

**THE STATE OF NEW HAMPSHIRE**  
**BEFORE THE NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION**  
**PREPARED TESTIMONY OF LEE LAJOIE AND BRIAN DICKIE**  
**PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE d/b/a EVERSOURCE ENERGY**  
**2017 RELIABILITY ENHANCEMENT PROGRAM RECONCILIATION**  
**AND REQUEST FOR PROGRAM CONTINUATION**

**Docket No. DE 09-035**

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1 **Q. Please state your names, business addresses, positions, and responsibilities.**

2 A. My name is Lee Lajoie and I am employed by Eversource Energy as the Manager of  
3 System Resiliency. In my role my primary responsibility is the management of the  
4 Reliability Enhancement Program for the distribution system in New Hampshire that is  
5 operated by Public Service Company of New Hampshire d/b/a Eversource Energy  
6 (“Eversource” or the “Company”). I also manage the Company’s Distribution  
7 Automation program and am involved in developing and managing the Company’s  
8 capital budget.

9 A. My name is Brian Dickie and I am employed by Eversource Energy as the Director of  
10 System Operations. In my role my primary responsibility is management of New  
11 Hampshire Transmission and Distribution (“T&D”) Grid operations, technology support  
12 for the systems required to operate the T&D systems, and the troubleshooter linemen  
13 organization.

14 **Q. Have you previously testified before the New Hampshire Public Utilities**  
15 **Commission (“Commission”)?**

16 A. No, we have not.

17 **Q. Mr. Lajoie, please describe your educational background.**

18 A. I graduated from Northeastern University in Boston, MA in 1985 with a Bachelor of  
19 Science in Electrical and Computer Engineering, Power Systems and from Southern NH  
20 University in Manchester, NH in 2016 with a Master of Business Administration.

1 **Q. Mr. Lajoie, please describe your professional experience.**

2 A. Upon graduation from Northeastern University, I was hired by Public Service of New  
3 Hampshire and have held various positions in Distribution Engineering, Field  
4 Engineering, New Service, and Distribution Maintenance with increasing responsibility  
5 through my current position as Manager of System Resiliency.

6 **Q. Mr. Dickie, please describe your educational background.**

7 A. I graduated from the University of New Hampshire with a Bachelor's of Science in  
8 Engineering Technology and from Worcester Polytechnic Institute with a Masters in  
9 Electrical and Computer Engineering. I am a licensed professional engineer in the state  
10 of New Hampshire.

11 **Q. Mr. Dickie, please describe your professional experience.**

12 A. I have held various positions with Eversource over the last 28 years from Fossil / Hydro  
13 Operations to engineering and engineering management. I am currently the Director of  
14 System Operations responsible for transmission and distribution grid operations, outage  
15 management operations, and the troubleshooter linemen department.

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

17 A. The purpose of our testimony is to describe the Company's Reliability Enhancement  
18 Program ("REP") activities as they relate to the REP called for in the "2015 Public  
19 Service Company of New Hampshire Restructuring and Rate Stabilization Agreement"  
20 (the "Agreement") approved by the Commission on July 1, 2016 in Order No. 25,920.

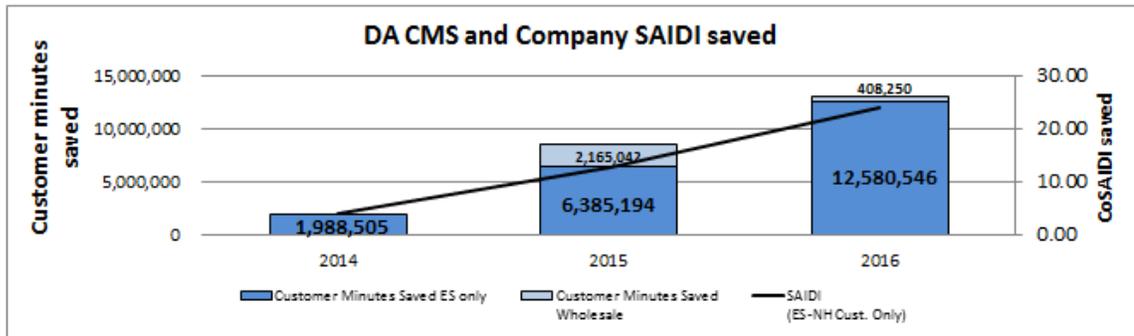
21 Under the Agreement, in June 2015 Eversource was to make a filing with the  
22 Commission to reconcile the expenses and revenues relating to REP activities between  
23 April 1, 2013 and March 31, 2015 and include a forecast of activities for the period April  
24 1, 2015 through June 30, 2016. Eversource made the required filing in June 2015, and  
25 through Order No. 25,793 was permitted to adjust its distribution rates to collect the

1 annual revenue necessary to recover the revenue requirements associated with REP  
2 capital additions, and operations and maintenance (“O&M”) expenses.

3 Under the Agreement, Eversource was to make a second REP reconciliation filing in  
4 April 2016. In that filing, Eversource was to reconcile the expenses and revenues relating  
5 to REP activities between April 1, 2015 and March 31, 2016 and include a forecast of  
6 activities for the period April 1, 2016 through June 30, 2017. Eversource made that  
7 filing, which was approved by the Commission in Order 25,913 (June 28, 2016). In our  
8 testimony we will discuss the 2016 reliability results, the Company’s REP-related capital  
9 and O&M activities over the prior year, and its forecast of activities for the Company’s  
10 proposed two year continuation of the REP. The reconciliation of expenses and revenues  
11 is addressed in the testimony of Christopher J. Goulding.

12 **Q. Please describe the Company’s REP activities performed over the last year.**

13 A. The largest capital investment has been in the area of Distribution Automation (“DA”).  
14 This category includes the addition of pole top Supervisory Control and Data Acquisition  
15 (“SCADA”) controlled devices. These devices have resulted in significant savings in  
16 customer outage minutes, as shown below.



Year	# of outages	Customers Saved Eversource only	Customer Minutes Saved ES only	Customers Saved Wholesale	Customer Minutes Saved Wholesale	Customer Minutes total	SAIDI (ES-NH Cust. Only)
2014	155		1,988,505				3.86
2015	115	235,957	6,385,194	19,294	2,165,042	8,550,236	12.64
2016	194	464,509	12,580,546	16,116	408,250	12,988,796	24.19
Totals	464	700,466	20,954,245	35,410	2,573,292	21,539,032	40.70

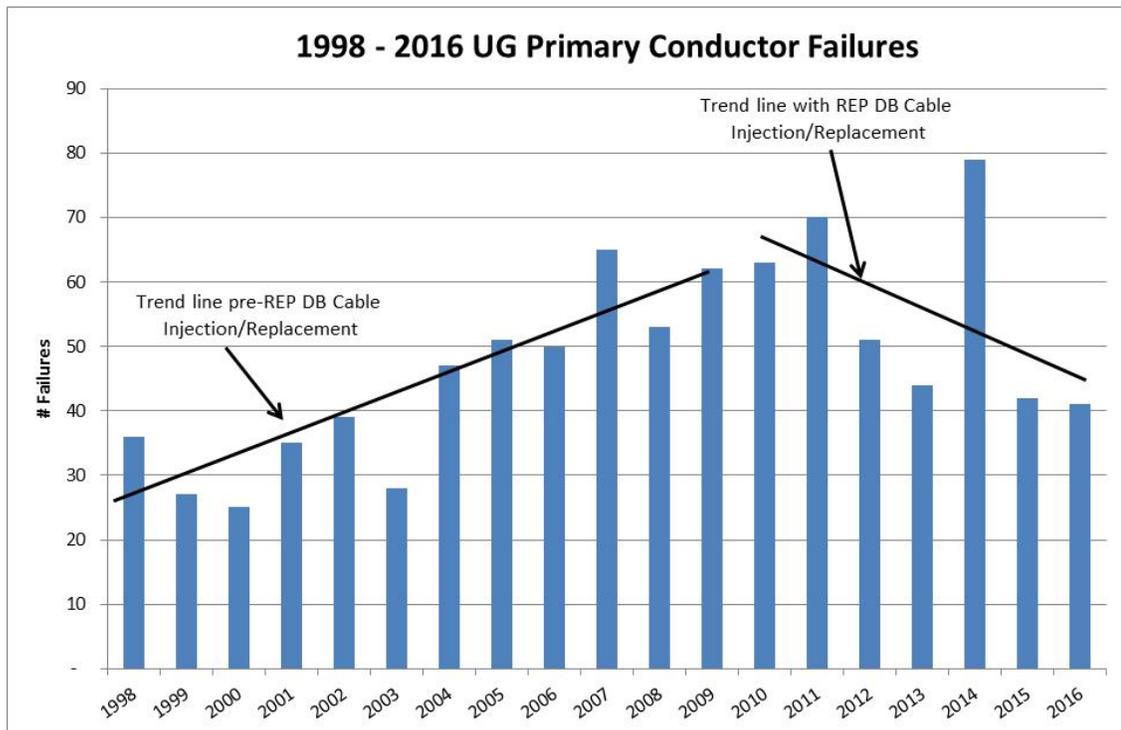
1 As shown in the above charts, the use of SCADA controlled devices to limit outages by  
2 enabling the Company to reroute power and sectionalize outages resulted in more than 12  
3 million customer minutes saved in 2016. In other words, without DA many more  
4 customers would have been without power for longer periods of time.

5 Other DA programs include: expanding SCADA control to lower voltage substations;  
6 replacing electromechanical relays with numerical relays; deploying additional line  
7 sensors; and expanding the communications capabilities to support each of these  
8 activities. These measures work with the pole top automation devices to lessen the  
9 number of customers impacted by interruptions, shorten interruption times, and provide  
10 significantly greater real time intelligence for operational and engineering personnel.  
11 These investments also provide a foundation for 21<sup>st</sup> century modernized grid operations  
12 which will allow applications of other technologies that are in early stages of  
13 development such as a Distribution Management System (“DMS”) directing self-healing  
14 circuits, volt/VAR optimization, and voltage management for distributed energy  
15 resources (“DER”) integration.

16 In addition, Eversource has completed a Geographic Information System (“GIS”)   
17 connectivity inspection to accurately map each customer to the correct transformer,   
18 phase, and protective device in the GIS and to track the location of Company owned   
19 service poles, which were not depicted on the old mapping system. A partial list of   
20 corrections made as a result of this effort includes 8,000 service poles added to the GIS   
21 system, phase connection corrected on 4,600 transformers, and the transformer feeding a   
22 particular service was corrected at 176,000 locations. Consistent with Order No. 25,913,   
23 Eversource has submitted regular reports on those GIS-related activities. The   
24 information in the GIS will enhance Eversource’s response to power outages and the   
25 accuracy and effectiveness of the Outage Management System (“OMS”) implementation   
26 and outage reporting to our customers.

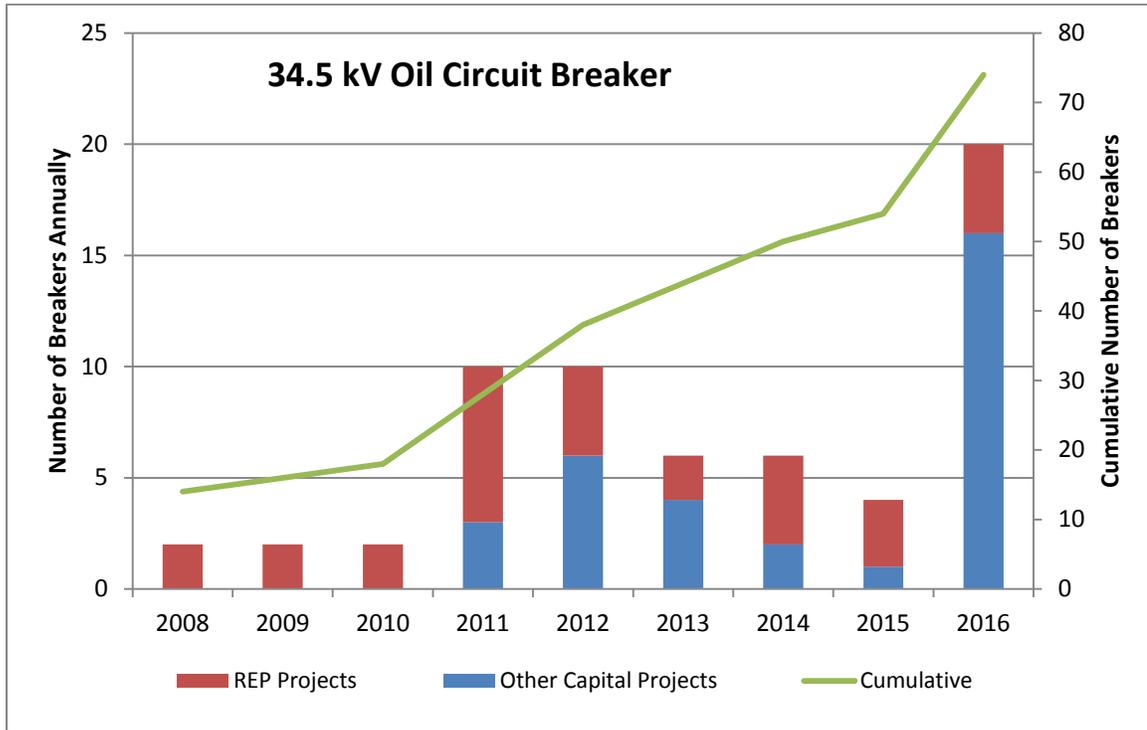
1 Programs to address overhead reliability and safety that were elements of the previous  
2 REP have been continued. These include Reject Pole Replacement, Porcelain  
3 Replacement, and NESC Capital Repairs. The Hit List Reliability Enhancement project  
4 (previously referred to as the Reliability Improvements Annual) provides funding for  
5 improvements on poor performing circuits. New programs include: Rights of Way  
6 (“ROW”) System Hardening/Reconductoring, which rebuilds portions of lines in ROW  
7 to improve operational performance; Heather-Lite Replacement, which replaces obsolete  
8 fiberglass brackets with cross arm construction; and Circuit Tie Construction, which  
9 builds circuit ties for large radial circuits providing a backup source of power, the ability  
10 to reroute power in the event of system troubles, and the full implementation of DA.

11 Underground reliability is addressed through the continuation of the Direct Buried Cable  
12 Replacement program, which replaces direct buried cable that has reached the end of its  
13 expected life with new cable in conduit, and Direct Buried Cable Injection, which is used  
14 to extend the life of cables that are still suitable for use. Together, these programs have  
15 resulted in a decrease in primary underground cable failures, as shown below.



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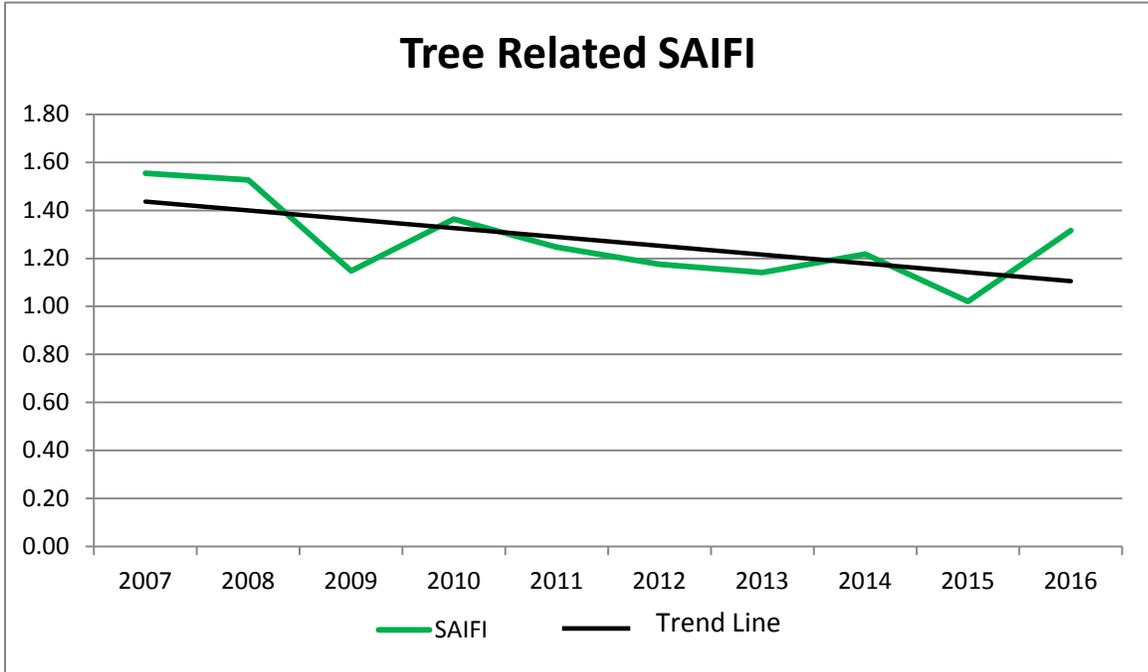
1 Two programs target aging and obsolete equipment in substations. The Oil Circuit  
2 Breaker (“OCB”) Replacement program is a continuation of a prior REP activity and  
3 replaces aging, obsolete oil circuit breakers. Thirty eight breakers have been replaced  
4 under the REP program, in addition to the 40 replaced as part of other capital projects  
5 (such as full replacement of a substation) as shown below.



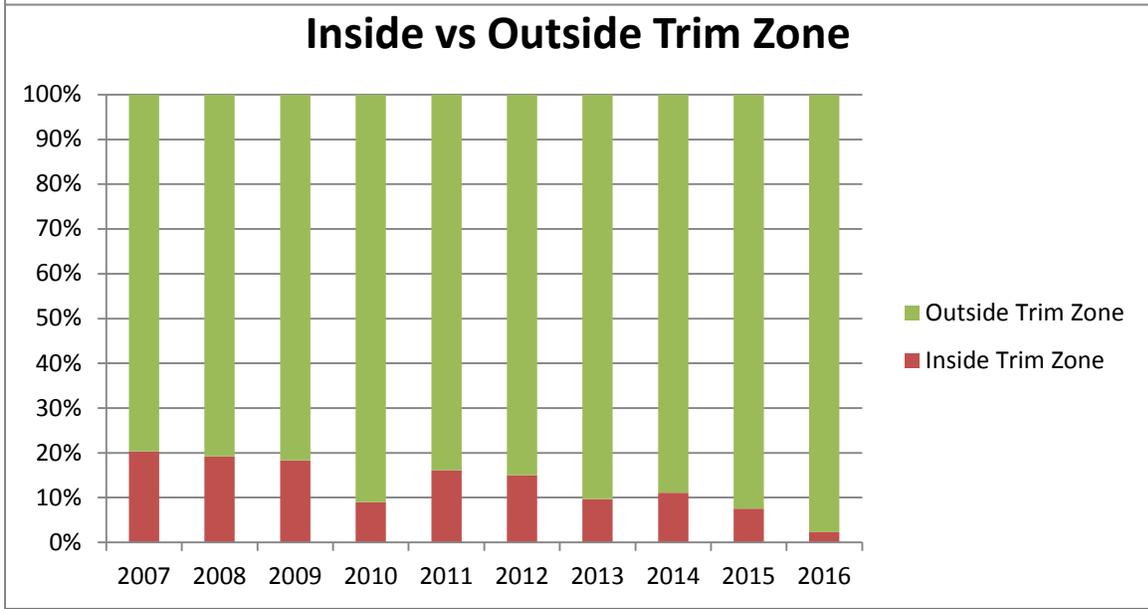
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7 Through the 4 & 12kV Aging Infrastructure program Eversource eliminated seven small,  
8 aging 4 & 12 kV substations by converting to a higher voltage so that the substation was  
9 no longer needed. Substation sites were then restored to a natural state.

10 Effective vegetation management activities continued with over 70 miles of additional  
11 Enhanced Tree Trimming (“ETT”), and 2.7 miles of Full Width ROW Clearing  
12 completed between July 1 and December 31, 2016. Although trees continue to be the  
13 largest cause of outages, the frequency of tree related outages (tree related SAIFI) has  
14 steadily declined, and the percentage of trees and limbs from inside the trim zone has  
15 likewise steadily declined, as shown below.

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Similar to the prior REP, O&M activities include the O&M allocation from capital work related to REP. Also, as testified to in the June 2015 filing, Eversource has implemented a “Troubleshooter” program in New Hampshire, beginning in August, 2015. The Troubleshooter Organization consists of 18 Troubleshooter positions and two

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1 Supervisors. The Troubleshooters are broken up into three six person teams working  
2 twelve hour shifts providing coverage 24 hours a day, 365 days a year to the primary  
3 coverage area. The primary coverage area consists of the Bedford, Derry, Hooksett, and  
4 Nashua Area Work Centers (“AWCs”). This coverage area includes 235,704 customers  
5 across 1,052 square miles. When available, the Troubleshooters also provide coverage to  
6 a secondary coverage area consisting of the Epping, Keene, Newport, Portsmouth,  
7 Rochester and Tilton AWCs. This secondary coverage area includes 229,341 customers  
8 across 2,642 square miles. Eversource has utilized this organization to provide improved  
9 response times to emergency situations for both customers and municipalities.  
10 Additionally, implementing this program has allowed Eversource to eliminate the legacy  
11 “Loss of Service” investigation charges to customers.<sup>1</sup>

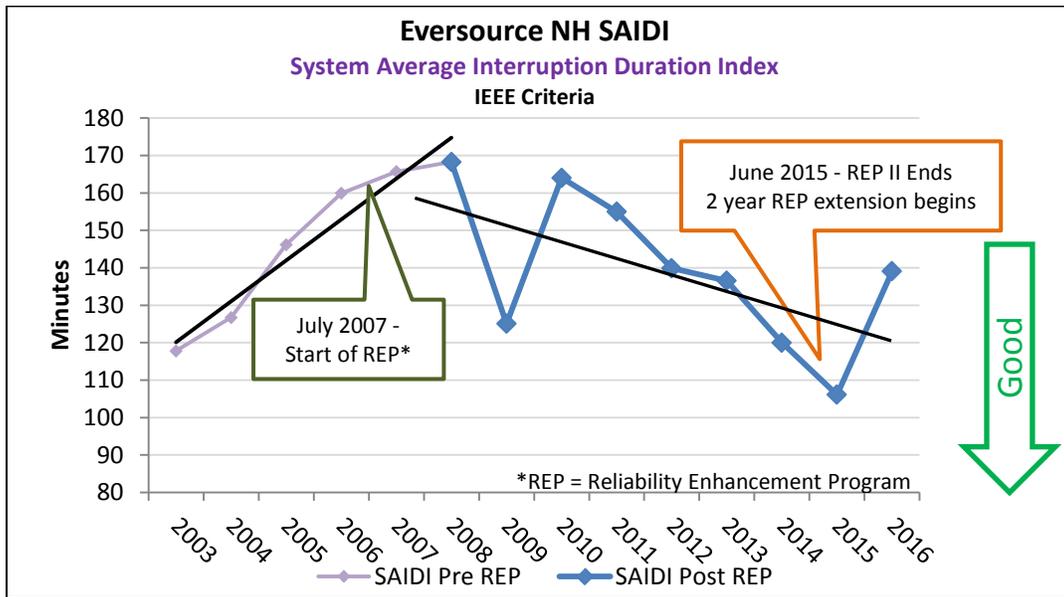
12 The Troubleshooters perform both reliability related work and non-reliability related  
13 work. The REP funding supports only the reliability work. Reliability related tasks  
14 undertaken by the Troubleshooters include responding to reports of wires down and  
15 trouble events not requiring the installation of capital plant units, removing limbs/trees  
16 from wires where there is no damage, circuit patrols, substation security patrols,  
17 responding to emergencies (no plant damage), installation of animal protection and pole  
18 reflectors, and circuit device labeling. When not needed for reliability related tasks, the  
19 Troubleshooters perform other activities such as installation, repair, and removal of State,  
20 municipal, and private street and area lighting, floating or reattaching services for  
21 customers, installation and removal of temporary protective cover over lines and services,  
22 installation, removal, replacement, or relocation of services, conversion of overhead and  
23 underground temporary services to permanent, and Third Party “make ready” work  
24 among other tasks, the costs of which are not funded by the REP program.

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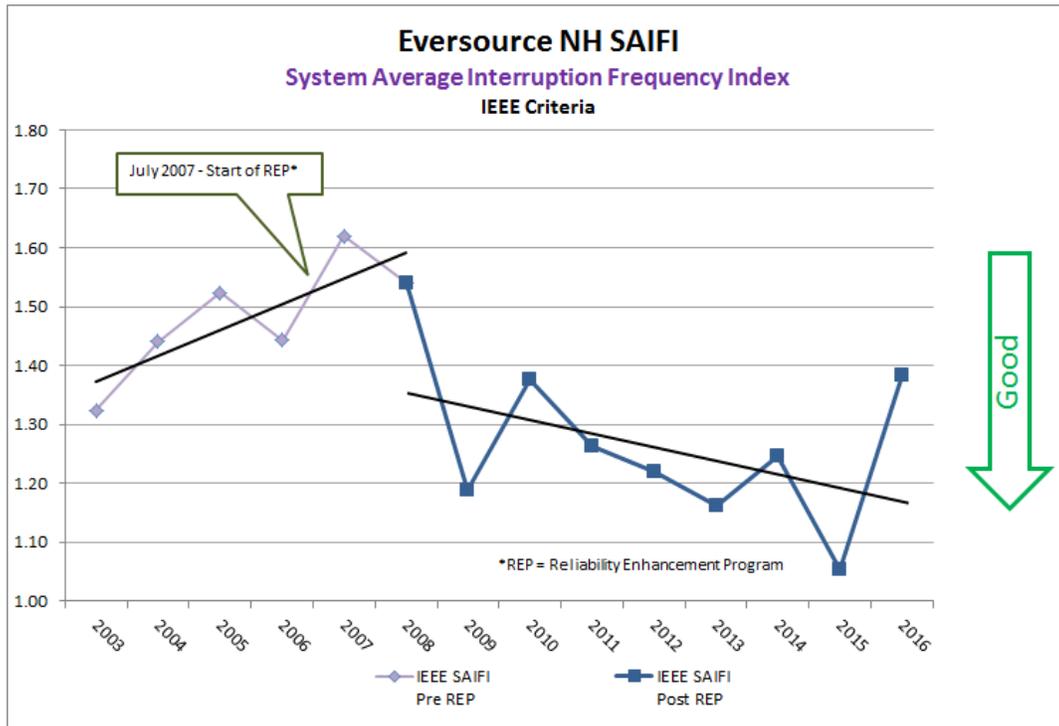
<sup>1</sup> The Commission approved the elimination of that charge in Order No. 25,842 (November 20, 2015) in Docket No. DE 15-467.

1 **Q. Has the REP program to date achieved the goals of increased safety and reliability**  
2 **of the Company's distribution system?**

3 A. Yes, the REP program has led to a sustained improvement in the reliability of the  
4 Eversource distribution system. The charts below illustrate the reliability performance  
5 before and since the introduction of the REP program. As shown on the first chart, since  
6 the start of the REP, there has been a steady decline in the average number of minutes the  
7 typical customer is without power. Significant storm activity in 2016 led to an increase  
8 in SAIDI that year but the overall trend since the start of the REP program continues to  
9 show improvement.



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11 The next chart shows a similar reduction in the frequency of outages for the typical  
12 customer.



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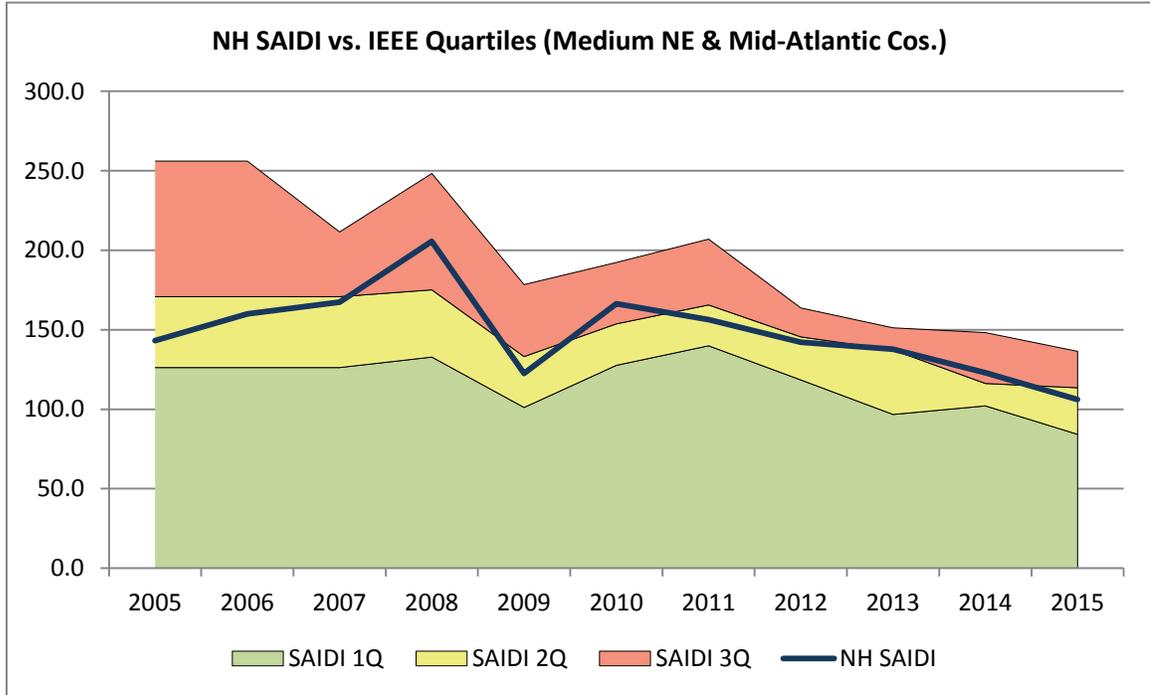
Clearly, the REP has had, and is having, a sustained and measurable positive impact on system reliability for Eversource’s customers. Customers are experiencing fewer outages, and the outages they do experience are shorter in duration.

**Q. How do these metrics and trends compare to other utilities in the region?**

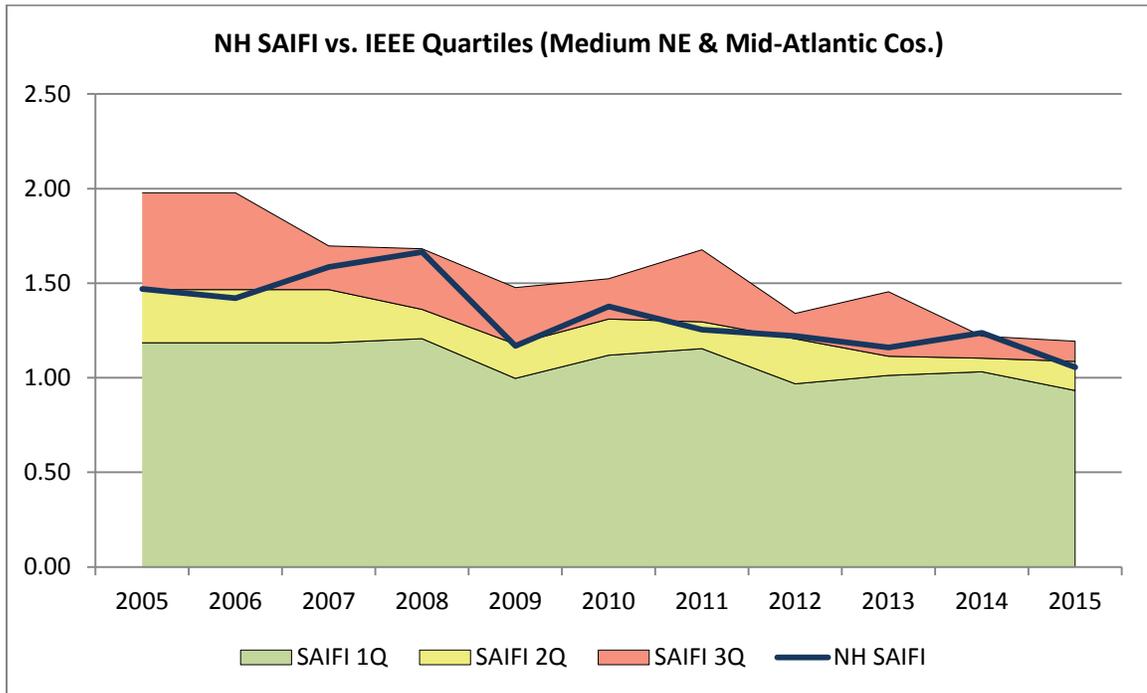
A. Regarding SAIDI, prior to the implementation of the REP, Eversource ranked just below the 3<sup>rd</sup> quartile when compared against other mid-sized utilities in the Northeast and the Mid-Atlantic, according to data from the Institute of Electrical and Electronics Engineers (IEEE). From the inception date of the REP in 2007 through 2015, Eversource has consistently been a borderline 2<sup>nd</sup> quartile performer, with some years placing within the 2<sup>nd</sup> quartile. While the quartile results are not dramatic, the clear trend has been a reduced Company SAIDI. Also, there has been increased “competition” in the quartile rankings over time. Aside from weather and other external factors impacting these numbers each year, in response to increasing customer expectations utilities are focusing on system performance and proactively addressing reliability concerns making the comparable numbers to attain a specific quartile rank incrementally more difficult over

1 time. For instance, the Company's 2<sup>nd</sup> quartile performance in 2011 would have been 4<sup>th</sup>  
2 quartile performance in 2015. Below is a chart developed from IEEE data illustrating  
3 Eversource New Hampshire's SAIDI when compared against its peers in New England  
4 and the Mid-Atlantic.

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7 Regarding SAIFI, prior to the implementation of the REP, Eversource's performance was  
8 degrading to the point where it ranked in the bottom half of the 3<sup>rd</sup> quartile when  
9 compared against other mid-sized utilities in the Northeast and the Mid-Atlantic in 2008.  
10 Since the implementation of REP, Eversource has mostly ranked in the high 2<sup>nd</sup> and  
11 lower 3<sup>rd</sup> quartiles, with 2015 showing a substantial drop from the prior year and a 2<sup>nd</sup>  
12 quartile performance. The clear trend for the Company has been a reduced SAIFI over  
13 time. Below is a chart illustrating Eversource's New Hampshire SAIFI when compared  
14 against other mid-sized utilities in New England and the Mid-Atlantic.



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These comparisons illustrate obvious improvements, but are not yet a reflection of an acceptable and sustainable level of reliability.

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4 **Q. In light of the above, does the Company believe the REP should be continued?**

5 **A.** Yes. The Company strongly supports continuing the REP to ensure that customers will  
6 continue to see improved reliability and so that the Company will have a strong and  
7 resilient system capable of meeting customers' demands into the future. Therefore,  
8 Eversource is proposing to continue the REP for two years, as we will describe below.

1 **Q. How does the Company plan to allocate REP funding in its proposed two-year**  
2 **extension?**

3 A. The proposed REP extension will contain the same level of funding (\$39M annually) and  
4 types of investments as the current program. Proposed annual funding of the categories  
5 is as follows:

Distribution Automation	\$20.4M	52.3%
Overhead System Reliability	\$8.7M	22.3%
Vegetation Management	\$7.0M	18.0%
Direct Buried Cable	\$1.9M	4.9%
Replacement/Rejuvenation		
Substation Aging Infrastructure	\$1.0M	2.5%

6 **Q. How is the proposed funding prioritized within the REP?**

7 A. Distribution automation has a direct and measurable impact on reliability. The build-out  
8 of this program over the proposed two year extension will provide the groundwork for  
9 automation coverage across the Company's entire distribution system so the funding  
10 level was set based on requirements to complete the project to this level. Coupling  
11 automation with Overhead System Reliability projects, such as constructing circuit ties,  
12 provides the ability to make the distribution system more resilient and maximizes the  
13 effectiveness of the automation program by providing backup sources of power in the  
14 event of outages. The funding proposed in this area will allow the Company to address  
15 some of the most significant proposed projects, based on outages which have been  
16 experienced. Since trees continue to be the major cause of outages on the Company's  
17 system, proposed funding for vegetation management will continue at a slightly higher  
18 level than the existing program. The remaining two categories, dealing with direct buried  
19 cable and aging substation infrastructure, will be funded at a level which will allow the  
20 Company to continue to make progress in these two areas to ensure the gains already  
21 realized do not back-slide.

1 **Q. Could you summarize the Company's position on the REP in this filing?**

2 A. Implementing the REP has aided Eversource in achieving reliability gains for its  
3 customers in New Hampshire, but there is still more to do. Therefore, Eversource is  
4 proposing to continue the REP, essentially at its present funding level and with the  
5 existing programs, for an additional 2 years.

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

7 A. Yes, it does.