Docket No. DE 15-xxx
Exhibit No. 3

STATE OF NEW HAMPSHIRE
BEFORE THE PUBLIC UTILITIES COMMISSION

Public Service Company of New Hampshire
d/b/a Eversource Energy
Reconciliation of Energy Service and Stranded Costs for
Calendar Year 2014

DIRECT TESTIMONY OF
Elizabeth H. Tillotson

I. Introduction

Q. Please state your name, position, employer and address.

A. My name is Elizabeth H. Tillotson. I am the Manager – Regulatory and Environmental for the Generation Division of Public Service Company of New Hampshire, d/b/a Eversource Energy ("Eversource"). My business address is 780 North Commercial Street, P.O. Box 330, Manchester, New Hampshire 03105.

Q. Please provide a brief summary of your background.

A. I received a Bachelor of Science in Mechanical Engineering from the University of New Hampshire. I began working for Public Service Company of New Hampshire in 1980. My duties have included Results Engineer – Merrimack Station, Senior Engineer on Staff including serving as the Division's weld engineer, Project Engineer – Merrimack Station's Supplemental Precipitator, Production Manager – Merrimack Station and Station Services Manager at Merrimack Station responsible for the installation of the Merrimack Unit 2 supplemental precipitator and the Merrimack 1 SCR. In February 2002, I assumed the responsibilities of Technical Business Manager - PSNH Generation. In 2014, I became the Manager – Regulatory and Environmental for the Generation Division.

Q. Have you ever testified before this Commission?

A. Yes. I have provided testimony in previous Commission proceedings including energy service and reconciliation dockets. I also testified before the commission during the Schiller Conversion proceeding, Docket No. DE 03-166.

Q. Please describe your responsibilities as Manager – Regulatory and Environmental, Generation.

A. In my present position, as Manager – Regulatory and Environmental for Generation, I am responsible for the support of environmental and regulatory compliance, as well as supporting legislative activities for PSNH's generating stations. Eversource maintains a diversified fuel portfolio including gas, oil and coal-fired units as well as hydro and renewable biomass with a total generation capacity of approximately 1150 MW.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to provide information on all outages that took place at Eversource's fossil-fired, hydroelectric and biomass units and at NextEra Energy Resources, LLC's (formerly FPL Energy) Wyman Station, Unit No. 4 in which Eversource is a minority owner. This information will be for the period January 1, 2014 through December 31, 2014. I shall also provide information on unit equivalent availability achieved by Eversource's steam generating units, consistent with reporting provided in previous years. Unit availability including planned outages will be calculated consistent with past submittals, as well as similar calculations, without the influence of planned outages.

II. <u>Generating Unit Operation</u>

Q. Please provide an overview of the performance of Eversource's generating units in 2014.

A. Eversource's generating units produced 2,090,920 megawatt-hours (MWH) during 2014. The fleet's availability during the 30 highest-priced days when customers' exposure to high market prices was the greatest was 99.1%. Eversource focused on safe, compliant, reliable, and cost-effective operations and management of the generating fleet to provide benefit to customers; as well as the successful management planned outages and forced outages during 2014. These efforts resulted in the generating stations achieving an aggregate equivalent availability of 86.4% in 2014.

Merrimack Unit 1 and Unit 2's annual equivalent availability factors ("EAF") were 90.7% and 80.1%, respectively. These availabilities were reduced due to outage planning which continues to consider overtime costs and replacement power costs, often resulting in a longer outage window (lower EAF), but lower overall costs to customers. The Flue Gas Desulfurization system ("scrubber") completed its third full calendar year of successful operation with overall good performance. Merrimack Station also operates four electrostatic precipitators and two selective catalytic reduction systems to significantly reduce flue gas emissions.

At Schiller Station, December 1, 2014 marked the eighth anniversary of the Northern Wood Power biomass unit (Unit 5). In 2014, Unit 5 produced its second highest annual generation of 313,002 MWH, an 88% capacity factor, and has generated over 2,500,000 MWH during its 8 years of operation. Northern Wood Power completed a run of 113 consecutive days, the third longest run in its history, as well as 2 additional Top-Ten runs during the year. Units 4 and 6 had equivalent availability of 85.7% and 86.4%, respectively.

Eversource's hydroelectric facilities consist of 9 hydro facilities with a total of 20 units. These units successfully produced 308,435 MWH in 2014.

Newington Station burned more oil in 2014 than in 2013, with oil accounting for 72% of total station generation in 2014. The unit utilized its fuel diversity, blending oil and natural gas to support the system grid and maximize its value to customers. Newington Station was selected to participate in the ISO-NE Winter Reliability Program through the provision of oil inventory service. Eversource managed this Program to maximize customer benefit while maintaining unit availability and reliability. Newington Station completed the year with 90.4% equivalent availability.

Q. Please provide a summary of how Eversource's generating units continue to operate well, with high reliability and high availability, recognizing the changing market conditions and capacity demands.

A. Eversource's generation continues to focus on key items important to long-term operational success: the day-in and day-out operation and maintenance of the units; the corrective and preventative maintenance conducted during forced outages; pre-planning and execution of scheduled and planned maintenance outages; and the use of a long-term maintenance outage and capital expenditure planning process. While plans to accomplish these goals have been revised to accommodate the changing market, our goals still remain high reliability, high availability, and competitively priced energy. Long-term maintenance plans prioritize reliable plant operations and are founded on operations, equipment history, on-going condition assessment, and industry experience. The generating stations maintain a long-standing preventative maintenance program to best execute quality maintenance and the operation of the units.

Eversource focuses on maximizing the value of a fuel diverse fleet with reliable, cost competitive energy for its customers. With changes in market forces and market conditions due to economic changes in the country and the world, as well as the continuing evolution of gas markets, Eversource has adjusted the management of its fleet to appropriately suit the needs of customers. In doing so, Eversource has adjusted expenses and staffing to accommodate a range of operating scenarios while providing ongoing customer value at the lowest possible cost. Appropriate efforts and adjustments will continue going forward. As energy market conditions change, Eversource plants are being maintained and are ready to serve at a full range of operating scenarios.

Eversource continues to rely on an experienced management team and a skilled work force utilizing sound practices derived from experience within our facilities, as well as working with suppliers, contractors, experts, and other generating plant peers in the industry. The 2014 capital budget was the third lowest in over 10 years and Generation was able to

operate and maintain the fleet's reliability while lowering O&M, overtime and capital expenditures. Eversource operating budgets continued to emphasize a proper balance between spending what is necessary in the most critical areas, while being sensitive to the overall cost of production to our customers taking Energy Service, both long term and short term. Eversource reviews maintenance projects to determine how they can be most effectively executed and how capital investments can be best applied to achieve a high level of plant performance. Eversource also continues to integrate into the above management focus consideration and implementation of recommendations by the Commission's consultants.

III. Unit Outages and Availabilities

Q. Please provide a list of all unplanned outages that took place during the period January 1, 2014 through December 31, 2014 for Eversource's fossil, hydro, and biomass units and for NextEra's Wyman Station Unit No. 4.

A. Attachment EHT-1 lists these outages. This listing is similar to the information submitted in the past, as a reporting requirement for the fossil hydro "outage information" resulting from discussion with the Staff in Docket No. DR 91-011.

Q. Is there additional reporting with respect to outages?

A. Yes. Eversource provides outage reports for all forced and maintenance outages in excess of two days at either Newington Station or at the two units at Merrimack Station, and in excess of four days at the three units at Schiller Station and at Wyman Unit 4. These Outage Reports are included as Attachment EHT-2.

Q. Please provide a chronological listing of the forced and maintenance outages for which Outage Reports are provided in the testimony.

A. The following table provides the chronological listing along with the start and end dates and times, the duration, and the causes of these forced and maintenance outages. The outages listed do include short term maintenance outages coordinated with wholesale marketing and scheduled with ISO-NE.

FORCED & MAINTENANCE OUTAGE LIST

NH Generation Steam Units Forced & Maintenance Outage List					
Report No.		Outage Start Date Time	Outage End Date Time	Duration Days	Reason
OR-1	MK2	1/16 0106	1/18 1653	2.7	Convention Pass Wall Tube Leak
OR-2	MK1	1/31 0144	2/2 1209	2.4	Waterwall Tube Leak
OR-3	MK2	2/14 1404	2/17 0841	2.8	Primary Superheater Leak
OR-4	MK1	2/20 1940	2/24 1617	3.9	Maintenance Outage - Air Heater Wash / Waterwall Tube Leak
OR-5	MK2	5/27 0800	6/17 1645	21.4	Maintenance Outage - Generator Hydrogen Leak
OR-6	MK2	7/29 0700	7/31 1430	2.3	Maintenance Outage- Electrostatic Precipitator Repairs
OR-7	SR5	8/18 0338	8/27 1730	9.6	In-Bed Boiler Tube Leaks
OR-8	SR4	9/9 1315	10/8 1500	29.1	Reliability Outage - Induced Draft Fan Motor Inspection / Repair
OR-9	MK1	9/16 0700	9/21 1300	5.3	Reliability Outage – SCR Outlet Expansion Joint Replacement
OR-10	MK2	10/27 1530	10/31 1609	4.0	Reliability Outage - Back Pass Boiler Tube Maintenance
OR-11	SR6	10/31 1440	11/7 1415	7.0	Reliability Outage - Secondary Superheater Hand Hole Cap Repair
OR-12	SR5	12/6 1048	12/13 0545	6.8	Reliability Maintenance Outage
OR-13	MK2	12/12 0001	12/16 1440	4.6	Maintenance Outage- penthouse repair/ SCR Inlet expansion joint
OR-14	SR5	12/27 2104	12/31 2400	4.1	Hydrogen Cooler Tube Leak

Q. Please discuss the longer outage durations provided in the table.

A. Eversource monitors customer load and the energy market and seeks to provide low cost energy to Eversource's customers. With that, during periods of low electrical demand and low power market prices, the outage duration is adjusted to use less overtime. While this practice may extend the duration of the outage, the total outage expense is minimized, by avoiding the associated overtime costs.

Q. Please provide a brief summary of each of the Outage Reports discussed above.

A. A summary of the Outage Reports follows:

2014-OR-01

This Merrimack Unit 2 outage was 2.66 days long and began on January 16. With a period of milder January temperatures, the unit was removed from service to repair an external convection pass wall tube leak. Access to the wall tube leak was challenging. Staging was installed, and then insulation and lagging removed. The leak was padwelded. A boiler inspection was performed. The boiler inspection revealed tube leaks in C cyclone, G cyclone and the front wall of the fire box. The tube leaks were repaired with pad welding. New studs and refractory were installed in the cyclones. Additional jobs from the outage backlog were also completed.

2014-OR-02

This Merrimack Unit 1 outage was 2.4 days long and began on January 31. The unit was removed from service to repair two leaks in water wall tubes on the north wall. The initial leak was in an original weld; and this leak cut an adjacent tube to cause the second leak. The elevation of the leaks required a full shift to stage for the repair. Access to the leaks was also constrained and required spreading and wedging on the pendants to repair the leaks. A boiler inspection was completed. The tube leaks were repaired with pad welding. Critical path was the tube leak repairs with additional jobs from the outage backlog also completed.

2014-OR-03

This Merrimack Unit 2 outage was 2.8 days long and began on February 14. The unit was removed from service to repair a leak in the primary superheater. Repair of this leak on the tube bend had to be accessed externally requiring the removal of lagging, insulation and membrane. The leak was pad welded, as well as an adjacent elbow with indication of tube erosion from the initial leak. A boiler inspection was performed. The boiler inspection revealed tube leaks in cyclones C, D and F. All tube leaks were repaired with pad welding. New studs and refractory were installed in the cyclones. Additional jobs from the outage backlog were also completed.

2014-OR-04

This Merrimack Unit 1 outage was 3.9 days long and began on February 20. With warmer temperatures expected, the unit was removed from service to perform a number of corrective maintenance activities. An air heater wash was completed. Also, wall tube leaks on the north wall at elevation 287 were identified and replaced. The water wall tube leaks caused erosion on three adjacent secondary superheater outlet tubes. The superheater tubes were pad weld repaired. Because of the tube material, the superheater tubes were stress-relieved as part of the weld repair process. Additional jobs from the outage backlog were also completed.

2014-OR-05

This Merrimack Unit 2 outage was 21.4 days long and began on May 27. While off-line in reserve status, the unit was removed from service to investigate excessive generator hydrogen leakage. In-house resources and 3 contractors were utilized to identify the leakage location. The location of the leakage was identified at the turbine end and exciter end bearing cavities. In the area of the leaks, bearing components were disassembled and hand cleaned. The hydrogen gland brackets and oil seals were reinstalled with new gaskets. The upper half bearing brackets were reinstalled with new rubber plugs at the horizontal joint. The bearing brackets were then pumped with fluorosilicone sealant. The repairs were tested. The final leakage rate was confirmed as acceptable and the unit was returned to reserve status.

2014-OR-06

This Merrimack Unit 2 outage was 2.3 days long and began on July 29. While off-line in reserve status, the unit was removed from service to investigate issues with two electrostatic precipitator automatic voltage controllers. The controllers were replaced and the unit was returned to reserve status. Additional jobs were completed for corrective and preventative maintenance.

2014-OR-07

This Schiller Unit 5 outage was 9.6 days long and began on August 18. The unit was removed from service to repair in-bed boiler tube leaks. Multiple leaks were found and repaired. Twenty-nine Dutchmen were installed and an additional 71 tubes were pad welded including two roof tubes. The bed, back pass and associated areas were vacuumed. An inspection of the bag house bags was also performed. Additional jobs from the outage backlog were also completed.

2013-OR-08

This Schiller Unit 4 outage was 29.1 days long and began on September 9. The unit was removed from service to repair the ID fan motor. The fan motor was sent to an outside vendor for repair. A boiler inspection was performed at the onset of the outage. A section of the south secondary superheater sidewall was repaired and refractory was repaired and replaced, as necessary. In parallel, padwelding and shielding was completed in the primary and secondary superheater sections. Additional jobs from the outage backlog were also completed.

2014-OR-09

This Merrimack Unit 1 outage was 5.3 days long and began on September 16. With power prices and demand being low, the unit was removed from service to replace the SCR Reactor Outlet/Air Heater Inlet expansion joints. Additional jobs were completed for corrective and preventative maintenance.

2014-OR-10

This Merrimack Unit 2 outage was 4.0 days long and began on October 27. With power prices and demand being low, the unit was removed from service to inspect and repair tubes in the backpass. Identified boiler tubes were pad welded or replaced, and tube shields installed. Additional jobs were completed for corrective and preventative maintenance.

2014-OR-11

This Schiller Unit 6 outage was 7.0 days long and began on October 31. The unit was in reserve status. As part of the seasonal readiness initiative, the boiler was inspected on Friday, October 31. During the inspection a secondary superheater hand hole cap was found to be leaking. With power prices and demand low, the unit was declared unavailable to proactively repair this leak and complete other corrective and preventative maintenance. Additional work included turbine turning gear repairs, installation of 7 tube shields in the primary superheater, and padwelding of 14 tubes on lower loops of the primary superheater at the hoppers. Additional jobs from the outage backlog were also completed.

2014-OR-12

This Schiller Unit 5 outage was 6.8 days long and began on December 6. The unit was taken offline to inspect and take preventative measures for the purpose of winter reliability. All cyclones were cleaned and substantial pluggage in #4 & #5 cyclones was removed, 37 in-bed tubes were replaced, and 6 pad welds performed. Additional jobs from the outage backlog were also completed.

2014-OR-13

This Merrimack Unit 2 outage was 4.6 days long and began on December 12. The unit was removed from service for a tube failure in the penthouse and to replace the SCR reactor inlet expansion joint. Tube leaks were also identified and pad welded in the economizer and in A, B, C, D, and G cyclones. Additional jobs from the outage backlog were also completed.

2014-OR-14

This Schiller Unit 5 outage was 4.1 days long and began on December 27. The unit was removed from service to locate and repair a hydrogen cooler leak. The leak was found on the #1 cooler. Tube ends were plugged to repair the leak. An air test on the generator was completed. Additional maintenance work was performed during the outage including cleaning of cyclones and condenser water boxes.

Q. Were scheduled Planned Outages performed at any of Eversource's fossil and hydro units during the period January 1, 2014 through December 31, 2014?

A. Yes. Attachment EHT-1 contains a list of unit outages including planned maintenance outages for each of Eversource's fossil, biomass, hydro, and combustion turbine units, as well as the Wyman 4 unit. EHT-3 also summarizes the planned maintenance periods for the fossil units.

Q. Please provide a list of scheduled Planned Outages at Eversource's fossil units during January 1, 2014 through December 31, 2014.

A. The planned maintenance outages & their durations were:

Unit	Planned Outages
Newington Unit 1	3/17 – 3/29
Schiller Unit 6	3/28 – 5/5
Schiller Unit 5	4/5 – 4/28
Schiller Unit 4	4/6 – 4/26
Merrimack Unit 2	4/21 – 5/21
Merrimack Unit 1	5/12 – 5/30
Newington Unit 1	9/24 – 10/10

The outages listed in the table above were scheduled to complete routine maintenance to support improved reliability during subsequent higher priced operating periods.

Q. Are these scheduled outages usually reviewed as part of the Reconciliation of Energy Service and Stranded Costs docket?

A. Yes. A review of the scheduled outages has traditionally been completed by the Commission's Staff utilizing an outside consultant. The outside consultant has performed on-site interviews and a review process of the planned outages.

Q. Are there any other requirements associated with this filing to be discussed?

A. Yes. As part of this 2014 SCRC docket, on-going recommendations associated with past SCRC filings are reported on and finalized as appropriate. Eversource understands specific requirements may be outlined in the final order associated with the 2013 review in Docket No. DE 14-120. Any necessary reporting will be provided by Eversource, consistent with a Commission Order in Docket No. DE 14-120 during the review in this docket.

Q. Does this conclude your testimony?

A. Yes, it does.