THE STATE OF NEW HAMPSHIRE

BEFORE THE NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

PREPARED TESTIMONY OF RUSSEL D. JOHNSON

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE d/b/a EVERSOURCE ENERGY

RELIABILITY ENHANCEMENT PROGRAM

Docket No. DE 09-035

Q. Please state your name, business address, position, and your responsibilities.

A. My name is Russel D. Johnson and I am employed by Public Service Company of New Hampshire d/b/a Eversource Energy ("Eversource" or the "Company") at 780 North Commercial Street, Manchester NH. My position is Manager – System Planning and Strategy and my primary responsibility is the long term planning of the Eversource distribution system in New Hampshire.

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

A. Yes, in the last least cost planning docket (Docket No. DE 13-177) for Eversource.

Q. Please describe your educational background.

A. I graduated from Clarkson University in Potsdam, NY in 1985 with a Bachelor of Science in Electrical and Computer Engineering and in 1987 with a Master of Science in Electrical Engineering with a concentration in Power Engineering.

Q. Please describe your professional experience.

A. Upon graduation from Clarkson University, I was hired by Public Service of New Hampshire and have held various positions in Distribution Engineering, Large

Commercial and Industrial Sales, System Projects, and System Planning with increasing responsibility through my current position as Manager – System Planning and Strategy. I have been a licensed Professional Engineer in the State of New Hampshire since 1990.

Q. What is the purpose of your testimony?

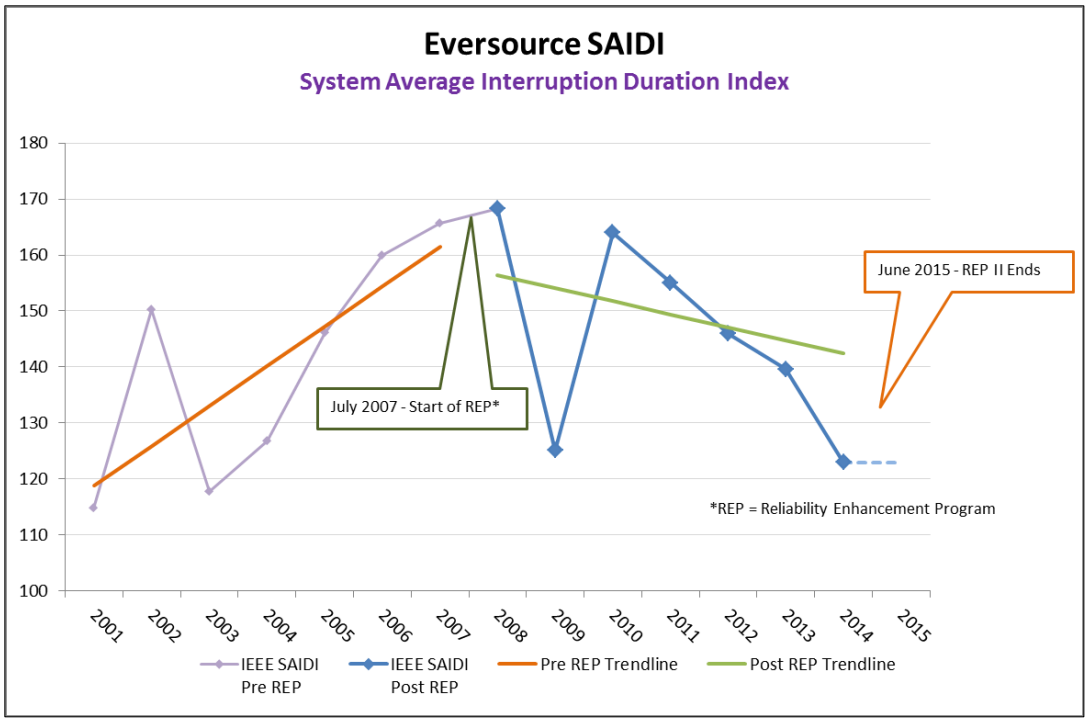
A. The purpose of my testimony is to describe the Company's Reliability Enhancement Program ("REP") activities as they relate to the reconciliation and forecast called for in the "2015 Public Service Company of New Hampshire Restructuring and Rate Stabilization Agreement" (the "Agreement") which has been submitted to the Commission.

Q. Please describe the background of the Company's REP.

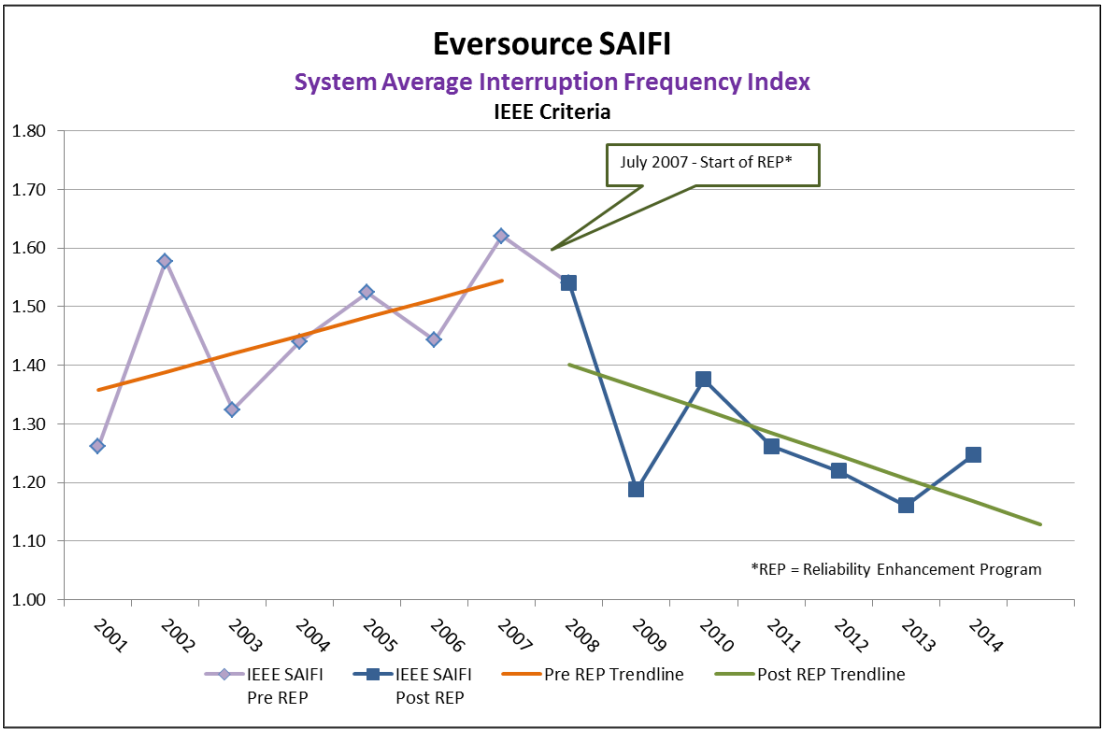
A. The REP was initially established as part of the Company's rate case in 2006 (Docket No. DE 06-028) and was intended to provide funding for enhanced and targeted capital and O&M spending that would directly affect the reliability of Eversource's distribution system. The REP was updated and expanded during the Company's 2009 rate case (Docket No. DE 09-035), but the intent remained the same – to provide sustainable targeted funding to support capital projects and O&M expenditures that would improve the reliability of the distribution system. Based upon the availability of that funding, the Company has been able to develop and implement plans for specific projects and activities aimed at improving the reliability and resiliency of the distribution system.

Q. Has the REP achieved the goals you've just described?

A. Yes, the REP program has led to a sustained improvement in the reliability of the Eversource distribution system. The charts below illustrate the reliability performance before and since the introduction of the REP program. As shown on the first chart, since the start of the REP there has been a steady decline in the average number of minutes the typical customer is without power.



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



Clearly, the REP has had, and is having, a measurable positive impact on system reliability.

Q. Please explain your understanding of the purpose of the Company's proposal here.

A. By its terms, the Company's existing REP was coextensive with the term of the settlement in the last rate case. Therefore, the funding dedicated to supporting REP projects is set to end when the term of that settlement ends on June 30, 2015. Rather than end the REP, as part of the Agreement there was a term that provided for the continuation of funding for the REP in exchange for otherwise avoiding a general rate increase. As I understand that provision, the Company was to provide a reconciliation relating to REP activities since the time of its last REP-related step increase and a

forecast of REP activities for the coming year. My testimony will, therefore, discuss the REP activities the Company has put in service since April 2013 and will provide a forecast of the upcoming REP activities.

Q. Will you be explaining the expenses relating to those activities?

A. In general terms only. The specific costs of the activities and the effect on rates will be covered in the testimony of Christopher Goulding, which is being filed at the same time as my testimony.

Q. Please describe the Company's REP activities since the time of its last REP-related step increase in 2013.

A. Broadly, the capital programs briefly described below were implemented since April 1, 2013 as part of the REP. Additional details regarding each of these programs are included in Eversource's "Report to the Public Utilities Commission Detailing Eversource's Reliability Enhancement Program Activities" submitted on March 31, 2014 and April 1, 2015 in Docket No. DE 09-035.

- Reject Pole Replacement – The replacement of decayed or damaged poles identified through the annual pole inspection and treatment program – which encompasses the inspection of approximately 24,000 poles annually.
- Pole Reinforcement – The reinforcement of poles identified through the annual pole inspection and treatment program that are deemed suitable for reinforcement rather than replacement.
- National Electric Safety Code Generated Capital Work – Replacement or installation of plant units, most often to address clearance issues with buildings, communications conductors, or roadways.

- Airbreak Switch Replacement – The replacement of obsolete and/or aged distribution line switches.
- Direct Buried Cable Replacement – The replacement of direct buried ("DB") unjacketed cable which has reached the end of its useful life. The DB cable is replaced with new jacketed cable in conduit to extend the life of the cable and shorten repair times should cable failure occur.
- Direct Buried Cable Injection - DB cable which maintains the integrity of the concentric neutral is injected to extend the useful life of the cable. This is a cost effective alternative to replacing the cable when conditions allow.
- Distribution Line Porcelain Product Changeout – The replacement of distribution line porcelain equipment with polymer equipment resulting in improvements in safety and reliability.
- 34.5 kV Substation Breaker Replacement – This program addresses the replacement of existing substation 34.5 kV oil circuit breakers which are problematic in repair or operation, unique, or no longer supported by vendors for parts and repair material due to age or obsolescence.
- Enhanced Tree Trimming ("ETT") – Trim main lines for reliability using an ETT specification to create ground to sky clearance versus the smaller maintenance trim zone.
- Pole Top DSCADA Replacement – The replacement of obsolete remote terminal units ("RTUs"). The corresponding front-end processors to the Supervisory Control and Data Acquisition ("SCADA") system are obsolete and no longer vendor supported. New RTUs provide advanced technology and flexibility.
- Substation RTU Replacement – This program replaced obsolete substation RTUs which are no longer vendor supported.

- Enable SCADA to Windsor Backup – Connected existing RTUs to the backup computer server in Windsor, CT. In the event of a computer server failure at the Electric System Control Center in Manchester, NH, all RTUs can be accessed via the backup server at Windsor, CT.
- Distribution Line Wire Upgrade/Eliminate Narrow Right-of-Way ("ROW") – This program replaced small copper conductors in narrow ROWs which were susceptible to burning down on contact with tree limbs. The lines were relocated to the street to improve the ability to patrol and repair.
- Reliability Improvements Annual – This project provided funding for a variety of lower cost activities relating to reliability of service including unfused lateral protection, adding reclosers, line construction to provide added phases or alternate feeds, and adding sectionalizing devices.
- GIS Capital Project – This project, which was specifically described in the settlement agreement in Docket No. DE 09-035, defined the overall scope and desired end products, determined technology requirements, selected vendors, and defined the overall implementation plan to establish GIS at Eversource. Deliverables included establishing the overhead and underground maps on a land base and providing outputs to automate engineering analysis tools. The GIS was a prerequisite to implementing a more robust Outage Management System ("OMS").
- Hazard Tree Removal – This program removed trees, from both inside and outside the standard trim zone, that were identified as a hazard to falling onto primary conductors and causing lengthy power outages.

- Reclaim ROWs to Full Width – The program researched easements, determined easement boundaries, and cleared ROWs to the full extent of the easements, thereby reducing the risk of tree outages on major circuit backbones.

REP O&M programs addressed a number of activities including vegetation management maintenance activities, overhead and underground inspections and testing, repair activities, and maintenance on line equipment such as reclosers and gang operated switches.

These programs positively impacted reliability of the Eversource distribution system by reducing the frequency of outages caused by vegetation or equipment failure, and by reducing the number of customers impacted by events. Also, the increased use of technology has improved the quantity and quality of information available to engineering and operational functions used for outage restoration and system performance.

Q. Please describe the Company's expected REP activities for the coming 12 month period.

A. I understand from the terms of the Agreement that the Company will have approximately $7 million in funding dedicated to the REP for the coming 12 month period. Based upon that expectation we have developed a list of investments and activities that would be completed with those funds. In particular, Eversource expects to make capital investments in Distribution Automation ("DA"), including adding pole top SCADA controlled devices, expanding SCADA control to lower voltage substations, replacing electromechanical relays with numerical relays, deploying additional line sensors, and expanding the communications capabilities to support each of these activities. These measures, once implemented, will result in interruptions to fewer customers, shorter

interruption times, and significantly greater real time intelligence for operational and engineering personnel. This provides a foundation for 21st century grid operations which will allow applications of other technologies that are in early stages of development. I also note that some of these activities will be discussed in additional detail as part of Eversource's upcoming Least Cost Integrated Resource Plan docket, which, under Order No. 25,676 (June 12, 2014), will relate to distribution and transmission planning.

In addition, Eversource will be conducting a GIS connectivity project to accurately map each customer to the correct transformer, phase, and protective device in GIS which will enhance the accuracy and effectiveness of the OMS implementation and outage reporting and communications to our customers.

Also, Eversource has a significant population of DB cable that is reaching the end of its expected life. Additional investment in the injection or replacement of DB cable is needed to address the anticipated increase in cable failures.

Eversource also has a number of proposed programs to address overhead system reliability. These include activities that were included in the previous REP program such as Reject Pole Replacement, Porcelain Replacement, and NESC Capital Repairs. Other activities include: ROW System Hardening/Reconductoring, which would rebuild portions of lines in ROW to improve operational performance; Heather-Lite Replacement, which would replace these obsolete brackets with cross arm construction; Hit List Reliability Enhancement provides additional funding to address poor performing circuits; and a program for Circuit Tie Construction to build circuit ties for large radial circuits which would allow a backup source of power with DA.

Substation aging infrastructure will be addressed with a continuation of the oil circuit breaker replacement project. A new program for 4 and 12 kV substations is proposed to address aging substation components such as power transformers, switchgear, or air circuit breakers. Effective vegetation management activities will continue with ETT, Hazard Tree Removal, and Full Width ROW Clearing.

O&M activities will include: maintenance of distribution lines in ROW to address items such as aging crossarms, splices, or insulators; and maintenance of equipment associated with the significant increase in deployment of distribution automation.

In addition, Eversource will be moving to implement a Troubleshooter Organization. In the summer months of 2014, Eversource piloted a second shift troubleshooter program in the Hooksett, Bedford, Milford, Derry and Nashua Area Work Centers. The pilot program coverage area included 1,052 square miles of the Eversource service territory and 232,000 customers. The success of the program included overall improved outage and trouble response time, along with improved visibility with municipal Emergency Management Directors partners and first responders. Based on the success of the pilot program, Eversource intends to implement a 24x7 Troubleshooter Organization in the pilot area work centers, and that organization will also have the flexibility to respond to outage and trouble calls in the Keene, Newport, Tilton, Rochester, Tilton, Epping and Portsmouth.

As the year goes on some projects may not be completed for various reasons (such as poor weather conditions), or other projects may be added. In any event, the Company's

intention is to devote the funding specified in the Agreement to REP activities. Please refer to Attachment RDJ-1 for the budgeted Capital and O&M amounts by activity. The semi-annual budgeted amounts have been straight-lined for ratemaking purposes.

Q. At the end of the coming 12 month period, what will happen to the REP?

A. As I understand it, the Agreement calls for a filing next year similar to this one where the Company would describe the completed activities and reconcile the expenses for them with the revenue and would also provide a new forecast for REP activities in the 2016 to 2017 period. Therefore, I expect that the REP will be continued under the terms of the Agreement until the Company files for a general rate change. At that point, there may be more extensive revisions to how the REP program is structured and funded. Until then, however, Eversource will ensure that the program is continued consistent with the Agreement to provide customers with the benefits of improved system reliability and resiliency.

Q. Is it your opinion that the provisions for the REP in the Agreement and as described in this submission are reasonable and appropriate?

A. Yes, it is. The REP has been a successful program, and the benefits of the investments have begun to be seen in the reliability improvements I described earlier. Ensuring that this program is continued, and that the gains of the program are not lost, is important to Eversource and the Commission, and, most importantly, to customers.

Q. Does this conclude your testimony?

A. Yes, it does.