390	16.45
CHOCORUA	395	1.54
CHOCORUA	3218	3.71
CHOCORUA	336X	1.5
CHOCORUA	346X2	1.92
DERRY	3184X10	1.18
DERRY	32W1	0.91
DERRY	32W3	0.39
DERRY	32W4	2.15
DERRY	32W5	0.91
DERRY	365X	3.43
EPPING	377	13.34
EPPING	380	3.7

District	Line	ROW Miles
EPPING	3162	3.93
EPPING	3115X	2.73
EPPING	3137X	16
EPPING	3152X	0.82
EPPING	49W1	5.7
EPPING	3229	5.11
HOOKSETT	318	4.77
HOOKSETT	321	2.26
HOOKSETT	324	3.39
HOOKSETT	325	1.8
HOOKSETT	356	0.2
HOOKSETT	357	0.25
HOOKSETT	370	0.45
HOOKSETT	372	0.35
HOOKSETT	387	0.74
HOOKSETT	393	4.42
HOOKSETT	3142	2.48
HOOKSETT	3614	6.27
KEENE	313	25.19
KEENE	382	8.63
KEENE	3178	5.46
KEENE	3235	8.65
KEENE	313X4	12
KEENE	3140X	5
KEENE	382X2	2.5
KEENE	76W1	1.2
KEENE	76W3	1.4
KEENE	76W4	1.4
KEENE	76W5	0.2
KEENE	76W7	3.57
KEENE	W-110	2.63
KEENE	W-15	7.34
KEENE	W-185	2.14
KEENE	W-2	1.5
LANCASTER	351	24.66
LANCASTER	355	35.52
LANCASTER	384	0.83
LANCASTER	348X	14.97
LANCASTER	348X1	2
LANCASTER	348X2	9.3
LANCASTER	348X3	13.34
LANCASTER	351X1	1.16
LANCASTER	376X	21.25

# EVERSOURCE

## 2020 Reliability Report

ROW Patrols (cont.)

District	Line	ROW Miles
LANCASTER	43W1	2.69
NASHUA	314	7.05
NASHUA	353	5.43
NASHUA	383	2.61
NASHUA	389	3.14
NASHUA	3144	6.97
NASHUA	3146	2.92
NASHUA	3147	2.95
NASHUA	3154	4.67
NASHUA	3155	9.49
NASHUA	3175	1.62
NASHUA	3445	1.51
NASHUA	3750	0.25
NASHUA	3891	0.68
NASHUA	3010X	0.25
NASHUA	3020X	1.83
NASHUA	3020X2	1
NASHUA	3110X	4.45
NASHUA	3136X	3.5
NASHUA	3159X	1.15
NASHUA	3168X	1.06
NASHUA	3177X	5.39
NASHUA	3217X	5.97
NASHUA	329	10.71
NEWPORT	315	3.87
NEWPORT	316	9.3
NEWPORT	3410	6.63
NEWPORT	4411	0.5
NEWPORT	4435	0.25
PORTSMOUTH	339	2.83
PORTSMOUTH	367	0.55
PORTSMOUTH	3101	0.69
PORTSMOUTH	3102	3.48
PORTSMOUTH	3105	3.76
PORTSMOUTH	3106	0.97
PORTSMOUTH	3111	4.16
PORTSMOUTH	3112	7.93
PORTSMOUTH	3165	7.93
PORTSMOUTH	3167	0.32
PORTSMOUTH	3171	2.22
PORTSMOUTH	3172	7.93
PORTSMOUTH	3214	2.76
PORTSMOUTH	3850	5.06

District	Line	ROW Miles
PORTSMOUTH	3153X	2.18
PORTSMOUTH	3191	6.6
ROCHESTER	32	11.68
ROCHESTER	340	2.97
ROCHESTER	362	1.5
ROCHESTER	371	15.72
ROCHESTER	386	10.32
ROCHESTER	392	3.62
ROCHESTER	399	6.67
ROCHESTER	3157	2.42
ROCHESTER	3174	4.93
ROCHESTER	3425	2.12
ROCHESTER	3601	0.57
ROCHESTER	3148X	1.16
ROCHESTER	3157X	2.51
ROCHESTER	3157X1	6.54
ROCHESTER	386A	1.79
ROCHESTER	399X1	3.38
ROCHESTER	W-122	1.04
TILTON	310	6.05
TILTON	317	22.06
TILTON	319	10.94
TILTON	337	7.06
TILTON	338	22.46
TILTON	343	8
TILTON	345	16.75
TILTON	368	1.68
TILTON	398	9.82
TILTON	3025	4.77
TILTON	3122	2.65
TILTON	3149	0.36
TILTON	3216	3.68
TILTON	3548	6.44
TILTON	3625	1.89
TILTON	3216 TAP	2.64
TILTON	3222X	0.43
TILTON	342A	12.12
TILTON	342B	5.39
TILTON	3548 TAP	0.22

# EVERSOURCE

## 2020 Reliability Report

### Roadside Circuit Patrols

<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>	<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>
BEDFORD	3108		5/1/20	BEDFORD	322X12_12	39.13	4/28/20
BEDFORD	13W1_12	7.17	4/26/20	BEDFORD	322X14_12	3.06	4/29/20
BEDFORD	18W1_12	13.11	5/7/20	BEDFORD	322X15_12	0.02	4/29/20
BEDFORD	18W3_12	12.54	5/7/20	BEDFORD	322X3_12	2.44	4/29/20
BEDFORD	21W1_12	4.51	4/23/20	BEDFORD	322X54_12	0.83	4/28/20
BEDFORD	23X2_12	7.86	5/6/20	BEDFORD	323X10_12	0.02	4/30/20
BEDFORD	23X4_12	5.80	5/6/20	BEDFORD	323X5_12	35.85	4/30/20
BEDFORD	23X5_22	127.08	5/13/20	BEDFORD	323X6_12	0.24	4/30/20
BEDFORD	23X6_22	46.55	5/7/20	BEDFORD	323X7_12	0.19	4/30/20
BEDFORD	27W2_12	12.00	4/22/20	BEDFORD	323X9_12	0.04	4/30/20
BEDFORD	30H2_22	10.39	4/28/20	BEDFORD	324X2_12	0.02	4/30/20
BEDFORD	3108X1_12	10.51	4/22/20	BEDFORD	3271X1_12	57.76	4/14/20
BEDFORD	311X1_12	34.91	4/22/20	BEDFORD	3271X2_12	69.43	5/1/20
BEDFORD	311X2_12	6.38	5/1/20	BEDFORD	3271X3_12	1.61	4/29/20
BEDFORD	311X3_12	8.57	5/1/20	BEDFORD	3271X4_12	0.00	5/5/20
BEDFORD	311X4_12	0.19	5/1/20	BEDFORD	3271X5_12	11.78	4/23/20
BEDFORD	311X5_12	36.98	5/14/20	BEDFORD	327X10_12	1.64	5/1/20
BEDFORD	311X6_12	7.80	5/1/20	BEDFORD	327X8_12	4.33	5/1/20
BEDFORD	312X_12	1.44	5/6/20	BEDFORD	327X9_12	1.57	5/1/20
BEDFORD	312X4_12	0.03	5/6/20	BEDFORD	328X1_12	13.62	4/23/20
BEDFORD	3138X_12	11.35	4/22/20	BEDFORD	328X10_12	1.80	4/30/20
BEDFORD	3151X1_12	0.10	5/5/20	BEDFORD	328X11_12	0.33	4/30/20
BEDFORD	3151X10_12	7.20	5/4/20	BEDFORD	328X12_12	0.03	4/30/20
BEDFORD	3151X13_12	0.51	4/24/20	BEDFORD	328X13_12	0.19	4/30/20
BEDFORD	3151X2_12	0.77	4/27/20	BEDFORD	328X18_12	1.34	4/30/20
BEDFORD	3151X49_12	1.78	4/27/20	BEDFORD	328X2_12	2.55	5/1/20
BEDFORD	3151X52_12	3.20	5/4/20	BEDFORD	328X3_12	1.06	5/1/20
BEDFORD	3151X53_12	0.35	5/4/20	BEDFORD	328X6_12	0.22	4/30/20
BEDFORD	3151X9_12	3.12	5/4/20	BEDFORD	328X7_12	0.67	5/5/20
BEDFORD	3164X1_12	0.16	4/23/20	BEDFORD	328X8_12	0.21	5/1/20
BEDFORD	3164X2_12	1.41	4/28/20	BEDFORD	328X9_12	20.50	4/28/20
BEDFORD	3164X3_12	16.47	5/7/20	BEDFORD	332X1_12	15.63	5/1/20
BEDFORD	3164X4_12	0.04	4/29/20	BEDFORD	334X14_12	6.60	5/1/20
BEDFORD	3164X6_12	0.03	4/29/20	BEDFORD	334X15_12	0.04	5/1/20
BEDFORD	3164X7_12	0.01	4/29/20	BEDFORD	334X2_12	16.55	5/1/20
BEDFORD	3164X8_12	3.49	4/29/20	BEDFORD	335X1_12	8.36	4/14/20
BEDFORD	3173X1_12	67.91	5/5/20	BEDFORD	335X2_12	16.20	5/4/20
BEDFORD	317X1_12	15.12	5/1/20	BEDFORD	335X3_12	6.80	4/23/20
BEDFORD	317X2	43.95	5/5/20	BEDFORD	335X4_12	0.02	5/1/20
BEDFORD	317X3	65.93	5/7/20	BEDFORD	335X56_12	2.71	5/1/20
BEDFORD	317X7	5.70	5/8/20	BEDFORD	335X6_12	0.06	5/1/20
BEDFORD	3194X1_12	6.07	4/29/20	BEDFORD	335X7_12	0.03	5/1/20
BEDFORD	3194X2_12	2.28	4/29/20	BEDFORD	335X8_12	0.17	5/1/20
BEDFORD	3197X_12	14.19	4/29/20	BEDFORD	33H1_12	47.11	5/12/20
BEDFORD	322X10_12	19.89	4/28/20	BEDFORD	35H1_12	0.95	5/4/20

# EVERSOURCE

## 2020 Reliability Report

Roadside Circuit Patrols (cont.)

AWC	CIRCUIT	CIRCUIT		AWC	CIRCUIT	CIRCUIT	
		MILES	Date completed			MILES	Date completed
BEDFORD	360X1_12	8.86	4/22/20	CHOCORUA	17H1_45	5.45	4/29/20
BEDFORD	360X10_12	1.10	5/4/20	CHOCORUA	19W1_45	45.66	5/1/20
BEDFORD	360X11_12	8.21	5/4/20	CHOCORUA	19W2_45	99.70	5/1/20
BEDFORD	360X12_12	0.03	5/4/20	CHOCORUA	3116X_45	33.49	5/1/20
BEDFORD	360X13_12	0.62	5/4/20	CHOCORUA	3116X1_45	85.19	5/1/20
BEDFORD	360X14_12	2.73	5/4/20	CHOCORUA	333X_45	35.25	5/1/20
BEDFORD	360X2_12	6.48	4/23/20	CHOCORUA	336X_45	13.56	5/1/20
BEDFORD	360X3_12	0.02	5/4/20	CHOCORUA	336X1_45	29.48	4/29/20
BEDFORD	360X4_12	3.02	5/4/20	CHOCORUA	346X1_45	52.13	5/1/20
BEDFORD	360X5_12	10.99	4/22/20	CHOCORUA	346X2_45	2.10	5/5/20
BEDFORD	360X6_12	0.13	5/4/20	CHOCORUA	346X56_45	1.93	4/29/20
BEDFORD	360X7_12	18.33	4/29/20	CHOCORUA	347X1_45	0.26	4/29/20
BEDFORD	360X8_12	0.23	4/30/20	CHOCORUA	347X3_45	51.77	5/1/20
BEDFORD	360X9_12	3.72	4/29/20	CHOCORUA	347X6_45	2.58	4/29/20
BEDFORD	37W1_12	52.67	5/1/20	CHOCORUA	395X1_45	2.07	4/29/20
BEDFORD	387X4_12	0.10	5/4/20	DERRY	26W1_23	7.22	4/23/20
BEDFORD	3W1_12	22.32	5/5/20	DERRY	3115X_23	71.68	4/17/20
BEDFORD	3W2_12	23.99	5/5/20	DERRY	3128X_23	75.83	4/27/20
BEDFORD	45H1_12	7.24	5/11/20	DERRY	3133X_23	58.25	4/15/20
BEDFORD	5W1_12	1.02	5/4/20	DERRY	3141X_23	95.91	4/27/20
BEDFORD	5W2_12	0.20	5/4/20	DERRY	3184X_23	18.59	4/28/20
BEDFORD	79W4_12	11.94	5/1/20	DERRY	32W1_23	25.79	4/24/20
BEDFORD	85W1_12	64.65	5/5/20	DERRY	32W2_23	4.67	4/23/20
BERLIN	21H1_77	7.04	5/14/20	DERRY	32W3_23	10.72	4/23/20
BERLIN	21H2_77	6.28	5/14/20	DERRY	32W4_23	19.26	4/27/20
BERLIN	21H4_77	6.31	5/15/20	DERRY	32W5_23	31.71	4/27/20
BERLIN	21H5_77	10.88	5/15/20	DERRY	365X_23	24.00	4/27/20
BERLIN	25W1_77	42.06	5/7/20	DERRY	3750_21	26.82	4/28/20
BERLIN	350X_77	5.69	5/7/20	DERRY	3818_23	76.01	4/27/20
BERLIN	350X1_77	4.11	5/14/20	DERRY	383X1_21	21.31	4/27/20
BERLIN	350X2_77	18.77	4/15/20	DERRY	383X2_21	8.91	4/28/20
BERLIN	350X3_77	15.65	4/27/20	DERRY	383X3_21	6.75	4/28/20
BERLIN	351X3_77	2.92	5/14/20	DERRY	8W1_23	3.97	4/23/20
BERLIN	351X4_77	19.98	4/27/20	EPPING	3103X1_65	47.52	4/30/20
BERLIN	351X4_77	2.92	5/11/20	EPPING	3115X11_65	6.18	4/27/20
BERLIN	351X5_77	0.22	5/14/20	EPPING	3115X12_65	80.67	5/1/20
BERLIN	351X8_77	7.24	5/15/20	EPPING	3115X14_65	6.14	4/27/20
BERLIN	351X9_77	2.64	5/14/20	EPPING	3115X7_65	12.41	5/1/20
BERLIN	3525X_77	9.56	5/14/20	EPPING	3115X9_65	6.00	4/27/20
BERLIN	3525X1_77	5.42	5/14/20	EPPING	3137X_65	61.21	4/15/20
BERLIN	3525X2_77	19.34	5/14/20	EPPING	3137X1_65	52.94	4/29/20
BERLIN	3525X3_77	5.11	5/14/20	EPPING	3137X10_65	14.55	4/30/20
BERLIN	3525X4_77	28.40	4/27/20	EPPING	3137X3_65	10.16	5/4/20
BERLIN	3525X5_77	59.40	5/11/20	EPPING	3137X4_65	0.21	5/4/20
BERLIN	3525X6_77	2.51	5/14/20	EPPING	3137X5_65	14.08	5/4/20

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## 2020 Reliability Report

Roadside Circuit Patrols (cont.)

AWC	CIRCUIT	CIRCUIT		AWC	CIRCUIT	CIRCUIT	
		MILES	Date completed			MILES	Date completed
EPPING	3137X6_65	11.47	5/4/20	HOOKSETT	14H8_11	0.66	4/26/20
EPPING	3137X7_65	6.04	5/4/20	HOOKSETT	14W1_11	2.56	4/24/20
EPPING	3137X8_65	5.65	5/4/20	HOOKSETT	14W2_11	2.18	4/27/20
EPPING	3137X80_65	8.71	5/4/20	HOOKSETT	14X109_11	0.48	4/27/20
EPPING	3152X_65	16.31	4/30/20	HOOKSETT	14X118_11	0.27	4/28/20
EPPING	3152X1_65	12.06	4/30/20	HOOKSETT	14X121_11	0.20	4/28/20
EPPING	3162X1_65	8.43	4/30/20	HOOKSETT	14X126A_11	5.80	4/28/20
EPPING	3162X2_65	5.19	4/30/20	HOOKSETT	14X126B_11	0.15	4/28/20
EPPING	3162X3_65	1.37	4/30/20	HOOKSETT	14X128A_11	0.04	4/29/20
EPPING	3162X4_65	4.17	4/30/20	HOOKSETT	14X130_11	0.05	4/28/20
EPPING	3191X1_65	0.58	4/28/20	HOOKSETT	14X134_11	0.03	4/28/20
EPPING	3191X10_65	1.44	4/28/20	HOOKSETT	14X135_11	1.02	4/28/20
EPPING	3191X1A_65	14.08	4/28/20	HOOKSETT	14X135Y_11	0.01	4/28/20
EPPING	3191X1B_65	9.15	4/28/20	HOOKSETT	14X136_11	0.07	4/28/20
EPPING	3191X2_65	6.20	4/28/20	HOOKSETT	14X178_11	0.63	4/28/20
EPPING	3191X5_65	2.28	4/28/20	HOOKSETT	14X188_11	3.24	4/29/20
EPPING	3191X6_65	5.76	4/28/20	HOOKSETT	14X38_11	0.08	4/29/20
EPPING	3191X7_65	0.31	4/28/20	HOOKSETT	16W1_11	2.54	4/22/20
EPPING	3191X8_65	0.70	4/28/20	HOOKSETT	16W3_11	5.44	5/2/20
EPPING	377X1_65	4.90	4/30/20	HOOKSETT	19X5_11	0.12	5/5/20
EPPING	377X10_65	3.35	4/30/20	HOOKSETT	19X6_11	0.15	5/5/20
EPPING	377X11_65	5.12	4/30/20	HOOKSETT	1W2_11	0.01	4/28/20
EPPING	377X12_65	0.39	5/4/20	HOOKSETT	22H4_11	0.46	4/28/20
EPPING	377X13_65	0.29	4/30/20	HOOKSETT	22W1_11	2.63	4/30/20
EPPING	377X14_65	0.12	4/30/20	HOOKSETT	22W2_11	2.42	4/24/20
EPPING	377X15_65	5.62	4/30/20	HOOKSETT	23W1_11	0.64	5/4/20
EPPING	377X16_65	10.33	4/30/20	HOOKSETT	23W2_11	1.74	5/4/20
EPPING	377X17_65	0.04	4/30/20	HOOKSETT	23W3_11	2.67	5/4/20
EPPING	377X18_65	0.59	4/30/20	HOOKSETT	23W4_11	2.29	5/4/20
EPPING	377X19_65	3.57	4/30/20	HOOKSETT	24H1_11	0.68	4/28/20
EPPING	377X2_65	21.92	4/28/20	HOOKSETT	24H2_11	0.26	4/28/20
EPPING	377X20_65	18.02	4/14/20	HOOKSETT	29H1_11	0.51	4/30/20
EPPING	377X29_65	4.12	5/4/20	HOOKSETT	29H2_11	3.47	4/24/20
EPPING	377X3_65	16.39	5/4/20	HOOKSETT	3130X_11	6.57	5/6/20
EPPING	377X5_65	1.21	5/4/20	HOOKSETT	318X2_11	6.87	5/8/20
EPPING	377X6_65	8.39	4/28/20	HOOKSETT	321X11_11	1.96	4/30/20
EPPING	377X7_65	18.51	4/30/20	HOOKSETT	324X10_11	2.18	4/30/20
EPPING	377X9_65	1.47	5/4/20	HOOKSETT	324X11_11	0.32	4/30/20
EPPING	380X1_65	7.34	4/30/20	HOOKSETT	324X12_11	0.43	4/30/20
EPPING	380X2_65	4.63	4/30/20	HOOKSETT	324X4_11	0.67	4/23/20
EPPING	380X3_65	3.54	4/30/20	HOOKSETT	324X8_11	1.08	4/23/20
EPPING	49W1_65	16.48	5/5/20	HOOKSETT	332X1_11		5/4/20
EPPING	63W1_65	77.27	4/30/20	HOOKSETT	334X11_11	0.05	4/30/20
HOOKSETT	14H4_11	1.40	4/27/20	HOOKSETT	334X163_11	0.05	4/30/20
HOOKSETT	14H7_11	0.72	4/27/20	HOOKSETT	334X17_11	0.88	5/11/20



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## 2020 Reliability Report

Roadside Circuit Patrols (cont.)

<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>	<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>
HOOKSETT	334X18_11	14.45	5/8/20	KEENE	313X2_36	21.45	4/22/20
HOOKSETT	334X43_11	0.02	4/30/20	KEENE	313X3_36	8.50	4/21/20
HOOKSETT	334X6_11	0.02	4/30/20	KEENE	313X4_36	10.65	4/21/20
HOOKSETT	334X8_11	0.55	4/30/20	KEENE	313X7_36	27.64	4/21/20
HOOKSETT	335X12_11		5/4/20	KEENE	313X8_36	3.19	4/22/20
HOOKSETT	335X15_11		5/4/20	KEENE	3140_36	57.24	5/4/20
HOOKSETT	34W18_11		5/8/20	KEENE	3140X1_36	38.41	5/5/20
HOOKSETT	3614X3_11	5.79	4/27/20	KEENE	3140X2_36	91.51	4/27/20
HOOKSETT	3615X1_11	21.04	4/27/20	KEENE	3140X3_36	13.13	5/5/20
HOOKSETT	3615X2_11	7.42	4/27/20	KEENE	3155X4_36	83.19	4/24/20
HOOKSETT	3615X3_11	3.98	4/27/20	KEENE	3155X6_36	9.24	4/28/20
HOOKSETT	370X_11	2.73	4/28/20	KEENE	3155X9_22	47.67	5/5/20
HOOKSETT	370X3_11	0.90	4/28/20	KEENE	3173_36	63.69	5/1/20
HOOKSETT	387X1_11		4/27/20	KEENE	3178X3_31	3.30	4/20/20
HOOKSETT	387X7_11	0.00	4/27/20	KEENE	3178X4_31	75.46	5/1/20
HOOKSETT	393X1_11	0.69	4/27/20	KEENE	3178X5_31	10.09	4/24/20
HOOKSETT	393X10_11	0.02	4/27/20	KEENE	33W1_36	55.53	4/23/20
HOOKSETT	393X10A_11	0.04	4/27/20	KEENE	35W1_36	38.97	4/23/20
HOOKSETT	393X11_11	0.86	4/27/20	KEENE	382X3_36	33.45	5/7/20
HOOKSETT	393X2_11	0.68	4/27/20	KEENE	4W1_31	65.14	4/21/20
HOOKSETT	393X20_11	2.91	4/14/20	KEENE	4W2_31	53.13	4/21/20
HOOKSETT	393X3_11	0.13	4/27/20	KEENE	51W1_36	32.64	4/20/20
HOOKSETT	393X32_11	0.20	4/27/20	KEENE	53H1_31	34.00	4/22/20
HOOKSETT	393X33_11	0.02	4/27/20	KEENE	53H2_36	25.58	4/23/20
HOOKSETT	393X36T_11	0.00	4/27/20	KEENE	55H1_36	13.98	4/24/20
HOOKSETT	393X38_11	0.04	4/27/20	KEENE	76W1_31	20.88	4/22/20
HOOKSETT	393X39_11	0.22	4/27/20	KEENE	76W5_31	30.97	4/21/20
HOOKSETT	393X4_11	0.01	4/27/20	KEENE	76W7_31	170.73	4/21/20
HOOKSETT	393X40_11	0.02	4/27/20	KEENE	W1_31	0.96	4/27/20
HOOKSETT	393X44_11	0.04	4/27/20	KEENE	W110_31	37.64	4/20/20
HOOKSETT	393X8_11	1.16	4/27/20	KEENE	W15_31	76.33	4/27/20
HOOKSETT	44W2_11	9.29	4/27/20	KEENE	W175_31	26.20	5/1/20
HOOKSETT	5W2_11	7.38	4/30/20	KEENE	W185_31	19.83	4/20/20
HOOKSETT	7W1_11	2.78	4/27/20	KEENE	W2_31	12.09	4/20/20
KEENE	24X1_36	114.00	4/27/20	KEENE	W9_31	10.73	5/7/20
KEENE	26H1_36	2.93	4/23/20	LANCASTER	12W1_43	72.37	5/8/20
KEENE	26H2_36	13.22	4/23/20	LANCASTER	13W1_43	60.09	5/13/20
KEENE	28W1_36	47.87	5/7/20	LANCASTER	1W1_76	19.49	4/23/20
KEENE	3120_31	71.01	4/23/20	LANCASTER	1W2_76	54.28	4/24/20
KEENE	3120X1_31	19.28	4/23/20	LANCASTER	348X1_76	85.80	5/8/20
KEENE	3120X2_31	57.64	4/24/20	LANCASTER	348X19_43	3.38	5/8/20
KEENE	3120X3_36	13.79	4/26/20	LANCASTER	348X2_76	73.46	5/15/20
KEENE	3120X4_36	73.53	4/23/20	LANCASTER	348X20_43	19.72	5/15/20
KEENE	3139X_31	140.12	4/30/20	LANCASTER	348X3_76	87.97	5/15/20
KEENE	313X1_36	102.81	4/22/20	LANCASTER	348X4_76	9.43	5/9/20



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## 2020 Reliability Report

Roadside Circuit Patrols (cont.)

<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>	<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>
LANCASTER	348X5_76	20.18	5/14/20	NASHUA	17H3_21	0.52	5/1/20
LANCASTER	348X6_76	0.76	5/14/20	NASHUA	18H1_21	6.31	5/1/20
LANCASTER	348X7_76	17.01	5/14/20	NASHUA	18H2_21	0.63	5/1/20
LANCASTER	348X8_76	7.93	5/14/20	NASHUA	18H3_21	0.11	5/1/20
LANCASTER	348X9_76	16.11	5/14/20	NASHUA	23H3_22	3.18	4/27/20
LANCASTER	351X1_76	4.43	5/13/20	NASHUA	23W7_22	7.57	5/7/20
LANCASTER	351X16_76	48.86	4/23/20	NASHUA	24W1_21	27.51	4/28/20
LANCASTER	351X17_76	7.43	5/13/20	NASHUA	27H1_22	1.36	5/5/20
LANCASTER	351X2_76	4.08	5/13/20	NASHUA	27H2_22	3.03	5/5/20
LANCASTER	355X1_76	45.04	4/27/20	NASHUA	27H3_22	3.71	5/7/20
LANCASTER	355X10_76	117.06	4/27/20	NASHUA	2H1_21	5.59	4/22/20
LANCASTER	355X14_76	0.91	4/27/20	NASHUA	3010X_21	22.79	4/30/20
LANCASTER	355X15_76	6.42	5/14/20	NASHUA	3020X_21	21.32	4/30/20
LANCASTER	355X16_76	2.20	5/13/20	NASHUA	3110X_21	36.57	5/1/20
LANCASTER	355X2_76	3.02	4/27/20	NASHUA	3136X_21	9.57	4/28/20
LANCASTER	355X3_76	16.53	4/27/20	NASHUA	3143X_22	7.12	5/6/20
LANCASTER	355X4_76	0.72	4/27/20	NASHUA	3144X1_21	16.74	5/4/20
LANCASTER	355X5_76	7.82	4/27/20	NASHUA	3144X3_21	15.67	5/5/20
LANCASTER	355X6_76	9.73	4/27/20	NASHUA	314X12_22	4.25	5/5/20
LANCASTER	355X7_76	5.15	4/27/20	NASHUA	314X14_22	7.66	4/15/20
LANCASTER	36W1_76	5.75	4/27/20	NASHUA	314X15_22	36.43	5/5/20
LANCASTER	376X_76	22.18	4/15/20	NASHUA	314X19_22	0.52	5/4/20
LANCASTER	376X1_76	12.32	5/12/20	NASHUA	314X21_22	0.14	5/4/20
LANCASTER	376X2_76	4.48	4/27/20	NASHUA	314X22_22	1.06	5/4/20
LANCASTER	376X3_76	0.96	4/27/20	NASHUA	314X23_22	22.91	5/5/20
LANCASTER	376X4_76	0.91	4/27/20	NASHUA	314X24_22	1.98	5/4/20
LANCASTER	376X5_76	1.85	4/27/20	NASHUA	314X26_22	4.96	5/4/20
LANCASTER	376X6_76	4.81	4/27/20	NASHUA	314X3_22	6.69	5/4/20
LANCASTER	41W1_43	26.70	5/15/20	NASHUA	314X34_22	0.07	5/4/20
LANCASTER	45W1_43	9.67	5/15/20	NASHUA	314X35_22	1.22	5/4/20
LANCASTER	59W1_76	38.62	4/24/20	NASHUA	314X4_22	91.38	5/1/20
LANCASTER	59W2_76	38.39	4/23/20	NASHUA	314X46_22	2.61	4/30/20
LANCASTER	5H1_76	20.07	4/23/20	NASHUA	314X54_22	10.72	4/30/20
LANCASTER	5H2_76	15.79	4/27/20	NASHUA	3154X1_21	21.44	4/30/20
NASHUA	15H1_21	1.38	4/30/20	NASHUA	3154X2_21	33.58	5/5/20
NASHUA	15H2_21	0.51	4/30/20	NASHUA	3155X_22	28.62	4/29/20
NASHUA	15H3_21	1.64	4/30/20	NASHUA	3155X2_22	80.69	5/1/20
NASHUA	15H4_21	2.87	5/1/20	NASHUA	3155X3_22	9.19	4/28/20
NASHUA	15H5_21	0.51	5/1/20	NASHUA	3155X7_22	35.83	5/1/20
NASHUA	15H6_21	3.51	5/1/20	NASHUA	3159X_21	40.34	4/28/20
NASHUA	16H1_21	0.02	4/22/20	NASHUA	3168X_21	20.30	5/7/20
NASHUA	16H2_21	2.33	4/22/20	NASHUA	3175X_21	13.10	5/6/20
NASHUA	16H3_21	6.65	4/22/20	NASHUA	3175X1_21	17.29	5/5/20
NASHUA	17H1_21	0.76	5/1/20	NASHUA	3175X3_21	1.72	5/5/20
NASHUA	17H2_21	2.90	5/1/20	NASHUA	3175X5_21	1.89	5/5/20

# EVERSOURCE

## 2020 Reliability Report

Roadside Circuit Patrols (cont.)

<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>	<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>
NASHUA	3177X_21	14.63	5/4/20	PORTSMOUTH	2W4_63	5.34	4/24/20
NASHUA	3177X1_21	24.26	5/5/20	PORTSMOUTH	2W5_63	8.43	4/24/20
NASHUA	3177XA_21	19.86	4/30/20	PORTSMOUTH	3102X1_63	0.54	4/24/20
NASHUA	3211X_21	39.02	5/1/20	PORTSMOUTH	3102X2_63	5.80	4/24/20
NASHUA	3212X_22	26.93	4/28/20	PORTSMOUTH	3102X5_63	5.71	4/24/20
NASHUA	3217X_22	66.13	5/1/20	PORTSMOUTH	3102X6_63	2.61	4/24/20
NASHUA	3445X_21	39.94	4/30/20	PORTSMOUTH	3102X7_63	1.60	4/24/20
NASHUA	353X1_21	0.17	4/22/20	PORTSMOUTH	3105X1_63	25.85	4/24/20
NASHUA	353X3_21	3.37	4/25/20	PORTSMOUTH	3105X4_63	0.49	4/24/20
NASHUA	353X4_21	3.59	4/25/20	PORTSMOUTH	3111X1_63	5.22	4/24/20
NASHUA	353X5_21	4.72	4/23/20	PORTSMOUTH	3112X1_63	3.42	4/24/20
NASHUA	353X6_21	1.08	4/23/20	PORTSMOUTH	3112X3_63	4.70	4/24/20
NASHUA	389X3_21	4.69	4/22/20	PORTSMOUTH	3112X4_63	5.06	4/24/20
NASHUA	389X8_21	1.17	4/22/20	PORTSMOUTH	3153X_63	2.74	4/30/20
NASHUA	3H1_21	7.83	4/30/20	PORTSMOUTH	3153X1_63	0.14	4/30/20
NASHUA	3H2_21	4.39	4/30/20	PORTSMOUTH	3153X2_63	4.74	4/30/20
NASHUA	40W1_21	11.19	4/27/20	PORTSMOUTH	3165X8_63	2.73	4/30/20
NASHUA	52H1_22	0.32	4/27/20	PORTSMOUTH	3172X1_63	22.68	4/30/20
NASHUA	52H2_22	0.10		PORTSMOUTH	3172X2_63	4.76	4/30/20
NASHUA	6W1_21	6.36	5/1/20	PORTSMOUTH	3191X3_63	26.17	4/24/20
NASHUA	72W1_21	10.83	4/27/20	PORTSMOUTH	3191X4_63	0.25	4/24/20
NASHUA	9H1_21	0.26	4/29/20	PORTSMOUTH	3191X9_63	3.63	4/27/20
NASHUA	9H2_21	3.73	4/29/20	PORTSMOUTH	339X1_63	0.73	4/24/20
NEWPORT	17W1_43	39.63	4/21/20	PORTSMOUTH	339X2_63	0.37	4/24/20
NEWPORT	316_32	160.26	4/28/20	PORTSMOUTH	339X3_63	0.95	4/24/20
NEWPORT	316X1_32	152.79	4/27/20	PORTSMOUTH	339X4_63	1.65	4/24/20
NEWPORT	316X2_32	40.41	4/22/20	PORTSMOUTH	339X8_63	2.83	4/24/20
NEWPORT	3410_32	152.80	4/27/20	PORTSMOUTH	367X2_63	7.36	4/27/20
NEWPORT	42X1_32	22.88	4/30/20	PORTSMOUTH	3850X1_63	6.08	5/1/20
NEWPORT	42X3_32	74.86	4/30/20	PORTSMOUTH	3850X4_63	0.68	5/1/20
NEWPORT	42X4_32	10.50	4/30/20	PORTSMOUTH	3850X5_63	1.68	5/1/20
NEWPORT	44H1_32	39.10	5/4/20	PORTSMOUTH	3850X6A_63	0.42	5/1/20
NEWPORT	46W1_32	3.24	4/25/20	PORTSMOUTH	3850X6B_63	1.28	5/1/20
NEWPORT	47W1_32	53.90	5/6/20	PORTSMOUTH	3850X7_63	8.71	5/1/20
NEWPORT	48W1_32	34.68	5/7/20	PORTSMOUTH	48H1_63	8.42	5/1/20
NEWPORT	54W1_32	9.72	5/8/20	PORTSMOUTH	48H2_63	5.45	5/1/20
NEWPORT	55W2_32	24.73	5/1/20	PORTSMOUTH	58W1_63	2.34	5/1/20
NEWPORT	60W1_32	31.37	4/27/20	PORTSMOUTH	64W1_63	4.49	5/1/20
NEWPORT	61W2_32	6.98	4/23/20	PORTSMOUTH	64W2_63	4.86	5/1/20
NEWPORT	74W1_32	18.44	5/1/20	PORTSMOUTH	6H1_63	2.70	5/1/20
NEWPORT	75W2_32	51.15	5/1/20	PORTSMOUTH	6H2_63	8.84	5/1/20
PORTSMOUTH	15W4_63	2.20	4/24/20	PORTSMOUTH	71W1_63	4.85	5/1/20
PORTSMOUTH	16W4_63	3.89	4/24/20	PORTSMOUTH	71W2_63	0.03	5/1/20
PORTSMOUTH	2H1_63	7.90	4/24/20	PORTSMOUTH	71W3_63	8.34	5/1/20
PORTSMOUTH	2H2_63	6.38	4/24/20	PORTSMOUTH	71W4_63	5.67	5/1/20

# EVERSOURCE

## 2020 Reliability Report

Roadside Circuit Patrols (cont.)

<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>	<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>
ROCHESTER	115_62	3.85	5/1/20	ROCHESTER	371X9_62	5.65	5/7/20
ROCHESTER	28H1_61	3.95	4/28/20	ROCHESTER	38W1_62	14.06	5/7/20
ROCHESTER	28H2_61	1.37	4/28/20	ROCHESTER	38W2_62	32.20	5/7/20
ROCHESTER	3148X_62	8.39	4/28/20	ROCHESTER	392X_61	8.67	5/1/20
ROCHESTER	3148X2_62	12.50	4/23/20	ROCHESTER	392X1_61	64.76	5/1/20
ROCHESTER	3148X3_62	14.00	4/28/20	ROCHESTER	392X2_61	8.97	5/1/20
ROCHESTER	3148X4_62	4.17	4/23/20	ROCHESTER	392X3_61	0.82	5/1/20
ROCHESTER	3157X1_61	68.19	4/24/20	ROCHESTER	392X4_61	9.91	5/1/20
ROCHESTER	3157X2_61	1.41	4/24/20	ROCHESTER	392X5_61	10.29	4/21/20
ROCHESTER	3157X3_61	50.13	4/15/20	ROCHESTER	392X6_61	0.02	5/1/20
ROCHESTER	3157X4_61	0.40	4/24/20	ROCHESTER	392X7_62	89.69	5/1/20
ROCHESTER	3174X1_61	4.07	5/1/20	ROCHESTER	392X8_61	0.02	5/1/20
ROCHESTER	3174X2_61	6.08	5/1/20	ROCHESTER	392X9_61	1.09	5/1/20
ROCHESTER	3174X3_61	1.41	4/22/20	ROCHESTER	399X1_62	4.99	4/28/20
ROCHESTER	3174X4_61	34.64	5/1/20	ROCHESTER	399X10_62	0.04	4/28/20
ROCHESTER	32X1_62	0.85	5/1/20	ROCHESTER	399X11_62	2.78	4/28/20
ROCHESTER	32X24_62	3.76	4/22/20	ROCHESTER	399X12_62	2.51	4/28/20
ROCHESTER	32X3_62	14.88	5/1/20	ROCHESTER	399X13_62	4.76	4/28/20
ROCHESTER	32X4_62	5.82	5/1/20	ROCHESTER	399X14_62	0.52	4/28/20
ROCHESTER	32X6_61	2.38	5/1/20	ROCHESTER	399X15_62	9.10	4/28/20
ROCHESTER	32X98_62	0.22	5/1/20	ROCHESTER	399X17_61	0.05	4/28/20
ROCHESTER	340X1_61	5.19	4/24/20	ROCHESTER	399X18_61	10.09	4/28/20
ROCHESTER	340X10_61	0.04	4/25/20	ROCHESTER	399X19_61	3.04	4/28/20
ROCHESTER	340X11_61	0.45	4/25/20	ROCHESTER	399X2_61	0.06	4/28/20
ROCHESTER	340X2_61	0.29	4/24/20	ROCHESTER	399X20_61	0.18	4/28/20
ROCHESTER	340X4_61	0.48	4/24/20	ROCHESTER	399X3_61	0.86	4/28/20
ROCHESTER	340X5_61	5.83	4/24/20	ROCHESTER	399X4_61	0.62	4/28/20
ROCHESTER	34H1_61	4.65	5/5/20	ROCHESTER	399X42_61	0.04	4/28/20
ROCHESTER	34H2_61	2.63	5/5/20	ROCHESTER	399X5_61	0.04	4/28/20
ROCHESTER	34W3_61	14.44	4/23/20	ROCHESTER	399X6_61	0.05	4/28/20
ROCHESTER	34W4_61	15.90	5/1/20	ROCHESTER	399X7_61	0.01	4/28/20
ROCHESTER	362X1_61	12.57	4/28/20	ROCHESTER	399X8_61	3.37	4/28/20
ROCHESTER	362X2_61	9.37	4/15/20	ROCHESTER	399X87_61	0.18	4/28/20
ROCHESTER	362X3_61	2.24	4/28/20	ROCHESTER	39W1_61	11.96	5/1/20
ROCHESTER	362X4_61	5.55	4/28/20	ROCHESTER	39W2_61	31.37	5/1/20
ROCHESTER	371X1_61	31.34	5/8/20	ROCHESTER	40H1_61	5.85	4/26/20
ROCHESTER	371X14_62	16.02	5/7/20	ROCHESTER	41H1_61	2.23	5/7/20
ROCHESTER	371X22_62	3.40	5/6/20	ROCHESTER	41H2_61	5.12	5/7/20
ROCHESTER	371X3_62	0.29	5/6/20	ROCHESTER	42H1_61	11.22	5/7/20
ROCHESTER	371X30_62	5.57	5/6/20	ROCHESTER	42H2_61	2.45	5/7/20
ROCHESTER	371X4_61	7.07	5/6/20	ROCHESTER	43H1_61	8.26	5/7/20
ROCHESTER	371X5_61	1.82	5/6/20	ROCHESTER	51H1_61	8.82	5/14/20
ROCHESTER	371X6_62	0.16	5/6/20	ROCHESTER	54H1_61	4.63	5/14/20
ROCHESTER	371X7_61	0.30	5/6/20	ROCHESTER	54H2_61	6.53	5/14/20
ROCHESTER	371X8_62	3.90	5/7/20	ROCHESTER	56H1_61	3.21	4/24/20

# EVERSOURCE

## 2020 Reliability Report

Roadside Circuit Patrols (cont.)

<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>
ROCHESTER	56H2_61	6.60	4/24/20
ROCHESTER	57W1_61	25.29	5/14/20
ROCHESTER	73W1_61	38.30	5/5/20
ROCHESTER	73W2_61	69.00	5/5/20
TILTON	10W1_41	8.30	4/29/20
TILTON	11W1_41	26.39	5/1/20
TILTON	11W2_41	8.27	5/1/20
TILTON	1X4_42	30.21	5/4/20
TILTON	20W1_42	56.17	5/13/20
TILTON	20W2_42	45.05	5/13/20
TILTON	27X1_41	37.70	4/29/20
TILTON	29X1_41	15.11	5/1/20
TILTON	2W1_41	24.03	5/1/20
TILTON	2W2_41	47.11	5/1/20
TILTON	30W2_64	46.19	5/7/20
TILTON	310X2_41	0.71	5/1/20
TILTON	310X3_41	17.31	5/1/20
TILTON	310X4_41	0.04	5/1/20
TILTON	310X5_41	4.11	5/1/20
TILTON	310X6_41	0.12	5/1/20
TILTON	3114W1_42	71.66	5/1/20
TILTON	3114X_42	52.76	5/1/20
TILTON	3137X2_64	8.65	5/8/20
TILTON	319X1_64	110.57	4/28/20
TILTON	31W1_64	61.20	5/6/20
TILTON	31W2_64	39.80	5/7/20
TILTON	3222X_41	62.08	5/1/20
TILTON	337X10_42	2.25	4/30/20
TILTON	337X12_42	1.17	4/30/20
TILTON	337X14_42	0.08	4/30/20
TILTON	337X15_42	0.62	4/30/20
TILTON	337X21_42	0.03	4/30/20
TILTON	337X3_42	0.03	4/30/20
TILTON	337X4_42	0.13	4/30/20
TILTON	337X5_42	0.03	4/30/20
TILTON	337X6_42	4.34	4/30/20
TILTON	337X7_42	6.27	4/30/20
TILTON	337X8_42	11.03	4/30/20
TILTON	338X3_41	1.75	5/8/20
TILTON	345X1_42	22.00	4/30/20
TILTON	345X2_42	0.66	4/30/20
TILTON	345X4_41	0.84	4/30/20
TILTON	345X5_41	6.66	4/30/20
TILTON	3548X11_42	9.59	5/1/20
TILTON	3548X2_42	35.13	5/1/20

<u>AWC</u>	<u>CIRCUIT</u>	<u>CIRCUIT</u> <u>MILES</u>	<u>Date</u> <u>completed</u>
TILTON	3548X9_42	8.33	5/1/20
TILTON	368X1_41	0.03	4/29/20
TILTON	3798X1_42	0.62	5/7/20
TILTON	3798X2_42	14.95	5/7/20
TILTON	3798X3_42	2.20	5/7/20
TILTON	3798X4_42	8.61	5/7/20
TILTON	37H1_42	2.57	5/8/20
TILTON	37H2_42	10.23	5/11/20
TILTON	37X4_42	8.25	5/1/20
TILTON	398X1_41	0.08	5/1/20
TILTON	398X2_41	30.32	5/12/20
TILTON	398X3_41	38.56	5/13/20
TILTON	39H1_42	6.79	5/1/20
TILTON	39H2_42	11.49	5/1/20
TILTON	47H7_41	7.91	5/1/20
TILTON	47H8_41	2.94	5/1/20
TILTON	49W2_42	5.27	4/30/20
TILTON	68W6_41	8.98	5/8/20
TILTON	70W1_41	14.43	5/8/20
TILTON	90H1_64	10.71	4/30/20
TILTON	90H2_64	18.78	4/30/20
TILTON	9W1_41	12.08	4/29/20

## Section 3

# Capital Activity Summary

January 1, 2020 – December 31, 2020

# EVERSOURCE

## 2020 Reliability Report

### **CAPITAL - 2020**

#### **REJECT POLE REPLACEMENT:**

**Program Description:** Replace poles determined to be defective during the annual inspection cycle.

Eversource maintains approximately 250,000 poles on its system. These are inspected every 10 years or an average of 25,000 poles per year

**Total Unit Population:** Depending upon inspection results, Eversource estimates 500 poles to replace each year which corresponds to a 2% failure rate.

**Results:** In 2020, 24,716 poles were inspected with 351 found to be defective requiring replacement (1.4 % defective rate).

\$ Plan	\$ Actual	\$ Variance
\$2,341,000	\$1,602,200	(\$738,800)

#### **DIRECT BURIED CABLE REPLACEMENT:**

**Program Description:** Replace direct buried cable with cable in conduit.

Approximately 2,000,000 feet of direct buried cable was installed at Eversource prior to 1985 with earliest vintages from 1970. Cable insulation is subject to age failure and bare concentric neutral conductors are subject to corrosion. Testing has indicated that in many locations the concentric neutral is no longer sufficient to provide a path to ground for the electric system. This project is to replace unjacketed direct buried cable in specific developments which have experienced a high failure rate or where cable has been rejected as a candidate for cable injection. Live front transformers and/or pre-1987 elbows are replaced along with the cable.

**Total Unit Population:** Approximately 2,000,000 feet

**Results:** One cable replacement project was completed in 2020, the final phase of Maple Hill Acres in Derry.

The Maple Hill Acres project replaced aging URD infrastructure in a residential neighborhood in Derry. Secondary failures have been ongoing for years, and in 2016 the primary cable started to fail. This direct-buried cable was up to 15 feet deep in some places, and old pit-style vaults were deteriorating and unsafe to perform switching in. The replacement provides new, reliable infrastructure, and helps avoid costly emergency cable repairs and lengthy outages. Construction took place over three years. Phase 1 was completed in 2018, Phase 2 was completed in 2019. This is the third and final phase for this development. The 2020 project scope was to replace 3,000 feet of primary URD cable and 2,265 feet of secondary cable with new cable in conduit. In addition, eight pad-mounted transformers were replaced and two sector cabinets installed. This was the third and final phase of work in this development.

\$ Plan	\$ Actual	\$ Variance
\$1,284,000	\$1,116,204	(\$167,796)

# EVERSOURCE

## 2020 Reliability Report

**OTHER CAPITAL RELIABILITY PROJECTS:**

**Category Description:**

This category includes all projects with spending in 2020 in excess of \$100,000 which were at least partially justified based on reliability.

There were twenty projects with greater than \$100,000 spent which were established in 2020 to improve reliability, in addition to the Cable Replacement Project described above. These projects are listed below. Project descriptions are shown on pages 36 through 39.

Project Number	Title	Amount Authorized	Amount Expended	Status
A20N01	Replace Berlin Underground System	\$280,000	\$431,927	Completed 1/21/21
A20E04	Ham St Dover Conversion	\$936,000	\$815,505	Completed 12/23/20
A20S06	Boston Post Rd 3159X	\$313,000	\$355,468	Completed 9/10/20
A20W07	Line Relocation Mason Rd Dublin	\$320,000	\$346,181	Under Construction
A20W08	Line Relocation Highbridge Rd Greenville	\$659,000	\$648,641	Completed 7/9/20
A20W09	Line Relocation Route 9 Keene	\$792,000	\$688,302	Completed 9/10/20
A20W13	Circuit Tie 315 to 3410 Newport	\$1,800,000	\$1,480,290	Completed 12/18/20
A20W14	Circuit Tie 24X1 to 313X1 Bennington	\$2,800,000	\$2,531,905	Completed 12/18/20
A20N15	Circuit Tie 43W1 to 348X20 Bath	\$2,200,000	\$2,353,442	Completed 1/28/21
A20C16	Bouchard St Cable Replacement	\$544,000	\$433,698	Under Construction
A20X21	NH DMS	\$9,290,000	\$2,010,300	Multi year project, under construction
A20W34	Byrd Ave S/S Upgrades	\$685,000	\$517,000	Under Construction
A20W35	Spring Street S/S Upgrades	\$1,231,000	\$1,312,309	Completed 11/19/20
A20X38	2020 Circuit Patrol Repairs			Under Construction
A20X39	NH T&D IEC 61850 Simulator	\$2,270,000	\$997,323	Completed 11/19/20
A20C40	Replace Manchester Network Cables Initial Funding	\$183,000	\$84,245	Survey Complete, phase 1 in design
A20C46	317 Line Section Rebuild	\$1,393,000	\$1,048,652	Under Construction
A20E47	Codfish Corner URD	\$469,000	\$299,563	Under Construction
A20DA	2020 Pole Top DA	\$12,000,000	\$11,564,087	Under Construction
A20LS	2020 Distribution Automation Line Sensors	\$180,000	\$223,000	Complete
<b>Total 2020 amount for projects initiated in 2020</b>		<b>\$40,540,000</b>	<b>\$29,944,243</b>	
(Note that Authorized Amount includes the total for multi-year projects)				



# EVERSOURCE

## 2020 Reliability Report

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In addition, there were nineteen reliability projects established in prior years with spending in 2020 in excess of \$100,000. Project descriptions for these projects are shown on pages 40 through 43.

Project #	Title	2020 Spend
A08N10	Portsmouth S/S Transformer Addition	\$2,538,500
A14W02	Daniel S/S	\$133,700
A16N01	11W1 - Replace Submarine Cable	\$945,700
A17C26	328 Line Reconductor	\$265,200
A17E01	Rye Area 4 kV Study	\$883,600
A17E05	Twombly SS Rebuild	\$5,012,100
A17E09	Rochester 4 kV Conversion	\$1,580,500
A17W19	North Rd SS Equipment Replacement	\$125,000
A18DA	Distribution Automation - Pole Top	\$214,700
A18W06	Monadnock S/S Rebuild	\$114,900
A18W11	316X1 Circuit Tie Eastman Development	\$458,400
A19C54	Pettingill Switchgear Reconfiguration	\$197,100
A19DA	Distribution Automation - Pole Top	\$3,340,000
A19E11	Circuit Ties-Wakefield 362 to 3157	\$594,200
A19E52	Dover Underground Back-feed Relocation	\$572,600
A19N12	Circuit Ties - Laconia 310 to 345	\$1,382,000
A19S06	Replace Conductor Route 13 Amherst	\$790,400
A19W03	Replace open wire w/ Spacer cable Rt 63	\$104,400
A19X58	Replace Lattice Steel Towers	\$2,556,500
<b>Total 2020 spend on projects initiated in previous years</b>		<b>\$21,809,500</b>



# EVERSOURCE

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## 2020 Projects

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## **A20N01 Replace Berlin Underground System – Construction Complete 1/21/21**

A portion of the Berlin downtown is fed from a 1960's vintage underground system. Two risers feed to three live-front pieces of switch gear that feed out to eight transformers which are mostly live front. In 2019, there were four system failures. The condition of the equipment is poor. The new system replaced all live front equipment with dead front units. The switchgear has been replaced with sector cabinets. A loop will be maintained with the two risers, eliminating the need for switchgear.

## **A20E04 Ham Street Dover Conversion – Construction Complete 12/23/20**

Park St in Dover is fed from the 41H2 circuit out of North Dover S/S. This project converted Ham St in Dover to offload Ham Street and Park Street from the 41H2 circuit onto the 3148X3 circuit. There are two large padmount transformers on Park Street which could not be properly fused without creating miscoordination, decreasing reliability on the 41H2 circuit. Transferring this area to the 3148X3 allows for proper transformer fusing and coordination with upstream devices.

## **A20S06 Extend Phases Boston Post Rd Amherst – Construction Complete 9/10/20**

The 23X5 circuit has been Top 50 Hit List circuit for many years. This project extended three phase primary conductor to feed 320 customers on Boston Post Road from the 3159X for better reliability and to allow the installation of additional protective devices. This project has a cost per saved customer minute calculated to be \$0.74.

## **A20W07 Line Relocation Mason Rd Dublin – Under Construction**

At the beginning of the 53H2 circuit, the backbone heads off road through a sloping, inaccessible ROW for approximately 1,500 feet. This project will improve reliability to customers in Dublin while hardening the circuit backbone by moving the circuit to the roadway. This line needs to be repaired and this proposed solution provides a better solution than continuing to maintain an off-road line with the associated maintenance and repair issues for a distribution line without an adequate ROW clearance zone. This will eliminate the potential for an extended outage due to a failure in the ROW.

## **A20W08 Line Relocation Highbridge Rd Greenville – Construction Complete 7/9/20**

The existing line feeding the 3155X6 circuit ran in an off-road location over a house, across an inaccessible field, and over the Souhegan River in Greenville, NH. This project relocated the line to the roadside and eliminated this difficult to access ROW.

## **A20W09 Line Relocation Route 9 Keene – Construction Complete 9/10/20**

A portion of the W110 line in Keene is in ROW from Chesterfield Hill out to Glebe Road through inaccessible wetlands and forest. Relocating this line to roadside eliminated a line in an inaccessible location which provides for faster outage response time and replaced pole infrastructure in a deteriorated condition with new infrastructure. It also replaced aged open wire with new spacer cable. All of these should result in improved reliability to the customers fed from this line.

## **A20W13 315 to 3410 Circuit Tie, Newport – Construction Complete 12/18/20**

The 315 line is a radial circuit feeding 4,235 customers in the greater Newport area. This project will extend three phase 34.5kV distribution line from the 3410 in Sunapee over to the 315X2 circuit in east Newport. This creates a second feed to Newport Substation, parallel to the 315 line, reducing the outage risk and duration to customers served from the 315 ROW circuit. Pole top Distribution Automation will allow remote switching to restore power to Newport Substation in the event of a permanent fault on the 315 line. A tree contact several years ago resulted in a 10 hour outage. There have been two near miss events in this section of ROW in the past two years, both of which caused operations on the 3150 breaker. Based on the outage, this project is estimated to save 635,250 customer minutes giving a cost per saved customer minute of \$1.98.

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## 2020 Reliability Report

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### **A20W14 24X1 to 313X1 Circuit Tie – Construction Complete 12/18/20**

The 313X1 circuit was #2 on the 2018 Hit List and the 24X1 was #12. These two long radial circuits originate from the 313 line and feed a total of over 4,400 customers. Looping these circuits is projected to save 474,000 customer outage minutes annually greatly improving reliability to two hospitals, four communities, and numerous schools, businesses, and residences. This project has a cost per saved customer minute calculated to be \$5.89

### **Project A20N15 Circuit Tie 43W1 to 348X20 – Construction Complete 1/28/21**

This project will increase reliability on the 43W1 circuit by building a tie to the 348X20, so the circuit could be served 348X20 or its present source, Green Mountain Power. Eversource customers are exposed to lengthy outages on the GMP system, which on average are 202 minutes. The circuit tie eliminates this exposure to the 835 customers served. The tie also increases reliability by being able to isolate a fault on the circuit, and feed remaining customers from both ends. Based on 6 GMP outages over the last 3 years, with average restoration time of 202 minutes, his project has a cost per saved customer minute calculated to be \$4.89. Including the 2 mainline outages on Eversource's system, this new tie would decrease the cost per customer minute saved to \$3.69

### **A20C16 Bouchard St Cable/Switchgear Replacement – Under Construction**

This project installs a combination of overhead spacer and new riser cables to supply large industrial and commercial customers on Bouchard Street in Manchester. It replaces 1973 vintage, 34 kV direct buried cables which have become increasingly vulnerable to failure. It will also remove an RTE M.O.S.T. switchgear as part of Eversource's efforts to retire such oil filled equipment.

### **A20X21 NH DMS – Multi-year project, under construction**

This project will implement a Distribution Management System ("DMS") in New Hampshire. The DMS comprised of hardware and software that is necessary to evaluate system conditions and provide data and information to distribution system operators, which will allow them to more effectively manage the distribution system in real time.

### **A20W34 Byrd Avenue SS Upgrades – Under Construction**

Byrd Avenue SS, River Road SS, Spring Street SS, and Sugar River SS were acquired in 2004 from the former Connecticut Valley Electric Company (CVEC) and have equipment that was defined as obsolete and replacement parts are no longer available according to Station Operations. This project will replace several disconnect switches, lightning arresters, and voltage regulators at Byrd Avenue substation.

### **A20W35 Spring Street SS Upgrades – Construction Complete 11/19/20**

Byrd Avenue SS, River Road SS, Spring Street SS, and Sugar River SS were acquired in 2004 from the former Connecticut Valley Electric Company (CVEC) and have equipment that was defined as obsolete and replacement parts are no longer available according to Station Operations. This project will replace the fence and ground grid, circuit breakers, several disconnect switches, lightning arresters, and voltage regulators at Spring Street substation.

### **A20X38 Circuit Patrol Repairs – Under Construction**

Circuit patrols of overhead distribution circuits were completed in April and May of 2020 following a spring storm looking for damaged equipment which may result in future outages. The list of items found was assembled and prioritized. A total of approximately 900 items are to be repaired or replaced. Items which were reported but are not likely to cause outages such as clearance issues and double poles will be addressed through the normal course of business and are not part of this project.

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## **A20X39 NH T&D IEC61850 Simulator – Construction Complete 11/19/20**

This project expands the existing NH Transmission IEC 61850 Protocol Simulator to include the addition of Transmission & Distribution (T&D) relay and control panels at the 1250 Hooksett Road, Hooksett, NH Eversource facility. This protection and control simulator will support the development and training of existing and future NH T&D Substations that utilize the IEC 61850 protocol.

## **A20C40 Manchester Network Cable Replacement (Initial Funding Request) – Survey Complete, phase 1 in design**

While the network has historically been a highly reliable distribution system due to its inherent redundancy, it has recently experienced a significant number of primary circuit outages. Since December 2018, there have been ten instances of cable or splice failures. The cabling on the four 13.8 kV circuits is primarily Paper Insulated Lead-sheathed Cable (PILC), and dates to the 1950s. This initial funding request was for surveying the first of four zones identified for the replacement of primary conductor on all four network circuits.

## **A20C46 317 Line ROW section rebuild – Under Construction**

This project is the reconstruction of a portion, approximately 5,000 feet, of the 317 line in right of way between Warner SS and the line crossing at Route 103. This project will replace twenty-seven aged wooden poles and deteriorated crossarms, 5,000 feet of 83-year-old #2 copper conductor with 477 MCM spacer cable and will add a neutral to an existing 3 wire system, providing improved fusing protective margins.

## **A20E47 Codfish Corner Road – Under Construction**

This project replaces failed direct buried cable on the 3105X1 to put the Portsmouth Trailer Park loop back into service and remove an overhead primary riser from a customer's backyard. It also replaces two live-front transformers to help complete loop and allow switching without having to de-energize customers.

## **A20DA 2020 Pole Top Distribution Automation – Under Construction**

This project funded the installation of approximately 150 pole top SCADA controlled devices in 2020. These devices provide indication of circuit conditions and allow for remote operation to sectionalize the system and restore power remotely. Installation of these devices over the last four years have resulted in significant savings in the impact and duration of outages on the distribution system.

## **A20LS Distribution Automation Line Sensors - Construction Complete**

This project was to install Aclara line sensors at various locations on the distribution system throughout the state. The sensors will monitor current at the installation location and communicate with the Eversource NH SCADA. This will increase visibility into the Distribution system and may instigate projects to improve reliability on circuits, reveal load balancing or low voltage situations that need to be resolved, or monitor step transformer loading.

## Prior Years' Projects

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## **A08N10 Portsmouth SS Second Transformer – Under construction**

This project is for the installation of a second company standard 115-34.5 kV 62.5 MVA transformer at Portsmouth Substation. It includes the installation of a 115 kV breaker and 115 kV bus rework to install the new transformer. The project also replaces the existing 44.8 MVA transformer with a 62.5 MVA unit. The addition of a second transformer at Portsmouth SS will allow for the installation of a bus restoration scheme resulting in improved reliability for the customers served.

## **A14W02 Daniel SS - Construction Complete**

This project was to construct a new substation to be named Daniel substation adjacent to the existing Webster Substation, to replace aged equipment at Webster substation and replace three undersized 115 – 34 kV transformers with two new standard 44.8 MVA units. This increased capacity and reliability for the Lakes Region of NH.

## **A16N01 Replace Submarine Cables - Construction Complete**

Two 15 kV submarine cables were installed between the mainland and Welch Island & Lockes Island in Lake Winnepesaukee in 1960 to provide electric service to residents of the two islands. The Lockes Island cable is a three phase cable, where one of the phases has already failed. The cable serving Welch Island has a severely deteriorated neutral conductor where it crosses the shoreline onto the island. This project was to replace both cables with new submarine cable.

## **A17C26 328 Line Reconstruction - Construction Complete**

This project was to reductor 3.65 miles of 266 ACSR with 477 Al Spacer Cable on the 328 Line. The line reductoring was needed to allow the retirement of the Greggs S/S transformer and oil circuit breaker without resulting in a negative impact to reliability. The Greggs S/S transformer was built in 1950 and was in very poor condition. P&C design for the station was such that a transformer differential operation cleared the 115kV bus until the high side switch was manually opened and the lockout relay was reset.

## **A17E01 Rye Area 4 kV Study - Construction Complete**

This project was to convert all 4 kV load fed from Foyes Corner #2 1950's vintage 4kV metal clad substation and replace two 1950's vintage 4 kV substations with metal clad switchgear and with a modern fully automated 12 kV substation. The new 12 kV circuits significantly increase capacity, address all voltage and fuse coordination issues, and allow for distribution automation to be implemented.

## **A17E05 Rebuild Twombly Street S/S - Construction Complete**

This project was for the construction of the new Twombly Street SS in Rochester, NH, removal of the existing Twombly Street SS, and rebuild of 34.5kV right of way structures to feed the new substation. The objective of this project was to increase capacity at the Twombly Street SS to support the upgrade of the distribution system in the city of Rochester, NH to 12.47 kV and increase system reliability.

## **A17E09 Rochester 4 kV Conversion – Under construction**

This project will improve the reliability of the distribution system in the city of Rochester by converting three 4 kV circuits to 12.47 kV, establishing new circuit ties between four 12.47 kV circuits in Rochester and allow for the use of distribution automation.

## **A17W19 North Road S/S Breaker Additions - Construction Complete**

This project was to replace transmission line circuit switchers 1J74 and 1J27 with 115kV circuit breakers for reliability purposes. Since the North Road Substation in New Hampshire had 115-kV circuit switchers and not breakers, a fault condition on either the M-127 line or the K-174 line initially tripped both lines. Loss of the M-127 and K-174 lines removed 115-kV supply to the North Road Substation until sectionalizing actions occurred. The load at risk was approximately 15,700 customers, including tripping more than 40MW of generation.

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### **A18DA 2018 Pole Top Distribution Automation - Construction Complete**

This project is to install approximately 230 pole top SCADA controlled devices in 2018. These devices provide indication of circuit conditions and allow for remote operation to sectionalize the system and restore power remotely. Installation of these devices over the last four years have resulted in significant savings in the impact and duration of outages on the distribution system.

### **A18W06 Monadnock SS Rebuild – In design**

This project is still under design to determine the ultimate configuration, develop a cost estimate, and develop a project schedule. Load forecasts project the Monadnock substation transformer (TB40) to be loaded to 90% of the normal rating under normal operating conditions. The size of the existing transformers limits customer restoration capabilities for loss of one of the transformers. Oil test data on the unit suggests signs of thermal fault or electrical discharge over past 1.5 years (5 oil samples in last 1.5 years). Additional substation deficiencies include: No transformer low side breakers, no transformer high side circuit switchers, no automatic bus restoral scheme, and no space in distribution control house for additional relays. This project is intended to address these issues.

### **A18W11 316X1 Circuit Tie - Construction Complete**

This project was to build a circuit tie on the 316X1 circuit to provide an alternate source to the Eastman Development in Grantham, NH. The 316X1 finished #1 on 2016 Hit List. Construction of this project was projected to save 232,258 minutes annually and cost about \$4.83 per customer minute saved.

### **A19C54 Pettengill Switchgear Reconfiguration - Construction Complete**

This project reconfigured the transformer sub-loops in the Pettengill Industrial Park in Manchester, NH. With the original sub-loop configuration, damage or failure to a switchgear caused loss of power to all transformers in the sub-loop it feeds. Restoration of the transformer sub-loop could not occur until that switchgear was repaired or replaced. The project reconfigured the underground system such that each transformer sub-loop would be fed by two pieces of switchgear, greatly expediting the restoration of power to those transformers.

### **A19DA 2019 Pole Top Distribution Automation - Construction Complete**

This project was to install approximately 240 pole top SCADA controlled devices in 2019. These devices provide indication of circuit conditions and allow for remote operation to sectionalize the system and restore power remotely. Installation of these devices over the last four years have resulted in significant savings in the impact and duration of outages on the distribution system.

### **A19E11 Wakefield Circuit Tie - Construction Complete**

This project was to construct a circuit tie from the 3157X3 near Laskey's Corner to Sanbornville S/S. This completed the tie from the 362 line to Sanbornville and provides an alternate source to approximately 4,200 customers in the area. This project had a cost per saved customer minute calculated to be \$7.11.

### **A19E52 Dover Underground Back-feed Relocation - Construction Complete**

This project was to replace the back-feed into Dover's First Street underground system. The former back-feed came from Second Street and ran through an alley without an easement. The owner of the abutting property has plans to develop that site and required us to remove our line, as the development will extend right to the property line and encroach on NESC required clearance distances. This new line provides an alternate source for 196 residential and commercial customers along First Street as well as the Cocheco Mill building. The project also eliminated a non-standard sector cabinet and replaced a single phase live front pad transformer.

### **A19N12 Laconia Circuit Tie 310 to 345 - Construction Complete**

This circuit tie project provides an alternate source to approximately 6,300 customers fed from the radial 310 line out of Laconia Substation. It was intended to improve reliability to customers in this area, which includes customers fed from Black Brook Substation as well as numerous 34.5 kV taps off the 310 line and the 345X5 circuit. This project had a cost per saved customer minute calculated to be \$2.27.

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2020 Reliability Report

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## **A19S06 Replace Conductor Route 13 Amherst, Mont Vernon - Construction Complete**

This project brought in a new more reliable, greater capacity feed to the town of Mont Vernon. It allowed balancing customers between phases to reduce the impact of outages and provide a single-phase back feed for the 125 customers on Old Amherst Road, helping to reduce restoration time (CAIDI). This project had a cost per saved customer minute calculated to be \$5.82.

## **A19W03 Route 63 Hinsdale Spacer Cable - Construction Complete**

This project replaced sections of open wire along Highway 63 in Hinsdale with three phase spacer cable. The 3139X was the worst performing New Hampshire circuit in 2017, ranked #1 on the Hit List. The circuit is radially fed from the Chestnut Hill Substation in Hinsdale and runs about 8 miles north up Route 63 to feed over 2,000 customers. Over the past 3 years, the 3139X has experienced 2.01 million outage minutes due to tree damage along Route 63. The former line construction was open wire primarily on Heatherlite brackets. This project is anticipated to save approximately 75% of the outage minutes or 500,000 minutes annually. This project had a cost per saved customer minute calculated to be \$2.94

## **A19X58 Replace Lattice Steel Towers, 3178X - Construction Complete**

This project replaced 32 lattice steel towers on the 3178X circuit in Winchester NH with new self-weathering light duty steel poles. The existing lattice steel structures were installed in the early part of the 20<sup>th</sup> century and were on deteriorated concrete foundations and were rusting.



## Section 4

# Worst Performing Circuit Lists

# EVERSOURCE

## 2020 Reliability Report

### 2020 Circuit Hit List - Ranked By SAIDI - IEEE Criteria

Rank	Circuit	Customers Served	Circuit SAIDI	Circuit SAIFI	CAIDI	MBI	CIII	# Outages	Customers Interrupted	Customer Minutes	Circuit Miles	AWC	Region
1	43W1_43	842	1,608	3.581	449	3.4	56	54	3,015	1,354,169	61.4	NORTHERN	LANCASTER
2	23X2_12	251	1,162	2.435	477	4.9	41	15	610	291,056	16.3	CENTRAL	BEDFORD
3	336X1_45	340	997	5.779	172	2.1	115	17	1,963	338,548	30.3	NORTHERN	CHOCORUA
4	24X1_36	2,048	738	5.505	134	2.2	96	118	11,272	1,511,264	122.2	WESTERN	KEENE
5	34W18_11	1,130	664	4.122	161	2.9	141	33	4,659	750,145	28.6	CENTRAL	HOOKSETT
6	351X1_76	48	635	2.104	302	5.7	20	5	101	30,460	4.7	NORTHERN	LANCASTER
7	3525X2_77	1,648	597	2.168	275	1.4	510	7	3,573	983,306	21.1	NORTHERN	BERLIN
8	3615X1_11	2,503	591	3.103	191	3.9	109	71	7,767	1,479,695	95.7	CENTRAL	HOOKSETT
9	3120X2_31	1,057	580	3.256	178	3.7	50	69	3,441	612,824	55.5	WESTERN	KEENE
10	53H2_36	345	573	2.587	221	4.6	37	24	893	197,770	29.0	WESTERN	KEENE
11	23H3_22	479	572	1.025	558	11.7	164	3	491	273,964	3.2	SOUTHERN	NASHUA
12	28W1_36	796	519	2.021	257	5.9	41	39	1,608	413,247	50.9	WESTERN	KEENE
13	3178X4_31	1,836	497	3.024	164	4.0	69	80	5,554	913,420	76.4	WESTERN	KEENE
14	4W1_31	1,581	492	2.918	169	4.1	64	72	4,613	778,631	70.9	WESTERN	KEENE
15	14X128A_11	128	460	2.164	213	5.5	46	6	277	58,874	0.3	CENTRAL	HOOKSETT
16	348X1_76	1,561	439	2.238	196	5.4	29	121	3,492	684,694	104.9	NORTHERN	LANCASTER
17	334X18_11	717	392	1.544	254	7.8	53	21	1,107	280,720	13.1	CENTRAL	HOOKSETT
18	3175X1_21	1,211	382	0.849	449	14.1	41	25	1,028	461,988	25.6	SOUTHERN	NASHUA
19	316X1_32	3,452	375	4.096	91	2.9	137	103	14,139	1,292,668	157.8	WESTERN	NEWPORT
20	14X134_11	65	374	1.143	327	10.5	74	1	74	24,198	0.1	CENTRAL	HOOKSETT
21	12W1_43	1,310	372	2.073	180	5.8	54	50	2,715	487,691	74.7	NORTHERN	LANCASTER
22	47W1_32	734	364	1.829	199	6.6	29	46	1,343	267,599	56.8	WESTERN	NEWPORT
23	5W2_12	981	363	1.207	301	9.9	592	2	1,184	355,871	24.5	CENTRAL	BEDFORD
24	29H2_11	744	361	1.176	307	10.2	73	12	875	268,445	9.0	CENTRAL	HOOKSETT
25	348X20_43	427	333	1.210	275	9.9	30	17	517	142,121	20.8	NORTHERN	LANCASTER
26	384X1_76	447	329	2.060	160	5.8	51	18	921	147,152	33.1	NORTHERN	LANCASTER
27	377X7_65	520	327	2.231	146	5.4	83	14	1,160	169,905	22.5	EASTERN	EPPING
28	393X2_11	453	324	1.678	193	7.1	127	6	761	146,699	6.2	CENTRAL	HOOKSETT
29	324X8_11	304	322	1.113	289	10.8	42	8	338	97,699	17.0	CENTRAL	HOOKSETT
30	85W1_12	1,466	313	1.202	260	10.0	52	34	1,763	458,513	70.2	CENTRAL	BEDFORD
31	314X26_22	525	311	1.991	156	6.0	261	4	1,045	163,342	6.1	SOUTHERN	NASHUA
32	329_22	886	309	0.997	310	0.0	883	1	883	273,730	11.6	SOUTHERN	NASHUA
33	3140X3_36	267	300	1.315	228	9.1	50	7	351	79,993	14.6	WESTERN	KEENE
34	3137X_65	1,593	296	2.731	109	4.4	128	34	4,349	471,926	69.3	EASTERN	EPPING
35	348X3_76	1,929	296	2.243	132	5.3	62	70	4,326	571,389	108.0	NORTHERN	LANCASTER
36	314X14_22	200	293	2.677	110	4.5	59	9	534	58,498	7.9	SOUTHERN	NASHUA
37	355X10_76	2,337	291	2.019	144	5.9	69	68	4,717	679,854	122.2	NORTHERN	LANCASTER
38	79W4_12	199	290	2.165	134	5.5	31	14	430	57,624	12.3	CENTRAL	BEDFORD
39	328X6_12	27	290	1.000	290	12.0	27	1	27	7,830	0.2	CENTRAL	BEDFORD
40	24W1_21	880	286	2.090	137	5.7	48	38	1,840	252,043	39.1	SOUTHERN	NASHUA
41	3248_11	1,266	275	1.005	274	11.9	212	6	1,272	348,519	3.9	CENTRAL	HOOKSETT
42	3102X8_63	32	275	1.042	264	11.5	33	1	33	8,712	0.4	EASTERN	PORTSMOUTH
43	348X2_76	707	266	1.521	175	7.9	15	72	1,075	188,058	77.0	NORTHERN	LANCASTER
44	348X9_76	228	266	0.697	381	17.2	23	7	159	60,643	17.0	NORTHERN	LANCASTER
45	351X17_76	94	265	1.819	145	6.6	34	5	171	24,878	8.2	NORTHERN	LANCASTER
46	335X1_12	363	261	2.725	96	4.4	47	21	988	94,562	12.6	CENTRAL	BEDFORD
47	355X6_76	130	256	1.662	154	7.2	36	6	216	33,284	9.8	NORTHERN	LANCASTER
48	3155X9_22	932	256	2.171	118	5.5	63	32	2,023	238,456	50.5	WESTERN	KEENE
49	3179_11	746	252	2.205	114	5.4	137	12	1,645	187,937	19.5	CENTRAL	HOOKSETT
50	392X1_61	1,924	243	1.997	122	6.0	99	39	3,842	467,786	68.4	EASTERN	ROCHESTER

# EVERSOURCE

## 2020 Reliability Report

### 2020 Circuit Hit List - Ranked By SAIFI - IEEE Criteria

Rank	Circuit	Customers Served	Circuit SAIFI	Circuit SAIDI	CAIDI	MBI	CIII	# Outages	Customers Interrupted	Customer Minutes	Circuit Miles	Region	AWC
1	336X1_45	340	5.779	997	172	2.1	115	17	1,963	338,548	30.3	NORTHERN	CHOCORUA
2	24X1_36	2,048	5.505	738	134	2.2	96	118	11,272	1,511,264	122.2	WESTERN	KEENE
3	34W18_11	1,130	4.122	664	161	2.9	141	33	4,659	750,145	28.6	CENTRAL	HOOKSETT
4	316X1_32	3,452	4.096	375	91	2.9	137	103	14,139	1,292,668	157.8	WESTERN	NEWPORT
5	43W1_43	842	3.581	1,608	449	3.4	56	54	3,015	1,354,169	61.4	NORTHERN	LANCASTER
6	3140X2_36	1,634	3.288	219	67	3.7	81	66	5,372	358,161	94.9	WESTERN	KEENE
7	3120X2_31	1,057	3.256	580	178	3.7	50	69	3,441	612,824	55.5	WESTERN	KEENE
8	3615X1_11	2,503	3.103	591	191	3.9	109	71	7,767	1,479,695	95.7	CENTRAL	HOOKSETT
9	3178X4_31	1,836	3.024	497	164	4.0	69	80	5,554	913,420	76.4	WESTERN	KEENE
10	4W1_31	1,581	2.918	492	169	4.1	64	72	4,613	778,631	70.9	WESTERN	KEENE
11	3137X_65	1,593	2.731	296	109	4.4	128	34	4,349	471,926	69.3	EASTERN	EPPING
12	335X1_12	363	2.725	261	96	4.4	47	21	988	94,562	12.6	CENTRAL	BEDFORD
13	319X1_64	2,391	2.679	147	55	4.5	116	55	6,404	351,644	114.0	NORTHERN	TILTON
14	314X14_22	200	2.677	293	110	4.5	59	9	534	58,498	7.9	SOUTHERN	NASHUA
15	53H2_36	345	2.587	573	221	4.6	37	24	893	197,770	29.0	WESTERN	KEENE
16	23X2_12	251	2.435	1,162	477	4.9	41	15	610	291,056	16.3	CENTRAL	BEDFORD
17	3114X_42	1,189	2.424	188	77	5.0	87	33	2,881	222,995	54.9	NORTHERN	TILTON
18	351X16_76	836	2.362	243	103	5.1	132	15	1,975	203,070	52.9	NORTHERN	LANCASTER
19	392X2_61	480	2.246	192	86	5.3	135	8	1,079	92,308	12.4	EASTERN	ROCHESTER
20	348X3_76	1,929	2.243	296	132	5.3	62	70	4,326	571,389	108.0	NORTHERN	LANCASTER
21	348X1_76	1,561	2.238	439	196	5.4	29	121	3,492	684,694	104.9	NORTHERN	LANCASTER
22	377X7_65	520	2.231	327	146	5.4	83	14	1,160	169,905	22.5	EASTERN	EPPING
23	399_62	166	2.210	233	106	5.4	73	5	366	38,633	9.8	EASTERN	ROCHESTER
24	3179_11	746	2.205	252	114	5.4	137	12	1,645	187,937	19.5	CENTRAL	HOOKSETT
25	3155X9_22	932	2.171	256	118	5.5	63	32	2,023	238,456	50.5	WESTERN	KEENE
26	3525X2_77	1,648	2.168	597	275	1.4	510	7	3,573	983,306	21.1	NORTHERN	BERLIN
27	79W4_12	199	2.165	290	134	5.5	31	14	430	57,624	12.3	CENTRAL	BEDFORD
28	14X128A_11	128	2.164	460	213	5.5	46	6	277	58,874	0.3	CENTRAL	HOOKSETT
29	351X1_76	48	2.104	635	302	5.7	20	5	101	30,460	4.7	NORTHERN	LANCASTER
30	24W1_21	880	2.090	286	137	5.7	48	38	1,840	252,043	39.1	SOUTHERN	NASHUA
31	348X8_76	150	2.077	191	92	5.8	28	11	312	28,642	8.2	NORTHERN	LANCASTER
32	5W2_12	981	2.074	101	49	5.8	226	9	2,034	98,994	24.5	CENTRAL	HOOKSETT
33	12W1_43	1,310	2.073	372	180	5.8	54	50	2,715	487,691	74.7	NORTHERN	LANCASTER
34	384X1_76	447	2.060	329	160	5.8	51	18	921	147,152	33.1	NORTHERN	LANCASTER
35	3137X5_65	449	2.049	90	44	5.9	84	11	920	40,629	15.6	EASTERN	EPPING
36	28W1_36	796	2.021	519	257	5.9	41	39	1,608	413,247	50.9	WESTERN	KEENE
37	355X10_76	2,337	2.019	291	144	5.9	69	68	4,717	679,854	122.2	NORTHERN	LANCASTER
38	377X3_65	471	2.013	178	89	6.0	73	13	947	83,874	18.2	EASTERN	EPPING
39	64W1_63	885	2.002	170	85	6.0	886	2	1,771	150,598	5.3	EASTERN	PORTSMOUTH
40	392X1_61	1,924	1.997	243	122	6.0	99	39	3,842	467,786	68.4	EASTERN	ROCHESTER
41	3116X1_45	1,286	1.995	162	81	6.0	36	72	2,565	207,892	86.2	NORTHERN	CHOCORUA
42	314X26_22	525	1.991	311	156	6.0	261	4	1,045	163,342	6.1	SOUTHERN	NASHUA
43	3181_45	1,076	1.899	107	56	6.3	40	51	2,043	114,966	50.7	NORTHERN	CHOCORUA
44	37W1_12	1,406	1.892	116	61	6.3	62	43	2,660	162,964	58.7	CENTRAL	BEDFORD
45	355X5_76	159	1.877	166	88	6.4	50	6	298	26,309	8.8	NORTHERN	LANCASTER
46	317X3_12	1,363	1.874	188	100	6.4	48	53	2,555	256,144	69.1	CENTRAL	BEDFORD
47	355X1_76	210	1.862	210	113	6.4	65	6	391	44,157	13.2	NORTHERN	LANCASTER
48	318X2_11	786	1.833	128	70	6.5	44	33	1,441	100,892	32.5	CENTRAL	HOOKSETT
49	47W1_32	734	1.829	364	199	6.6	29	46	1,343	267,599	56.8	WESTERN	NEWPORT
50	351X17_76	94	1.819	265	145	6.6	34	5	171	24,878	8.2	NORTHERN	LANCASTER

**Table 1. Summary of Eversource's 2020 Planned vs. Actual Vegetation Management Program Costs**

VMP Activity	Net Costs (including Reimbursements Billed to Telephone Companies)			Reimbursements Billed to Telephone Companies		
	2020 Plan	2020 Actual	Variance	2020 Plan	2020 Actual	Variance
Scheduled Maintenance Trim	\$ 12,800,000	\$ 12,210,683	\$ (589,317)	\$ (2,500,000)	\$ (1,773,585)	\$ 726,415
METT	1,000,000	1,170,578	170,578	-	-	-
Mid Cycle Review	-	-	-	-	-	-
Customer Work	208,000	199,934	(8,066)	-	-	-
Hot Spot Work	-	-	-	-	-	-
Police/Flagging	-	-	-	-	-	-
Sub Transmission (Mowing/Side Trim)	1,070,000	722,262	(347,738)	-	-	-
<b>Distribution SMT Total</b>	<b>\$ 15,078,000</b>	<b>\$ 14,303,457</b>	<b>\$ (774,543)</b>	<b>\$ (2,500,000)</b>	<b>\$ (1,773,585)</b>	<b>\$ 726,415</b>
	<u>2020 Plan (Jan-Jun)</u>	<u>2020 Actual (Jan-Jun)</u>	<u>Variance (Jan-Jun)</u>	<u>2020 Plan (Jan-Jun)</u>	<u>2020 Actual (Jan-Jun)</u>	<u>Variance (Jan-Jun)</u>
Full Width Clearing	\$ 750,000	\$ 790,193	\$ 40,193	\$ -	\$ -	\$ -
Hazard Tree Removal	3,750,000	3,976,423	226,423	(1,875,000)	(2,858,590)	(983,590)
Enhanced Tree Trimming	1,500,000	1,368,776	(131,224)	-	-	-
<b>Jan-Jun Subtotal</b>	<b>\$ 6,000,000</b>	<b>\$ 6,135,393</b>	<b>\$ 135,393</b>	<b>\$ (1,875,000)</b>	<b>\$ (2,858,590)</b>	<b>\$ (983,590)</b>
	<u>2020 Plan (Jul-Dec)</u>	<u>2020 Actual (Jul-Dec)</u>	<u>Variance (Jul-Dec)</u>	<u>2020 Plan (Jul-Dec)</u>	<u>2020 Actual (Jul-Dec)</u>	<u>Variance (Jul-Dec)</u>
Full Width Clearing	\$ 750,000	\$ 264,501	\$ (485,499)	\$ -	\$ -	\$ -
Hazard Tree Removal	3,750,000	1,595,741	(2,154,259)	(1,875,000)	(3,562,110)	(1,687,110)
Enhanced Tree Trimming	1,500,000	657,332	(842,668)	-	-	-
<b>Jul-Dec Subtotal</b>	<b>\$ 6,000,000</b>	<b>\$ 2,517,574</b>	<b>\$ (3,482,426)</b>	<b>\$ (1,875,000)</b>	<b>\$ (3,562,110)</b>	<b>\$ (1,687,110)</b>
<b>Vegetation Management Program Total</b>	<b>\$ 27,078,000</b>	<b>\$ 22,956,424</b>	<b>\$ (4,121,576)</b>	<b>\$ (6,250,000)</b>	<b>\$ (8,194,285)</b>	<b>\$ (1,944,285)</b>

	2020 Plan	2020 Actual	Variance
2020 Miles (SMT/METT)	2,450	2,055	(395)
<b>2020 Total VMP Cost</b>	<b>\$ 27,078,000</b>	<b>\$ 22,956,424</b>	<b>\$ (4,121,576)</b>

**Table 2. Actual 2020 Scheduled Maintenance Trimming (SMT)**

<b>Circuit</b>	<b>SMT Miles</b>	<b>Primary Town</b>	<b>AWC</b>	<b>Total Circuit Miles</b>
15W4	2.26	Portsmouth	Portsmouth	2.26
3102X2	1.06	Portsmouth	Portsmouth	5.7
3102X5	3.76	Portsmouth	Portsmouth	5.86
3102X7	1.77	Portsmouth	Portsmouth	1.77
3112X1	3.3	Portsmouth	Portsmouth	3.65
3112X4	2.37	Portsmouth	Portsmouth	5.07
3153X2	4.7	Portsmouth	Portsmouth	4.71
3165X8	2.75	Portsmouth	Portsmouth	2.76
3191X3	17.36	Greenland	Portsmouth	25.98
339X4	1.45	Portsmouth	Portsmouth	1.65
3850X1	4.5	Newington	Portsmouth	6.4
3148X2	9.05	Dover	Rochester	12.96
32X24	3.76	Somersworth	Rochester	3.83
32	0.7	Somersworth	Rochester	12.95
32X6	2.49	Rochester	Rochester	3.87
340X1	5.38	Rochester	Rochester	5.12
340X5	5.83	Rochester	Rochester	5.94
362X1	12.57	Farmington	Rochester	12.79
371X5	2.11	Rochester	Rochester	2.11
392X2	8.96	Rochester	Rochester	8.98
392X7	82.48	Barrington	Rochester	90.95
399X12	2.51	Dover	Rochester	2.51
399X13	4.76	Dover	Rochester	4.81
399X4	0.62	Dover	Rochester	0.62
3148x3	0.31	Dover	Rochester	15
39W1	10.05	Milton	Rochester	12.12
41H1	2.25	Dover	Rochester	2.25
41H2	2.8	Dover	Rochester	5.1
56H1	3.2	Dover	Rochester	3.21
56H2	6.26	Dover	Rochester	6.62
73W1	35.78	Brookfield	Rochester	39.34
3615X1	4.58	Candia	Hooksett	79.71
23X6	32.01	Mont Vernon	Bedford	33.71
317X2	39.8	Hopkinton	Bedford	44.18
317X3	64.09	Webster	Bedford	66.45
322X10	11.95	Bedford	Bedford	20.14
317	4.16	Concord	Bedford	24.91
322X12	36.05	Bedford	Bedford	39.31
3143X	5	Milford	Bedford	7.25
322	1.38	Goffstown	Bedford	5.15
335X15	0.41	Hooksett	Bedford	21.97
23X5	9.52	Amherst	Bedford	117.64

**Table 2. Actual 2020 Scheduled Maintenance Trimming (SMT)**

<b>Circuit</b>	<b>SMT Miles</b>	<b>Primary Town</b>	<b>AWC</b>	<b>Total Circuit Miles</b>
328X18	1.34	Goffstown	Bedford	1.33
16H1	0.01	Nashua	Nashua	0.01
18H1	3.57	Nashua	Nashua	6.33
3136X	9.6	Nashua	Nashua	9.6
3144X3	14.81	Hudson	Nashua	15.67
314X15	17.74	Wilton	Nashua	17.75
3223	0.28	Nashua	Nashua	3.28
3155x2	67.77	Brookline	Nashua	81.02
329	5.82	Hollis	Nashua	11.52
3177X1	19.62	Nashua	Nashua	24.4
3212X	23.33	Hollis	Nashua	27
3217X	51.4	Hollis	Nashua	66.14
3445X	36.89	Amherst	Nashua	40.59
3177	0.47	Nashua	Nashua	14.89
353	1.68	Nashua	Nashua	6.46
6W1	6.4	Nashua	Nashua	5.72
3144X1	0.92	Hudson	Nashua	16.84
3110X	6.49	Nashua	Nashua	37.14
3144X	6.27	Hudson	Nashua	16.52
3750	19.99	Litchfield	Nashua	26.82
24X1	107.9	Francestown	Keene	119.3
3120X2	51.47	Fitzwilliam	Keene	54.82
3120X4	65.77	Rindge	Keene	74.26
3178	0.74	Winchester	Keene	44.9
3140x1	5.4	Antrim	Keene	38.49
3140	57.99	Antrim	Keene	58.03
3178X4	67.73	Winchester	Keene	75.17
4W1	52.82	Swanzey	Keene	67.28
53H2	25.6	Dublin	Keene	25.47
W15	73.79	Keene	Keene	75.79
3173	22.84	Hillsborough	Keene	64.03
26H2	0.25	Hillsborough	Keene	13.13
47W1	53.65	Cornish	Newport	53.65
316	1	Sunapee	Newport	160.3
316X1	18.01	Grantham	Newport	154.06
17W1	3.14	Bath	Newport	40.03
20W1	51.11	Bristol	Tilton	56.53
20W2	45	Hebron	Tilton	45.13
3114X	39.12	Danbury	Tilton	53.72
345X2	0.66	New Hampton	Tilton	0.68
3548x2	32.45	Franklin	Tilton	35.84
336X1	22.91	Conway	Chocorua	29.41

<b>Table 2. Actual 2020 Scheduled Maintenance Trimming (SMT)</b>				
<b>Circuit</b>	<b>SMT Miles</b>	<b>Primary Town</b>	<b>AWC</b>	<b>Total Circuit Miles</b>
346X1	45.83	Madison	Chocorua	52.33
347x3	0.09	Conway	Chocorua	51.85
3115X12	48.36	Raymond	Epping	67.91
3137X	6.1	Pittsfield	Epping	70.95
3137X1	52.02	Nottingham	Epping	52.98
3191x1A	0.67	Newfields	Epping	13.99
3191X2	5.15	Newmarket	Epping	6.48
377X15	5.69	Epping	Epping	5.69
380X1	2.87	Durham	Epping	7.62
13W1	3.48	Lyme	Lancaster	7.31
1W2	30.35	Whitefield	Lancaster	54.4
348X1	74.96	Franconia	Lancaster	86.54
348X2	4.16	Lisbon	Lancaster	73.89
350x2	1.98	Gorham	Lancaster	17.7
348X5	1.54	Bethlehem	Lancaster	20.32
348X7	0.47	Bethlehem	Lancaster	16.97
355X14	0.91	Stratford	Lancaster	0.91
36W1	5.75	Stratford	Lancaster	5.75
351X8	7.24	Gorham	Berlin	7.26
<b>Total Miles</b>	<b>1,847.47</b>			<b>3,167.21</b>

Note: Total Circuit miles are accurate. Several circuits were SMT'd over 2 calendar years  
Additionally, there are ROW miles that are captured under other programs  
GIS updates system regularly which can add footage throughout year

**Table 3. Actual 2020 Maintenance Enhanced Tree Trimming (METT)**

<b>Circuit</b>	<b>METT Miles</b>	<b>Primary Town</b>	<b>AWC</b>	<b>Total Circuit Miles</b>
3615x1	4.64	Candia	Hooksett	79.71
317X3	1.00	Webster	Bedford	66.45
322X10	2.68	Bedford	Bedford	20.14
322X12	6.78	Bedford	Bedford	39.31
335X15	0.99	Hooksett	Bedford	21.97
3144X3	0.86	Hudson	Nashua	15.67
3155x2	11.25	Brookline	Nashua	81.02
3177X1	4.64	Nashua	Nashua	24.4
3212X	3.06	Hollis	Nashua	27
3217X	8.62	Hollis	Nashua	66.14
3144X1	0.60	Hudson	Nashua	16.84
3750	5.00	Derry	Keene	26.82
24X1	6.95	Francestown	Keene	119.3
3120X2	3.26	Fitzwilliam	Keene	54.82
3178X4	7.50	Winchester	Keene	75.17
4W1	14.27	Swanzey	Keene	67.28
3173	0.96	Hillsborough	Keene	64.03
17w1	1.18	Lyme	Newport	40.03
3114X	14.56	Danbury	Tilton	53.72
3548X2	7.65	Sanbornton	Tilton	35.84
20w1	5.30	Bristol	Tilton	56.53
336X1	6.50	Conway	Chocorua	29.41
346X1	5.23	Madison	Chocorua	52.33
32X6	1.38	Rochester	Rochester	3.87
392X7	7.82	Barrington	Rochester	90.95
39W1	2.07	Rochester	Rochester	12.12
3148X2	3.83	Dover	Rochester	12.96
3102X2	4.64	Portsmouth	Portsmouth	5.7
3102X5	2.10	Portsmouth	Portsmouth	5.86
3112X4	2.70	Portsmouth	Portsmouth	5.07
3191X3	8.53	Greenland	Portsmouth	25.98
3850X1	1.25	Newington	Portsmouth	6.4
3115X12	19.32	Raymond	Epping	67.91
380X1	4.60	Durham	Epping	7.62
348X1	11.30	Franconia	Lancaster	86.54
1W2	1.97	Whitefield	Lancaster	54.4
13W1	1.69	Bath	Lancaster	7.31
1W1	0.50	Whitefield	Lancaster	19.66
25w1	11.20	Milan	Berlin	42.24
<b>Total Miles</b>	<b>207.20</b>			<b>1,588.52</b>



**Table 4. Actual 2020 Enhanced Tree Trimming (ETT) Work Plan**

<b>AWC</b>	<b>Circuit</b>	<b>Total Miles</b>	<b>Town</b>	<b>Total Circuit Miles</b>	<b>Tree SAIDI</b>	<b>Tree SAIFI</b>
Rochester	41H2	0.33	Dover	5.1	-*	-
Keene	35W1	1.76	Peterborough	39.31	19.43	0.12
Tilton	11W2	2.52	Laconia	8.33	125.05	0.67
Bedford	360x5	2.02	Bedford	10.91	18.5	0.24
Bedford	23X6	1.6	Milford	33.71	11.82	0.13
Bedford	311X6	2.43	Henniker	7.84	-	-
Bedford	33H1	0.65	Warner	47.22	65.7	0.37
Bedford	311x2	0.34	Henniker	6.53	4.68	0.1
Derry	3133XA	0.7	Windham	58.7	20.32	0.16
Derry	3133XB	1.4	Derry ,Windham	58.7	20.32	0.16
Derry	3133XC	0.5	Windham	58.7	20.32	0.16
Epping	3191x2	0.64	Newmarket	6.48	0.51	0.01
Epping	377x2	2.4	Newmarket	22.06	224.69	1.4
Nashua	30H2	6.5	Milford , Lyndeborough	9.3	-	-
Nashua	314x54	3.86	Milford	10.71	26.16	0.17
Nashua	3155x2	1.75	Brookline	81.02	63.92	0.46
Nashua	3445X	2	Amherst	40.59	5.01	0.02
Nashua	27h2	1.4	Greenville	2.51	-	-
Nashua	27h3	0.4	Greenville	3.71	243.33	0.67
Nashua	383X3	0.45	Hudson	6.76	12.03	0.12
Bedford	360x7	1.53	New Boston	18.61	27.34	0.53
Hooksett	14w7	3.31	Auburn	15.9	7.35	0.06
Rochester	399x15	0.57	Dover	10.82	6.1	0.19
Portsmouth	3191x9	1.63	Greenland	3.68	0.54	0.01
Chocorua	19W1	2.55	Ossipee	46.27	134.9	0.92
Rochester	32x3	3.25	Dover	15.62	11.85	0.21
<b>Total</b>		<b>46.49</b>		<b>629.09</b>		

Notes:

\* dash = no tree realted outages in 2019

**Table 5. Actual 2020 Hazard Tree/Enhanced Tree Removal (ETR)**

<b>Circuit</b>	<b>ETR Miles</b>	<b>Primary Town</b>	<b>AWC</b>	<b>Total Circuit Miles</b>
15W4	2.26	Portsmouth	Portsmouth	2.26
3102X2	5.7	Portsmouth	Portsmouth	5.7
3102X5	5.86	Portsmouth	Portsmouth	5.86
3102X7	1.77	Portsmouth	Portsmouth	1.77
3112X1	3.3	Portsmouth	Portsmouth	3.65
3112X4	5.07	Portsmouth	Portsmouth	5.07
3153X2	4.7	Portsmouth	Portsmouth	4.71
3165X8	2.75	Portsmouth	Portsmouth	2.76
3191X3	25.89	Greenland	Portsmouth	25.98
339X4	1.45	Portsmouth	Portsmouth	1.65
3850X1	5.7	Newington	Portsmouth	6.4
3148X2	12.88	Dover	Rochester	12.96
32X24	3.76	Somersworth	Rochester	3.83
32	0.7	Somersworth	Rochester	12.95
32X6	3.87	Rochester	Rochester	3.87
340X1	5.38	Rochester	Rochester	5.12
340X5	5.83	Rochester	Rochester	5.94
362X1	12.57	Farmington	Rochester	12.79
371X5	2.11	Rochester	Rochester	2.11
392X2	8.96	Rochester	Rochester	8.98
392X7	90.3	Barrington	Rochester	90.95
399X12	2.51	Dover	Rochester	2.51
399X13	4.76	Dover	Rochester	4.81
399X4	0.62	Dover	Rochester	0.62
3148x3	0.31	Dover	Rochester	15
39W1	12.12	Milton	Rochester	12.12
41H1	2.25	Dover	Rochester	2.25
41H2	2.8	Dover	Rochester	5.1
56H1	3.2	Dover	Rochester	3.21
56H2	6.26	Dover	Rochester	6.62
73W1	35.78	Brookfield	Rochester	39.34
3615X1	9.2	Candia	Hooksett	79.71
23X6	32.01	Mont Vernon	Bedford	33.71
317X2	39.8	Hopkinton	Bedford	44.18
317X3	65.09	Webster	Bedford	66.45
322X10	14.63	Bedford	Bedford	20.14
317	4.16	Concord	Bedford	24.91
322X12	42.8	Bedford	Bedford	39.31
3143X	5	Milford	Bedford	7.25
322	1.38	Goffstown	Bedford	5.15
335X15	1.4	Hooksett	Bedford	21.97

**Table 5. Actual 2020 Hazard Tree/Enhanced Tree Removal (ETR)**

<b>Circuit</b>	<b>ETR Miles</b>	<b>Primary Town</b>	<b>AWC</b>	<b>Total Circuit Miles</b>
23X5	9.52	Amherst	Bedford	117.64
328X18	1.34	Goffstown	Bedford	1.33
16H1	0.01	Nashua	Nashua	0.01
18H1	3.57	Nashua	Nashua	6.33
3136X	9.6	Nashua	Nashua	9.6
3144X3	15.6	Hudson	Nashua	15.67
314X15	17.74	Wilton	Nashua	17.75
3223	0.28	Nashua	Nashua	3.28
3155x2	79	Brookline	Nashua	81.02
329	5.82	Hollis	Nashua	11.52
3177X1	24.26	Nashua	Nashua	24.4
3212X	26.39	Hollis	Nashua	27
3217X	60.14	Hollis	Nashua	66.14
3445X	36.89	Amherst	Nashua	40.59
3177	0.47	Nashua	Nashua	14.89
353	1.68	Nashua	Nashua	6.46
6W1	6.4	Nashua	Nashua	5.72
3144X1	1.5	Hudson	Nashua	16.84
3110X	6.49	Nashua	Nashua	37.14
3144X	6.27	Hudson	Nashua	16.52
3750	19.99	Litchfield	Nashua	26.82
24X1	114.8	Francestown	Keene	119.3
3120X2	54.82	Fitzwilliam	Keene	54.82
3120X4	65.77	Rindge	Keene	74.26
3178	0.74	Winchester	Keene	44.9
3140x1	5.4	Antrim	Keene	38.49
3140	58.03	Antrim	Keene	58.03
3178X4	75.2	Winchester	Keene	75.17
4W1	67.28	Swanzey	Keene	67.28
53H2	25.6	Dublin	Keene	25.47
W15	73.79	Keene	Keene	75.79
3173	23.8	Hillsborough	Keene	64.03
26H2	0.25	Hillsborough	Keene	13.13
47W1	53.65	Cornish	Newport	53.65
316	1	Sunapee	Newport	160.3
316X1	18.01	Grantham	Newport	154.06
17W1	4.32	Bath	Newport	40.03
20W1	56.4	Bristol	Tilton	56.53
20W2	45	Hebron	Tilton	45.13
3114X	53.68	Danbury	Tilton	53.72
345X2	0.68	New Hampton	Tilton	0.68

<b>Table 5. Actual 2020 Hazard Tree/Enhanced Tree Removal (ETR)</b>				
<b>Circuit</b>	<b>ETR Miles</b>	<b>Primary Town</b>	<b>AWC</b>	<b>Total Circuit Miles</b>
3548x2	40.1	Franklin	Tilton	35.84
336X1	29.4	Conway	Chocorua	29.41
346X1	52.33	Madison	Chocorua	52.33
347x3	0.09	Conway	Chocorua	51.85
3115X12	67.91	Raymond	Epping	67.91
3137X	6.1	Pittsfield	Epping	70.95
3137X1	52.98	Nottingham	Epping	52.98
3191x1A	0.67	Newfields	Epping	13.99
3191X2	6.48	Newmarket	Epping	6.48
377X15	5.69	Epping	Epping	5.69
380X1	7.47	Durham	Epping	7.62
13W1	5.17	Lyme	Lancaster	7.31
1W2	32.32	Whitefield	Lancaster	54.4
348X1	86.54	Franconia	Lancaster	86.54
348X2	4.16	Lisbon	Lancaster	73.89
350x2	1.98	Gorham	Lancaster	17.7
348X5	1.55	Bethlehem	Lancaster	20.32
348X7	0.47	Bethlehem	Lancaster	16.97
355X14	0.91	Stratford	Lancaster	0.91
36W1	5.75	Stratford	Lancaster	5.75
351X8	7.26	Gorham	Berlin	7.26
25w1	11.2	Milan	Berlin	42.24
<b>Total ETR Miles</b>	<b>2,054.60</b>			<b>3,209.45</b>

**Table 6. Actual 2020 Right of Way Maintenance Trimming**

<b>Division + AWC</b>	<b>ROW Number</b>	<b>ROW Name</b>	<b>Total Acreage</b>	<b>Total Miles</b>	<b>Voltage</b>	<b>ROW Width</b>	<b>Maint. In Transmission (%)</b>
Keene	313x4	313x5	89	7.4	34.5kv	100	0
Bedford	3164	3164	23.82	2.39	34.5kv	100	0
Tilton	346	346	207.54	17	34.5kv	100	0
Keene	382x2	382x3	33.6	2.8	34.5kv	100	0
Keene	382	382	104	8.64	34.5kv	100	0
Keene	313	313	288	23.77	34.5kv	100	0
Tilton	3196	3196	70.15	5.75	34.5kv	100	0
Tilton	342B	342B	60.51	4.96	34.5kv	100	0
Rochester	399x1	399x1	21.96	1.8	34.5kv	100	0
Nashua	3155	3155	15.62	1.03	34.5kv	100	0
Nashua	3143	3143	17.45	1.43	34.5kv	100	0
Nashua	3154/3177	3154/3177	12.57	1.03	34.5kv	100	0
Nashua	389	389	23.91	1.96	34.5kv	100	0
Chocorua	390	390	116.34	9.54	34.5kv	100	0
Lancaster	348x2	348x2	30.13	2.47	34.5kv	100	0
<b>Total</b>			<b>1,114.60</b>	<b>91.97</b>			

**Table 7. Actual 2020 Full Width Right of Way Clearing**

<b>AWC</b>	<b>Feeder</b>	<b>Scheduled Miles</b>	<b>Total ROW Miles</b>	<b>ROW Width</b>	<b>Primary Town</b>	<b>Voltage</b>
<b>Newport</b>	316	1.25	13.72	100	New London	34.5kv
<b>Chocorua</b>	346	6.88	32.25	100	Ossipee	34.5kv
<b>Lancaster</b>	376	5.25	21.35	100	Lancaster	34.5kv
<b>Tilton</b>	342A	4.6	6.05	100	Campton	34.5kv
<b>Lancaster</b>	348X2	3.31	9.3	100	Lisbon	34.5kv
<b>Total</b>		<b>21.29</b>	<b>82.67</b>	<b>500</b>		

Public Service Company of New Hampshire d/b/a Eversource Energy  
2021 Vegetation Management Plan

March 1, 2021

Consistent with the terms of the settlement agreement in Docket No. DE 19-057, Public Service Company of New Hampshire d/b/a Eversource Energy (“Eversource” or the “Company”) provides the below vegetation management plan for calendar year 2021 for review by and discussion with the Commission Staff. The Company filed an initial plan on November 13, 2020 and a revised plan on January 5, 2021. This plan is a revision to both previously submitted plans per discussions had with NHPUC Staff. Included in the below narrative and in the following tables is a presentation of the proposed plan and estimated budgets using information known at this time. The plan described below reflects the miles necessary for the Company to maintain a 4.6 year maintenance cycle, in line with the 5-year cycle pruning requirements of the Commission’s Puc 307.10. This plan is also based on the most recent pricing received from vendors bidding on the Company’s upcoming vegetation management work for the next 4 years. Additionally, in the supporting tables the Company has included the relevant circuits and miles planned for 2021.

**Scheduled Maintenance Trimming (“SMT”) Program**

The Company’s SMT cycle is based on a 12,000-mile distribution overhead system. The current 4-year SMT contract expired on 12/31/2020 and Eversource released an RFP for the next 4 years in both MA and NH. The bids came back on 10/02/2020 and the rates and totals are substantially higher than previous levels. The Company’s plan for 2021 was to have tree contractors perform SMT on 2,470 miles and the initial budgets were constructed around that plan. The table immediately below shows the proposed SMT trimming dollars and miles. The other programs will each have a respective table.

<b><u>Eversource SMT Miles</u></b>		
<b><u>Total Miles = 2,470</u></b>	<b><u>Region</u></b>	<b><u>2021 Miles</u></b>
<b>Budget \$13,243,264</b>	<b>SOUTHERN</b>	339.36
	<b>CENTRAL</b>	456.50
	<b>WESTERN</b>	638.58
	<b>EASTERN</b>	557.22
	<b>NORTHERN</b>	478.69
	<b><u>Total Annual Miles</u></b>	<b><u>2,470.35</u></b>

**Maintenance Enhanced Tree Trimming (“METT”) Program**

METT is maintenance trimming performed on miles that were previously subject to Enhanced Tree Trimming (“ETT”). The amount of METT changes each year based on the circuit schedule. As with the SMT, this work was also part of the 4 year contract that was put out to bid in 2020 and the budget and miles reflect the current pricing.

<b><u>Eversource METT Miles</u></b>		
	-	-
<b><u>Total Miles = 204.58</u></b>	<b><u>Region</u></b>	<b><u>2021 Miles</u></b>
<b>Budget \$1,103,846</b>	<b>SOUTHERN</b>	33.08
	<b>CENTRAL</b>	24.44
	<b>WESTERN</b>	59.67
	<b>EASTERN</b>	11.39
	<b>NORTHERN</b>	76
		-
	<b>Total Annual Miles</b>	<b>204.58</b>

**Mid-Cycle Work**

Mid-cycle work is additional work completed on a circuit in between the standard cycle under the SMT. This can include vine removal and “cycle buster” type trees. This program is an emergent one and the budget is minimal as the Company is prioritizing the SMT cycle work with the funding available. If the need arises to address circuit miles with this application, the Company will utilize the allocated budget of \$350K.

<b><u>Eversource Mid-cycle Miles</u></b>		
<b><u>Total Miles = TBD</u></b>	<b><u>Region</u></b>	<b><u>2021 Miles</u></b>
<b>Budget \$350K</b>	<b>SOUTHERN</b>	
	<b>CENTRAL</b>	
	<b>WESTERN</b>	
	<b>EASTERN</b>	
	<b>NORTHERN</b>	
	<b>Total Annual Miles</b>	<b>0</b>



**Customer Request Work**

Customer Request work is work that is generated or instigated to address an issue identified by a customer rather than as part of the scheduled or planned circuit miles. Most often, these are service trimming requests. The amount of Customer Request work changes every year. Eversource has encouraged customers through social media to hire professionals to handle their tree issues. However, due to the prevalence of invasive insects and diseases the Company sometimes learns about problematic trees or groups of trees from customers. The work needed to mitigate the issues posed by these trees is often performed by our contractors.

<b><u>Eversource Customer Work</u></b>		
<b><u>Total Miles = TBD</u></b>	<b><u>Region</u></b>	<b><u>2021 Miles</u></b>
<b>Budget \$208K</b>	SOUTHERN	
	CENTRAL	
	WESTERN	
	EASTERN	
	NORTHERN	
<b><u>Total Annual Miles</u></b>		<b><u>0</u></b>

**Hot Spot Program**

The Hot Spot program addresses tree growth in between cycles. The Company has allocated funds for this program, but the circuit miles have not yet been identified.

<b><u>Eversource Hot Spot Work</u></b>		
<b><u>Total Miles = TBD</u></b>	<b><u>Region</u></b>	<b><u>2021 Miles</u></b>
<b>Budget \$350K</b>	SOUTHERN	
	CENTRAL	
	WESTERN	
	EASTERN	
	NORTHERN	
<b><u>Total Annual Miles</u></b>		<b><u>0</u></b>

**ROW Maintenance**

The ROW maintenance program includes mowing and side trimming. The acres listed will be mowed, and during the Quality Control inspection of the mowing any tree limbs that are within 20 feet of the line will be noted and a crew will be sent to remove the limb(s).

<b><u>Eversource ROW Maint.</u></b>		
<b><u>Total Acres = 963.86</u></b>	<b><u>Region</u></b>	<b><u>2021 Acres</u></b>
<b>Budget \$1,350,000</b>	<b>SOUTHERN</b>	143.88
	<b>CENTRAL</b>	173.69
	<b>WESTERN</b>	16.6
	<b>EASTERN</b>	332.62
	<b>NORTHERN</b>	297.07
	<b>Total Annual Acres</b>	<b>963.86</b>

**Full Width Clearing of ROW**

This program identifies ROWs where enhanced clearing will benefit customers and workers. This work is competitively bid. The tree contractor clears brush and trees to the full easement width. At the edge of the easement, the bordering trees are trimmed from ground to sky. The Company’s arborists work closely with abutting property owners to communicate the work needed and the final product.

<b><u>Eversource Full Width ROW</u></b>		
<b><u>Total Miles 6.12</u></b>	<b><u>Region</u></b>	<b><u>2021 Miles</u></b>
<b>Budget \$1.5M</b>	<b>SOUTHERN</b>	
	<b>CENTRAL</b>	
	<b>WESTERN</b>	5.02
	<b>EASTERN</b>	
	<b>NORTHERN</b>	1.1
	<b>Total Annual Miles</b>	<b>6.12</b>

**ETT Program**

The Company has identified 60.5 miles of three phase circuits for ETT in 2021. These miles will be competitively bid. If the pricing allows for additional miles to be done, the Company will review the circuit list and identify more miles.

<b><u>Eversource ETT Miles</u></b>		
<b><u>Total Miles = 60.5</u></b>	<b><u>Region</u></b>	<b><u>2021 Miles</u></b>
<b>Budget \$2.514,800</b>	<b>SOUTHERN</b>	2.67
	<b>CENTRAL</b>	11.22
	<b>WESTERN</b>	2.45
	<b>EASTERN</b>	27.82
	<b>NORTHERN</b>	16.38
	<b>Total Annual Miles</b>	<b>60.54</b>

**Hazard Tree Program**

The Company profiles the SMT circuits for hazard trees. Hazard trees are trees that are dangerously diseased or damaged and which should be removed rather than trimmed due to their potential to impact the electric system. It is a best practice to remove the troublesome trees while trimming the circuit. The customers on whose property the hazard trees grow, and who, therefore, own the hazard trees, are engaged in one conversation for both programs. The total number of trees removed will be compiled monthly.

<b><u>Eversource Hazard Tree Miles</u></b>		
<b><u>Total Miles = 2,675</u></b>	<b><u>Region</u></b>	<b><u>2021 Miles</u></b>
<b>Budget \$13M</b>	<b>SOUTHERN</b>	372.40
	<b>CENTRAL</b>	480.90
	<b>WESTERN</b>	698.25
	<b>EASTERN</b>	568.50
	<b>NORTHERN</b>	554.60
	<b>Total Annual Miles</b>	<b>2,674.6</b>

### **The work force:**

While Eversource currently has experienced professionals managing its Vegetation Management programs there are some longer-term concerns with the work force. There are very few programs in high school or college to attract students to Arboriculture/Forestry. It is a difficult job performed in all types of weather, usually aloft. This has had a direct impact on the work the Company does and the availability of trained individuals to do it, and, as has been seen in recent bids, has had a material impact on costs.

As noted above, the Company recently released a 4-year bid for SMT in MA and NH and the pricing is dramatically higher than expected. Eversource's procurement agents have been working with the tree contractors to refine their bid prices. However, at this point in time if the pricing remains where it is it will cost over \$13.2M to perform 2,470 miles of SMT at Eversource in 2021. This cost does not include METT or ROW mowing nor the emergent programs that are also included in the existing budget and plans for 2021.

Of additional note, Eversource tried two new pieces of equipment in 2020. A mechanical trimmer was utilized for over 50 miles of SMT. This unit is a hydraulic boom mounted on a large tractor. At the end of the boom is an articulating circular saw. This tool works well in the right application, but it will probably never replace human occupied bucket trucks. The other new tool was a Rotor Blade helicopter unit. The helicopter has 10 saws attached to the helicopter and the unit can be used to "hedge/side trim" difficult-to-access ROW lines. Both units have a future in New Hampshire as "force multipliers" and the Company will continue to explore other tools as they become available to improve vegetation management in New Hampshire.

<b>Table 1. Eversource 2021 Planned Vegetation Management Program Activities Summary</b>		
<b>(A)</b>	<b>(B)</b>	<b>(C)</b>
<b>VMP Activity</b>	<b>Budget*</b>	<b>Reference</b>
Scheduled Maintenance Trimming (SMT)	\$ 13,243,264	Tables 2-6
Maintenance Enhanced Tree Trimming (METT)	1,103,846	Tables 2-6
Mid Cycle Review	350,000	
Customer Work	208,000	
Hot Spot Work	350,000	
Police/Flagging	-	
Sub Transmission (Mowing/Side Trim)	1,350,000	Table 8
<b>Distribution SMT Total</b>	<b>\$ 16,605,110</b>	
Right of Way (ROW) Full Width Clearing	1,500,000	Table 7
Hazard Tree Removal	6,500,000	
Enhanced Tree Trimming (ETT)	2,514,800	Table 9
<b>Vegetation Management Program Total</b>	<b>\$ 27,119,910</b>	

\*Budget is net of reimbursements received from Telephone Companies per Intercompany Operating Procedure (IOP)

<b>2021 SMT + METT Miles</b>	<b>2,675</b>
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**Table 2. 2021 Vegetation Management Program Plan - Scheduled Maintenance Trimming (SMT) and Maintenance Enhanced Tree Trimming (METT)  
Eastern Region (Rochester, Portsmouth, Epping and Chocorua Area Work Centers)**

Trim Year	Circuit	SMT Miles	METT Miles	Primary Town	AWC	Total Circuit Miles
2021	17H1 45	5.46		Tuftonboro	Chocorua	5.46
2021	336X 45	6.55	7.12	Conway	Chocorua	13.67
2021	19W2-45	99.83		Freedom	Chocoura	99.83
2021	395X1 45	2.07		Conway	Chocorua	2.07
2021	2H1 63	7.93		Rye	Portsmouth	7.93
2021	2W4 63	6.40		Rye	Portsmouth	6.40
2021	2W5 63	13.93		New Castle	Portsmouth	13.93
2021	3105X1 63	10.16		Portsmouth	Portsmouth	10.16
2021	3105X3 63	0.04		Greenland	Portsmouth	0.04
2021	3105X4 63	0.49		Greenland	Portsmouth	0.49
2021	3191X4 63	0.25		Greenland	Portsmouth	0.25
2021	339X1 63	0.39	0.34	Portsmouth	Portsmouth	0.73
2021	339X2 63	0.37		Portsmouth	Portsmouth	0.37
2021	3850X4 63	0.90		Newington	Portsmouth	0.90
2021	3850X7 63	8.66		Newington	Portsmouth	8.66
2021	48H2 63	5.43		Rye	Portsmouth	5.43
2021	64W1 63	4.32		Portsmouth	Portsmouth	4.32
2021	64W2 63	4.86		Portsmouth	Portsmouth	4.86
2021	6H1 63	2.72		Hampton	Portsmouth	2.72
2021	6H2 63	8.86		North Hampton	Portsmouth	8.86
2021	71W1 63	5.41		Portsmouth	Portsmouth	5.41
2021	71W4 63	5.77		Portsmouth	Portsmouth	5.77
2021	115 61	3.87		Somersworth	Rochester	3.87
2021	3148x4 61	4.24		Dover	Rochester	4.24
2021	3157X1 61	70.69		Milton	Rochester	70.69
2021	3157x2 61	1.48		Milton	Rochester	1.48
2021	32X1 61	0.85		Somersworth	Rochester	0.85
2021	32X4 61	5.93		Somersworth	Rochester	5.93
2021	340X2 61	0.29		Rochester	Rochester	0.29
2021	340x4 61	0.48		Rochester	Rochester	0.48
2021	34W3 61	3.74		Rochester	Rochester	3.74
2021	371X14 61	16.22		Somersworth	Rochester	16.22
2021	371X4 61	7.21		Rochester	Rochester	7.21
2021	371X8 61	3.91		Somersworth	Rochester	3.91
2021	371X9 61	5.73		Somersworth	Rochester	5.73
2021	38W1 61	8.24	3.93	Dover	Rochester	12.17
2021	392X4 61	9.95		Rochester	Rochester	9.95
2021	392X5 61	10.37		Rochester	Rochester	10.37
2021	399X1 61	5.5		Dover	Rochester	5.50
2021	399X10 61	0.04		Dover	Rochester	0.04
2021	399X14 61	0.54		Dover	Rochester	0.54
2021	399X15 61	10.81		Madbury	Rochester	10.81
2021	399X17 61	0.05		Dover	Rochester	0.05
2021	399X19 61	3.23		Dover	Rochester	3.23
2021	399X3 61	0.92		Dover	Rochester	0.92
2021	399X42 61	0.04		Dover	Rochester	0.04
2021	399X5 61	0.04		Dover	Rochester	0.04
2021	399X6 61	0.05		Madbury	Rochester	0.05
2021	399X7 61	0.01		Madbury	Rochester	0.01
2021	399X8 61	2.8		Dover	Rochester	2.80
2021	399X87 61	0.18		Dover	Rochester	0.18
2021	40H1 61	5.91		Somersworth	Rochester	5.91
2021	42H1 61	11.25		Somersworth	Rochester	11.25
2021	42H2 61	2.63		Somersworth	Rochester	2.63
2021	3148x	8.56		Dover	Rochester	8.56
2021	3174x1	4.07		Farmington	Rochester	4.07

<b>Table 2. 2021 Vegetation Management Program Plan - Scheduled Maintenance Trimming (SMT) and Maintenance Enhanced Tree Trimming (METT)</b>						
<b>Eastern Region (Rochester, Portsmouth, Epping and Chocorua Area Work Centers)</b>						
<b>Trim Year</b>	<b>Circuit</b>	<b>SMT Miles</b>	<b>METT Miles</b>	<b>Primary Town</b>	<b>AWC</b>	<b>Total Circuit Miles</b>
2021	371x22	3.07		Somersworth	Rochester	3.07
2021	371x30	5.57		Somersworth	Rochester	5.57
2021	399x11	2.78		Dover	Rochester	2.78
2021	399x18	10.05		Dover	Rochester	10.05
2021	3157x2	1.48		Milton	Rochester	1.48
2021	340x4	0.48		Rochester	Rochester	0.48
2021	3115X7 65	12.44		Raymond	Epping	12.44
2021	3115X9 65	6		Raymond	Epping	6.00
2021	3152X1 61	12.06		Durham	Epping	12.06
2021	3137X4 65	0.21		Northwood	Epping	0.21
2021	3191X10 65	1.44		Durham	Epping	1.44
2021	3191X5 65	2.08		Newmarket	Epping	2.08
2021	3191X6 65	3.33		Newmarket	Epping	3.33
2021	3191X7 65	0.31		Durham	Epping	0.31
2021	3191X8 65	0.69		Newmarket	Epping	0.69
2021	377X10 65	3.27		Epping	Epping	3.27
2021	377X16 65	10.4		Epping	Epping	10.40
2021	377X19 65	3.64		Epping	Epping	3.64
2021	377X20 65	18.2		Epping	Epping	18.20
2021	377X5 65	1.21		Raymond	Epping	1.21
2021	377X6 65	8.3		Newmarket	Epping	8.30
2021	377X9 65	1.55		Raymond	Epping	1.55
2021	3137x80	8.81		Northwood	Epping	8.81
2021	377x1	4.9		Epping	Epping	4.9
2021	377x29	4.12		Epping	Epping	4.12
2021	377x3	16.52		Epping	Epping	16.52
2021	380X3 65	3.68		Durham	Epping	3.68
<b>Total</b>		<b>557.22</b>	<b>11.39</b>			<b>568.61</b>

**Table 3. 2021 Vegetation Management Program Plan - Scheduled Maintenance Trimming (SMT) and Maintenance Enhanced Tree Trimming (METT)  
Southern Region (Nashua and Derry Area Work Centers)**

Trim Year	Circuit	SMT Miles	METT Miles	Primary Town	AWC	Total Circuit Miles
2021	314X19	0.52		Milford	Nashua	0.52
2021	3155X9	0.05		Greenville	Nashua	0.05
2021	353X1	0.17		Nashua	Nashua	0.17
2021	3241	2.85		Merrimack	Nashua	2.85
2021	3155X7	32.31	3.7	Mason	Nashua	36.01
2021	3155X3	9.1		Milford	Nashua	9.1
2021	3155X8	18.83		Mason	Nashua	18.83
2021	3020X	19.39	1.6	Merrimack	Nashua	20.99
2021	30H2	3.86	6.5	Milford	Nashua	10.36
2021	314X12	18.54		Milford	Nashua	18.54
2021	314X14	6.14		Milford	Nashua	6.14
2021	314X3	6.58		Milford	Nashua	6.58
2021	314X23	23.01		Wilton	Nashua	23.01
2021	314X26	2.75	1.92	Wilton	Nashua	4.67
2021	314X46	2.61		Wilton	Nashua	2.61
2021	314X22	1.06		Milford	Nashua	1.06
2021	314X21	0.14		Milford	Nashua	0.14
2021	314X35	1.22		Wilton	Nashua	1.22
2021	2H1	5.6		Nashua	Nashua	5.6
2021	3H1	5.62	2.42	Nashua	Nashua	8.04
2021	3H2	3.02	1.37	Nashua	Nashua	4.39
2021	27H3	3.71		Greenville	Nashua	3.71
2021	3175x	13.14	2.75	Hudson	Nashua	15.89
2021	3175x1	17.55		Hudson	Nashua	17.55
2021	383X1	21.31		Hudson	Nashua	21.31
2021	3010X	22.79		Merrimack	Nashua	22.79
2021	3211X	39.02		Hudson	Derry	39.02
2021	3133X	58.47	12.82	Windham	Derry	71.29
<b>Total</b>		<b>339.36</b>	<b>33.08</b>			<b>372.44</b>



**Table 4. 2021 Vegetation Management Program Plan - Scheduled Maintenance Trimming (SMT) and Maintenance Enhanced Tree Trimming (METT)  
Central Region (Bedford and Hooksett Area Work Centers)**

Trim Year	Circuit	SMT Miles	METT Miles	Primary Town	AWC	Total Circuit Miles
2021	3271X2_12	60.83	8.91	Weare	Bedford	69.74
2021	311X1_12	35.76		Weare	Bedford	35.76
2021	23X2_12	7.62		Amherst	Bedford	7.62
2021	317X7_12	5.69		Hopkinton	Bedford	5.69
2021	311X2_12	6.51		Henniker	Bedford	6.51
2021	322X54_12	0.83		Bedford	Bedford	0.83
2021	13W1_12	7.25		Manchester	Bedford	7.25
2021	311X8_12	4.38		Henniker	Bedford	4.38
2021	360X4_12	3.02		Goffstown	Bedford	3.02
2021	311X6_12	7.88		Henniker	Bedford	7.88
2021	387_12	1.5		Manchester	Bedford	1.50
2021	312X_12	1.21		Manchester	Bedford	1.21
2021	312X4_12	0.01		Manchester	Bedford	0.01
2021	3108	59.6		Weare	Bedford	59.60
2021	322X14_12	2.21		Goffstown	Bedford	2.21
2021	322X15_12	0.02		Goffstown	Bedford	0.02
2021	328X8_12	0.21		Goffstown	Bedford	0.21
2021	328X13_12	0.19		Goffstown	Bedford	0.19
2021	360X10_12	1.1		Goffstown	Bedford	1.10
2021	311X4_12	0.19		Henniker	Bedford	0.19
2021	3271x1_12	52.39	6.32	Dunbarton	Bedford	58.71
2021	328x9_12	16.71	3.61	Goffstown	Bedford	20.32
2021	37w1_12	48.87	5.12	Hopkinton	Bedford	53.99
2021	335x12	0.93		Hooksett	Bedford	0.93
2021	34W18	24.88	0	Epsom	Hooksett	24.88
2021	393X20	12.39		Londonderry	Hooksett	12.39
2021	318X2_11	30.28		Pembroke	Hooksett	30.28
2021	29H1_11	1.68	0.48	Manchester	Hooksett	2.16
2021	14H4_11	3.29		Manchester	Hooksett	3.29
2021	14H8_11	2.79		Manchester	Hooksett	2.79
2021	23W2_11	1.74		Manchester	Hooksett	1.74
2021	318X2_11	28.58		Pembroke	Hooksett	28.58
2021	34w18	23.37		Pembroke	Hooksett	23.37
2021	14H7_11	2.59		Manchester	Hooksett	2.59
<b>Total</b>		<b>456.5</b>	<b>24.44</b>			<b>480.94</b>

<b>Table 5. 2021 Vegetation Management Program Plan - Scheduled Maintenance Trimming (SMT) and Maintenance Enhanced Tree Trimming (METT)</b>						
<b>Western Region (Keene and Newport Area Work Centers)</b>						
<b>Trim Year</b>	<b>Circuit</b>	<b>SMT Miles</b>	<b>METT Miles</b>	<b>Primary Town</b>	<b>AWC</b>	<b>Total Circuit Miles</b>
2021	3139x	128.79	14.23	Chesterfield	Keene	143.02
2021	28W1	42.08	6.1	Jaffrey	Keene	48.18
2021	3155x9	38.75	8.97	Temple	Keene	47.72
2021	3155X4	77.7	6.24	New Ipswich	Keene	83.94
2021	51W1	32.86	0	Dublin	Keene	32.86
2021	313X3	8.5	0	Jaffrey	Keene	8.5
2021	313X8	3.19	0	Jaffrey	Keene	3.19
2021	382X2	15.59	0	Jaffrey	Keene	15.59
2021	3120x4	65.77	8.2	Rindge	Keene	73.97
2021	316	149.05	11.21	New London	Newport	160.26
2021	382x3	28.85	4.72	Jeffrey	Keene	33.57
2021	3140X1	32.91	0	Stoddard	Keene	32.91
2021	3140X3	14.54	0	Stoddard	Keene	14.54
<b>Total</b>		<b>638.58</b>	<b>59.67</b>			<b>698.25</b>

**Table 6. 2021 Vegetation Management Program Plan - Scheduled Maintenance Trimming (SMT) and Maintenance Enhanced Tree Trimming (METT)**

**Northern Region (Berlin, Lancaster and Tilton Area Work Centers)**

Trim Year	Circuit	SMT Miles	METT Miles	Primary Town	AWC	Total Circuit miles
2021	348X19	2.81	0.67	Stark	Lancaster	3.48
2021	348X20	15.66	4.4	Landaff	Lancaster	20.06
2021	348X4	9.92		Bethlehem	Lancaster	9.92
2021	384x1	32.45		Stark	Lancaster	32.45
2021	355X10	109.13	10.07	Pittsburg	Lancaster	119.2
2021	3525X5	39.41	20.07	Errol	Berlin	59.48
2021	3525X5G	0.18		Wentworths Location	Berlin	0.18
2021	3525X	12.46		Berlin	Berlin	12.46
2021	3525X1	3.16	2.8	Berlin	Berlin	5.96
2021	3525X2	13.33	7.14	Milan	Berlin	20.47
2021	3525X3	0.12	2.65	Dummer-Milan	Berlin	2.77
2021	3525X6	1.69	0.82	Berlin	Berlin	2.51
2021	3114W1	72.09		Hebron	Tilton	72.09
2021	345X1	22.37		New Hampton	Tilton	22.37
2021	10W1	3.2	5.1	Laconia	Tilton	8.3
2021	2W1	18.5	5.57	Tilton-Belmont	Tilton	24.07
2021	2W2	42.29	5.33	Sanbornton	Tilton	47.62
2021	310X3	12.57	4.86	Gilford	Tilton	17.43
2021	310X4	0.04		Gilford	Tilton	0.04
2021	310X5	4.11		Gilford	Tilton	4.11
2021	337X6	4.34		Franklin	Tilton	4.34
2021	345X4	0.88		Laconia	Tilton	0.88
2021	3548X11	9.59		Tilton	Tilton	9.59
2021	3548X9	8.55		Tilton	Tilton	8.55
2021	49W2	5.34		New Hampton	Tilton	5.34
2021	3525x4	27.81	1.16	Berlin	Berlin	28.97
2021	9W1	6.69	5.36	Laconia	Tilton	12.05
<b>Total</b>		<b>478.69</b>	<b>76</b>			<b>554.69</b>

**Table 7. 2021 Vegetation Management Program Plan - Right of Way (ROW) Full Width Clearing**

<b>AWC</b>	<b>FEEDER</b>	<b>SCHEDULED MILES</b>	<b>Total ROW Miles</b>	<b>ROW Width</b>	<b>Primary Town</b>	<b>VOLTAGE (KV)</b>
Keene	3178	5.02	5.02	100	Hinsdale	34.5
Lancaster	351x1	1.1	1.1	100	Whitefield	34.5
<b>Total Miles</b>		<b>6.12</b>	<b>6.12</b>			

Table 8. 2021 Vegetation Management Program Plan - Right of Way (ROW) Maintenance

Division + AWC	ROW Number	ROW Name	Total Acreage	Side Trimming (miles)	VOLTAGE	ROW Width	Maint. In Transmission (%)
<b>SOUTHERN</b>							
Hooksett	319	319	108.85	8.9	34.5kv	100'	0
Nashua	353	353	35.03	2.87	34.5kv	100'	0
Bedford	317	317	113.09	9.34	34.5kv	100'	0
Bedford	3271X	3271X	60.6	4.97	34.5kv	100'	0
<b>EASTERN</b>							
Rochester	340	340	33.08	2.71	34.5kv	100'	0
Rochester	3228	3228	68.6	5.62	34.5kv	100'	0
Rochester	3174	3174	50.30	4.12	34.5kv	100'	0
Rochester	32	32	114.04	9.35	34.5kv	100'	0
Rochester	3148x3	3148x3	6.50	0.53	34.5kv	100'	0
Rochester	371D	371D	18.90	1.55	34.5kv	100'	0
Rochester	371D	371D	7.87	0.64	34.5kv	100'	0
Epping	3425	3425	33.33	2.73	34.5kv	100'	0
<b>WESTERN</b>							
Newport	61w2	61w2	8.48	0.7	46kv	100'	0
Newport	4411	4411	2.42	0.2	46kv	100'	0
Newport	4181	4181	5.70	0.47	46kv	100'	0
<b>NORTHERN</b>							
Berlin	350	350	44.85	3.68	34.5kv	100'	0
Berlin	351/352	351/352	21.33	1.75	34.5kv	100'	0
Lancaster	348x1	348x1	24.24	1.99	34.5kv	100'	0
Lancaster	348x3	348x3	117.45	9.62	34.5kv	100'	0
Tilton	3216	3216	32.24	2.64	34.5kv	100'	0
Chocorua	390	390	56.96	4.67	34.5kv	100'	0
<b>Total</b>			<b>963.86</b>	<b>79.05</b>			<b>0</b>

**Table 9. 2021 Vegetation Management Program Plan - Enhanced Tree Trimming (ETT)**

AWC	Circuit	Total Miles	Town	Total Circuit Miles	Tree SAIDI	Tree SAIFI
Bedford	317X1	1.53	Warner	15.24	15.47	0.10
Bedford	311X5	2.1	Henniker	37.55	88.65	1.07
Bedford	3151X49	0.55	Bedford	1.78	-*	-
Berlin	351X8	1.22	Gorham	7.26	-	-
Chocorua	347B	2.14	Madison	86.27	83.45	0.52
Chocorua	347A	0.99	Conway	86.27	83.45	0.52
Chocorua	333X	0.95	Conway	35.38	103.08	0.73
Epping	3152X1	1.64	Durham	12.14	23.06	0.11
Epping	63W1	0.74	Northwood	68.96	52.44	0.47
Epping	3191X1B	1.38	Newmarket	9.14	189.46	1.57
Epping	377X16	1.88	Epping	10.4	122.76	0.85
Epping	3103	3.16	Brentwood	23.87	8.27	0.04
Epping	49W1	1.91	Northwood	16.3	8.08	0.08
Epping	3115X7	1.2	Raymond	11.73	-	-
Epping	3137X8	0.52	Northwood	5.83	59.55	1
Epping	3191X6	1.12	Newmarket	3.32	-	-
Epping	3191X8	0.52	Newmarket	0.69	-	-
Epping	380X2	0.66	Durham	4.64	129.57	0.85
Epping	377X5	0.73	Raymond	1.21	-	-
Epping	380X3	0.36	Durham	3.68	13.4	0.16
Epping	377X11	1	Epping	5.13	-	-
Epping	3115X11	0.77	Raymond	6.22	0.49	0
Hooksett	318X2	1.7	Pembroke	30.33	96.04	0.9
Hooksett	334X18	2.29	Pembroke	10.59	38.01	0.2
Hooksett	34W18	1.51	Pembroke	25.05	0.08	0.41
Hooksett	29H2	0.65	Manchester	8.78	13.56	0.13
Keene	53H1	0.53	Harrisville	34.38	125.51	0.94
Keene	51W1	1.15	Dublin	32.92	102.01	0.66
Lancaster	348X4	1.27	Bethlehem	9.92	40.84	0.34
Lancaster	376X1	1.88	Whitefield	12.38	0.51	0.04
Lancaster	351X1	0.85	Whitefield	4.43	-	-
Nashua	314X46	0.6	Wilton	2.61	-	-
Nashua	3144X3	0.81	Hudson	15.67	26.11	0.38
Nashua	40W1	1.26	Nashua	11.34	1.46	0.02
Newport	48W1	0.77	New London	37.61	25.39	0.19
Rochester	3148X3	0.5	Dover	15	32.31	0.11
Rochester	399X8	0.74	Dover	3.02	-	-
Rochester	38W1	2.2	Dover	12.28	11.57	0.14
Rochester	54H2	1.1	Dover	7.23	0.45	0.02
Tilton	30W2	2.48	Chichester	47.03	79.83	1.11
Tilton	337X6	0.22	Franklin	4.34	99.62	0.97
Tilton	3548X11	0.24	Tilton	9.59	38.45	0.59
Tilton	39H1	1.43	Franklin	6.83	6.88	0.03
Tilton	398X3	3.74	Belmont	38.58	3.29	0.04
Tilton	337X7	1.83	Franklin	6.42	6.95	0.11
Rochester	3157X2	0.72	Milton	1.48	-	-
Rochester	371X30	0.89	Somersworth	5.62	-	-
Tilton	337X10	1.22	Tilton	2.25	-	-
Bedford	18w3	0.89	Goffstown	8.46	-	-
<b>Total</b>		<b>60.54</b>		<b>857.15</b>		

**Notes:**

\* "-" No tree related outages in 2019