STATE OF NEW HAMPSHIRE

BEFORE THE

NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

DOCKET NO. DE 23-_____

REGULATORY RECONCILIATION ADJUSTMENT

Vegetation Management and Reliability Reports

DIRECT TESTIMONY OF

ROBERT D. ALLEN
ELLI NTAKOU
RUSSEL D. JOHNSON

On behalf of Public Service Company of New Hampshire

d/b/a Eversource Energy

March 1, 2023

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I. INTRODUCTION

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

A. My name is Robert D. Allen. I am employed by Eversource Energy Service Company ("ESC") as Manager of Vegetation Management. In that role I provide support to Public Service Company of New Hampshire d/b/a Eversource Energy ("Eversource" or the "Company"). My business address is 780 N. Commercial Street Manchester, New Hampshire 03105.

Q. Please summarize your educational background.

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

Q. Please summarize your professional experience.

A. I was promoted to my current position at ESC in August 2013. From 2009 to 2013, I held the position of Supervisor of Vegetation Management for the Company. From 1992 to 2009, I was Arborist for the Company's affiliate, The Connecticut Light and Power Company. Overall, I have approximately 40 years of experience in Arboriculture.

Q. Have you previously testified before the New Hampshire Public Utilities Commission?

A. Yes, I have testified before the New Hampshire Public Utilities Commission (the "Commission") in Eversource's last Reliability Enhancement Program ("REP") submission in Docket No. DE 18-177, Eversource's most recent rate case in Docket No. DE 19-057, and in support of the Company's 2021 and Regulatory Reconciliation Adjustment filings in Docket Nos. DE 21-029 and DE 22-022, respectively.

Q. Ms. Ntakou, please state your full name, position and business address.

A. My name is Elli Ntakou. I am employed by ESC as the Manager of System Resilience and Reliability Planning. My business address is 247 Station Drive, Westwood, Massachusetts 02090.

Q. What are your principal responsibilities in this position relevant to this filing?

A. As the Manager of System Resilience and Reliability Planning, I am responsible for Eversource's reliability and resilience programs for its electrical infrastructure.

The Company's efforts focus on assessing a wide portfolio of reliability and resilience solutions and prioritizing, optimizing and granularly targeting these solutions to its T&D grid needs based on historical data, data forecasts and engineering models. Resilience and reliability planning is critical on Eversource's path to a modern and decarbonized grid and to continue to provide reliable electric service to customers in the face of climate change.

Q. Please summarize your professional experience and educational background.

A. I graduated from Boston University College of Engineering with a Master of Science and a PhD, both in Systems Engineering. Subsequently, I worked for ESAI Power LLC leading their Northeast wholesale power market modeling efforts. From 2018 and until July 2022, I was employed by Quanta Technology, in various positions, most senior being Senior Advisor. As part of my role, I advised a breadth of clients in the power sector on various topics including resilience and reliability, non-wires alternatives, storage use-cases and integration, grid modernization and scenario planning. In July 2022, I joined ESC as the Manager of System Resilience and Reliability Planning.

Q. Have you previously testified before the Commission?

A. No, I have not.

Q. Mr. Johnson, please state your full name, position and business address.

A. My name is Russel D. Johnson. I am employed by ESC as Director-Distribution Engineering. My business address is 780 North Commercial Street, Manchester,

New Hampshire.

Q. What are your principal responsibilities in this position?

A. As the Director-Distribution Engineering, I am responsible for optimizing the performance of the distribution system assets in New Hampshire that are operated by the Company and to ensure customer needs for service and reliability are satisfied.

Q. Please summarize your professional experience and educational background.

A. I graduated from Clarkson University in Potsdam, New York in 1985 with a Bachelor of Science in Electrical and Computer Engineering. I also received a Master of Science in Electric Engineering with a concentration in Power Engineering from Clarkson University in 1987. Upon graduation from Clarkson University, I was hired by the Company and have held various positions in Distribution Engineering, Large Commercial and Industrial Sales, System Projects, and System Planning with increasing responsibility leading to my current position as Director-Distribution Engineering. I have also been a licensed Professional Engineer in the State of New Hampshire since 1990.

Q. Have you previously testified before the Commission?

A. Yes, I have testified before the Commission in past proceedings, including Docket No. DE 09-035 (Reliability Enhancement Program), Docket No. DE 13-177 (Least Cost Integrated Resource Plan), Docket No. 16-576 (Development of New Alternative Net Metering Tariffs and/or Other Regulatory Mechanisms and Tariffs

for Customer-Generators), Docket DE 22-010 (the 2022 Regulatory Reconciliation Adjustment mechanism), and Docket DE 22-030 (the Petition for approval of the Company's Third Step Adjustment).

Q. What is the purpose of your testimony?

A. The purpose of our testimony is to present the Company's reports on its vegetation management and reliability performance for calendar year 2022 as required by Section 9.3 of the comprehensive settlement in the Company's rate case, Docket No. DE 19-057, which was approved by the Commission in Order No. 26,433 issued on December 15, 2020 (the "Settlement"). Specifically, the Settlement set out the requirements for a series of reports and information to be filed by March 1st of each year as the first step in the Company's annual Regulatory Reconciliation Adjustment ("RRA") filing. This testimony accompanies these required reports.

Q. Would you please describe the specific reports that are included?

A. Yes. Section 9.3 of the Settlement states:

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

In line with that requirement, this testimony includes the reports identified in Appendix 4 to the Settlement.

Q. Are you presenting any attachments in addition to your testimony?

A. Yes, we are presenting the following attachments in support of this testimony:

Attachment	Description
Attachment RDA/EN/RDJ-1	2022 Vegetation Management Plan and Performance Report
Attachment RDA/EN/RDJ-2	2023 Vegetation Management Plan Proposal
Attachment RDA/EN/RDJ-3	Reliability Report

We note that Attachment RDA/EN/RDJ-2 includes the Company's 2023 vegetation management plan proposal, which is not among the reports identified in Appendix 4 to the Settlement. However, the Company provided a 2021 vegetation management plan as part of its 2021 RRA filing (submitted on March 1, 2021 in Docket No. DE 21-029) and a 2022 vegetation management plan as part of its 2022 RRA filing (submitted March 1, 2022 in Docket DE 22-010). In the interest of consistency, and to aid the Commission's review of the Company's vegetation management activities, the 2023 Vegetation Management Plan, as filed in Docket No. DE 19-057 on November 15, 2022, is included here.

Q. How is your testimony organized?

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

- Section II provides an overview of Eversource's vegetation management program ("VMP"), including its key initiatives, objectives and performance;
- Section III discusses the Company's vegetation management activities and performance in 2022;
- Section IV discusses the Company's vegetation management activities plan for 2023;
- Section V discusses the Company's reliability performance in 2022; and
- Section VI provides the conclusion to our testimony.

Mr. Allen is primarily responsible for Sections II, III and IV. Ms. Ntakou and Mr. Johnson are primarily responsible for Section V.

II. VEGETATION MANAGEMENT PROGRAM

Q. Mr. Allen, what is the overall design of the vegetation management work performed under the Eversource VMP?

A. As discussed in the Company's Settlement and Docket Nos. DE 21-029 and DE 22-010, the Eversource VMP is structured as a comprehensive effort involving multiple departments and significant amounts of data analysis. The plan is coordinated on an individual circuit basis with the distribution engineering group

and targets specific areas to improve reliability and resiliency. The execution of the actual tree work is managed by Eversource's Vegetation Management Department utilizing a staff of Company arborists, contract arborists and tree trimming and removal contractors. The program covers all primary wires, with scheduling developed on the basis of a combination of performance and circuit-specific cycle-based trimming.

There are four aspects of the VMP. First, the program includes Scheduled Maintenance Trimming ("SMT"), which follows an established trim cycle to ensure that all circuits, regardless of current performance, are trimmed at least once every four to five years, subject to circuit-specific considerations. Second, the Company performs Enhanced Tree Trimming ("ETT") to manage vegetation along the main backbone of the circuit. In contrast to standard trimming, ETT expands the zones of tree pruning activity to create additional clearances between tree growth and electrical facilities. With respect to ETT, the Company employs reliability-based prioritization methods to schedule vegetation management activity on specific circuits. The Company targets up to 100 miles per year on circuits with the worst tree-related reliability experienced in the previous year (*i.e.*, the top 50 list). If the Company determines that a poorly performing circuit is scheduled to be included in the SMT cycle for that year, the Company will consider including the circuit backbone under ETT. Third, the program includes hazard tree removal. The hazard tree program works in parallel with the SMT cycle. It involves the review of SMT

circuits, to identify and complete the emergent removal of trees determined to be in ill-health, or that otherwise pose a threat to electrical facilities or public safety, both within and outside standard trimming zones. The Company seeks to remove trees that are identified by trained arborists as a hazard to primary conductors. It is best practice and prudent to remove the dead, diseased and/or dying trees while trimming the SMT circuit and to include those trees in the hazard tree removal program, as the Company typically will not revisit that circuit for another four to five years.

Lastly, the fourth component of the program is full-width rights-of-way ("ROW") clearing. The Company researches its easements to confirm the easement boundaries and then works to clear the ROW to the full extent allowed under the easement. More specifically, full-width ROW clearing involves the reclamation of existing ROW by the enhanced clearing of trees and brush to extend the clearances between vegetation and the Company's electrical facilities located in those ROWs.

Q. What are the program specifications for SMT?

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

there are approximately ninety crews on the Company's distribution system every day performing this critical baseline clearance work.

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

A. As noted above, the ETT is focused on circuit backbones and the specification are 10 feet to the side from "ground-to-sky," though there can be equipment limitations that prevent workers from safely achieving the clearance. This strategic clearance program targets overhanging branches that could break and fall onto the Company's power lines.

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

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

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

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

III. 2022 VEGETATION MANAGEMENT PROGRAM

Q. Mr. Allen, please explain the Company's vegetation management activities for 2022 and its performance.

A. As reflected in Attachment RDA/EN/RDJ-1, the Company trimmed 2,541 miles of SMT/METT in 2022 at a cost of $16,585,976. The original budgeted miles were 2,553 miles. Eversource successfully executed its SMT/METT miles to keep the Company on track for meeting the cycle trimming requirements of the Commission.

Within Attachment RDA/EN/RDJ-1, the Company has also included information on its ETT, Hazard Tree Removal, and ROW clearing activities, including the 2022 plan budget, as filed on March 1, 2022 in Docket No. DE 22-010 as Attachment RDA/JJH/RDJ-2, and the 2022 actual costs incurred for those programs, as well as the amount of work completed.

Q. Has the Company noticed an increasing number of hazard trees on its system?

A. Yes. The Company continued to find that the trees of New Hampshire have been impacted by many biotic factors over the last several years. These issues primarily include repeated drought years, Emerald Ash Borer, Spongy Moth, Hemlock Wooly Adelgid, Hemlock Looper, Elongate Hemlock Scale, White Pine Needle Disease and the residual effect of the listed factors. Such issues will mean more trees that are standing dead or in declining health along the roadside forest. The Company believes that adherence to a maintenance cycle, along with an aggressive hazard tree removal program, are key components to a successful and reliable Vegetation Management Program.

Q. Did Eversource experience any resource constraints during 2022?

A. Yes. As discussed in previous RRA dockets, retaining sufficient resources is an ongoing challenge. Following the pandemic, there were fewer crews available in New Hampshire. The price points at neighboring New England utilities were higher than the contracted prices on its New Hampshire system. As a result, tree contractors found the work on the Company's system to be less profitable.

In addition, while Eversource currently has sufficient experienced professionals managing its Vegetation Management Program, there are longer-term concerns with the work force. There continue to be limited existing qualified resources in New England, with very few programs in high school or college that focus on the Arboriculture/Forestry fields. This results in an extremely competitive market with

a material impact on costs and has had a direct impact on the availability of trained individuals the Company can utilize as seen in recent bids.

Q. Has the Company taken any steps to address these resource constraints?

A. Yes. In the interest of trying to expand the pool of qualified people for this work, Eversource has encouraged its tree contractors to host job fairs and increase their social media presence. The Company has also asked its contractors to explore new and different types of tree clearing/trimming equipment to be used on scheduled work. Currently, however, the new contracts have put significant pressure on the budgets for 2023 and forward and will likely result in significant adjustments to the Company's plans in the future to assure that the SMT continues to meet the Commission's requirements.

Q. How did resource constraints and 2021 storm restoration efforts contribute to the Company's underspend in 2022?

A. The crew resource constraints discussed above that have impacted Vegetation Management ("VM") over the last few years continued to be an issue in 2022. These resource constraints left the Company with fewer crews than originally planned for 2022 work.

In addition, the Company began 2022 with a backlog of VM work from 2021. This backlog was the result of storm restoration efforts and severe weather. In 2021, several major storm events resulted in VM crews being deployed for restoration efforts. These are the same crews that perform work under the VMP. As a result,

these 2021 restoration efforts created a backlog of VM work for 2022.

To address this backlog, the Company's first quarter 2022 strategy was to focus on hazard trees that had the greatest risk to customer reliability that were not addressed in December 2021 due to storm restoration efforts and resource constraints. In addition to addressing this backlog of hazard trees, the Company continued to focus on SMT.

In order to ensure that adequate mileage would be completed in 2022, the Company transitioned most of its crews to SMT/METT in the second and third quarters of 2022. This action reduced the investment on hazard trees for several consecutive months. The Company did initially ramp back up its hazard tree removals in the fourth quarter of 2022 with the intent of completing all hazard tree removals by year end. However, the Company did not fulfill its VMP investment strategy for hazard trees due to storm restoration efforts in December 2022. As discussed above, the Company did complete all SMT miles.

Q. Have you proposed an adjustment consistent with the Settlement, which directs Eversource to include a proposed adjustment to the August 1 RRA associated with prior calendar year vegetation management activities?

A. It is my understanding that the Company's full RRA adjustment will be filed on May 1, 2023 and therefore this filing only provides preliminary information that is subject to change. As of December 31, 2022, the Company completed the workplan as scheduled. As of March 1, 2023, the preliminary information available shows an over-recovery of $1,586,392. The 2022 over-recovery was the result of

underspending on hazard tree removal due to (1) resource constraints; (2) a backlog of hazard trees due to storm restoration efforts at the end of 2021 that required adjustments to the 2022 VMP; and (3) storm restoration work during December 2022. As discussed below, the Company is proposing to carry this amount over into the next program year to offset 2023 VMP costs.

Q. Pursuant to Section 6.2(c) of the Settlement Agreement, the Company is permitted to request to carry any over-collection into the next program year as an offset or to return the over-collection to customers through the RRA. How is the Company proposing to address the over-collection?

A. The Company is proposing to carry the over-collection into the next program year to serve as an offset. As discussed below, VM contractor costs have increased, and as previously described, certain VMP investments were unable to be completed in 2022 due to storm restoration efforts. Therefore, the Company determined that an offset to the 2023 program year costs is appropriate and prudent to enable the Company to provide continued improvement in customer reliability while meeting its VMP objectives.

IV. 2023 VEGETATION MANAGEMENT PROGRAM PLAN

Q. Mr. Allen, please describe the Company's vegetation management program plan for 2023.

A. As reflected in Attachment RDA/EN/RDJ-2, which was filed in Docket No. DE 19-057 on November 15, 2022, the Company anticipates trimming 2,399 miles of SMT/METT in 2023. The 2023 Distribution SMT Total estimated cost is $24,925,259, which was not adjusted for expected reimbursements to be received

from telephone company providers related to SMT activities. This plan reflects the scheduled miles for the Company to maintain a 5-year maintenance cycle, in line with the "no more than 5-year cycle" tree-pruning requirements of the Commission's rule Puc 307.10. The Company is still within the Commission's mandate of a 5-year cycle schedule for SMT.

As discussed in Docket Nos. DE 21-029 and DE 22-010, the last 4-year contract for SMT ended in December 2020. The new 4-year contract has resulted in a significant increase in the cost per mile for all the awarded work. This has resulted in a larger budget needed to complete the anticipated tree work than the one that was agreed to in the Settlement. The Company will invest in VM at the necessary level to complete the programs that it believes are foundational to a strong VMP. These programs include SMT, METT, Hazard Tree Removal, ETT, and Full Width Clearing of ROWs. This investment will also consider the current operating procedures with the various telephone companies, along with the 10 percent "overage" identified in Section 6.2 of the Settlement.

V. 2022 RELIABILITY PERFORMANCE

Q. Ms. Ntakou and Mr. Johnson, please describe the Company's reliability performance in 2022.

A. For many years as part of the Company's REP filings, Eversource provided information on numerous reliability statistics and performance metrics. Those reports showed the impact of the REP and the generally improving trends in system-average metrics of our reliability performance that came from the REP as well as

other company initiatives aimed at improving the reliability and resiliency of the Company's distribution system.

Included as Attachment RDA/EN/RDJ-3 is the 2022 Annual Reliability Report providing information similar to, but more expansive than, what had previously been included in the REP reports. This attachment is consistent with the format used for this report in Docket Nos. DE 21-029 and DE 22-010.

Pages 7 through 17 of Attachment RDA/EN/RDJ-3 contain the various graphs and charts agreed to by the parties to the Settlement to demonstrate the general trends and outcomes regarding reliability in 2022. The graphs and charts show various reliability indices as specified in Appendix 4 of the Settlement and are based on IEEE reporting criteria.

Pages 18 to 27 of Attachment RDA/EN/RDJ-3 explain the various operations and maintenance ("O&M") activities conducted by the Company in 2022 aimed at reliability issues. 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. These activities are intended to identify potential problems or failures so that they may be proactively addressed before they impact customers.

Pages 28 to 39 of Attachment RDA/EN/RDJ-3, contain the capital expenditures on various reliability-related activities. This report provides information on "routine" capital projects targeting reliability as well as specific projects, 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 2022, and projects with spend in 2022 over the threshold but which were established in prior years.

Lastly, pages 40 and 41 of Attachment RDA/EN/RDJ-3 contain the Company's "Worst Performing Circuits" list. This list is adjusted annually to track the circuits with the highest contribution to the Company's SAIDI and SAIFI (in two separate lists) and helps to inform the Company's priorities for future reliability work to ensure the best reliability possible for the greatest number of customers at the lowest reasonable cost.

VI. CONCLUSION

Q. Do you have any concluding remarks?

A. The reports and related information included with this filing show that the Company was successful in its vegetation management activities in 2022 and that the Company has also demonstrated continuing improvement in customer reliability over time, all of which are beneficial to customers in New Hampshire.

Q. Does this conclude your testimony?

A. Yes, it does.