Docket No. DE 12-XXX
Exhibit No. 2 _____

STATE OF NEW HAMPSHIRE
BEFORE THE PUBLIC UTILITIES COMMISSION

Public Service Company of New Hampshire
Reconciliation of Energy Service and Stranded Costs for
Calendar Year 2011

DIRECT TESTIMONY OF
FREDERICK B. WHITE

## I. INTRODUCTION

**Q. Please state your name.**

A. My name is Frederick B. White.

**Q. Mr. White, please provide your business address and title.**

A. My business address is 107 Selden St, Berlin, Connecticut. I am a Supervisor in the Wholesale Power Contracts department of Northeast Utilities Service Company (NUSCO).

**Q. Mr. White, please describe your responsibilities at NUSCO.**

A. NUSCO provides centralized administrative services to Northeast Utilities' principal subsidiaries, including Public Service Company of New Hampshire (PSNH), The Connecticut Light and Power Company (CL&P), and Western Massachusetts Electric Company (WMECO). I primarily supervise and provide analytical support required to fulfill the power supply requirement obligations of PSNH, CL&P, and WMECO. For PSNH, this includes the development of Energy Service rates, evaluation of the need to supplement PSNH's resources for the provision of Energy Service, and PSNH's acquisition of Financial Transmission Rights (FTR) to manage congestion. For CL&P and WMECO, I assist in the design and execution of the power supply sourcing contracts associated with these companies' versions of energy service. I participate in ISO-NE stakeholder meetings and monitor ISO-NE, NEPOOL, and FERC activities to ensure that our operations are up to date.

## II. PURPOSE

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

A. The purpose of my testimony is to report on how PSNH's generation resources and supplemental purchases were used to meet PSNH's energy and capacity requirements during the period January 1, 2011 through December 31, 2011. As a load-serving entity, PSNH is responsible for having sufficient energy to meet the hourly needs of its customers and is also responsible for its share of the ISO-NE capacity requirement. PSNH meets its requirements through its owned generation, PURPA-mandated purchases under short term rates and long term rate orders, and through supplemental purchases of energy and capacity from the market. I will also discuss PSNH's participation in the FTR auction process.

## III. ENERGY REQUIREMENTS

**Q. Please summarize the generation resources that were available to meet PSNH's energy requirements.**

A. Attachment FBW-1 lists the generation resource portfolio PSNH used to meet its customers' energy requirements as of December, 2011. As shown on that Attachment, PSNH's available generation capacity during this time period was about 1,216 MW for the summer months. The portfolio is comprised of the following resource groups: hydroelectric (61 MW from nine stations), nuclear (20 MW from the Vermont Yankee purchased power arrangement), coal and wood (589 MW from Merrimack and Schiller Stations), gas/oil (419 MW from Newington and Wyman 4), combustion turbines (83 MW from five units), and non-utility generation (33 MW from numerous PURPA-mandated purchases and 10 MW from one IPP buyout replacement contract). PSNH's resource portfolio can also be categorized as baseload (714 MW from hydroelectric, nuclear, coal, wood, non-utility IPPs, and the buyout replacement contract), intermediate (419 MW from gas/oil resources), and peaking (83 MW from combustion turbines). PSNH also served a portion of its customers' energy requirements via a unit-contingent power purchase arrangement (Lempster Wind).

**Q. Please summarize how PSNH's generation resources met PSNH's energy requirements during 2011.**

A. Attachment FBW-2 summarizes how PSNH's energy requirements were met and how PSNH's generation resources were utilized by month during peak and off-peak periods. During 2011, 63% of peak energy requirements and 69% of off-peak energy

requirements were met with the generation resources listed on FBW-1. These figures also include the energy produced by Lempster Wind. The remaining energy needs were met through bilateral or spot market energy purchases.

**Q. Was PSNH's generation sufficient to meet PSNH's energy requirements in every month?**

A. No. PSNH does not own sufficient generating capability to meet its customers' energy requirements in all hours and, therefore, must purchase a portion of its customers' needs. The purchase requirement changes hourly and can range from zero to a significant portion, depending on the availability of PSNH's resources, the level of demand, the migration of customers to competitive energy service options, and the relative economics of PSNH's generation versus purchase alternatives.

**Q. Please summarize how supplemental purchases were used to meet PSNH's energy requirements.**

A. Attachment FBW-3 summarizes the purchases made to supplement PSNH's generating resources. Approximately 1,114 GWh of peak energy were purchased at an average cost of $62.90 per MWh (a total expense of $70.1 million). 733 GWh (66%) were purchased bilaterally at an average cost of $69.15 per MWh (a total expense of $50.7 million). Of that, 475 GWh (43% of total) were procured via fixed-price monthly contracts to address forecasted supplemental requirements and planned unit outages; and 258 GWh (23% of total) were procured via fixed-price short-term arrangements (e.g. daily, weekly) to address unplanned outages and higher load periods. The remaining approximately 382 GWh (34%) of peak energy were procured via the ISO-NE hourly spot market at an average cost of $50.89 per MWh (a total expense of $19.4 million).

Approximately 820 GWh of off-peak energy were purchased at an average cost of $41.20 per MWh (a total expense of $33.8 million). 185 GWh (23%) were purchased bilaterally at an average cost of $43.39 per MWh (a total expense of $8.0 million). Of that, 61 GWh (7% of total) were procured via fixed-price monthly contracts to address forecasted supplemental requirements and planned unit outages; and 124 GWh (15% of total) were procured via fixed-price short-term arrangements (e.g. daily, weekly) to address unplanned outages and higher load periods. The remaining approximately 635 GWh (77%) of off-peak energy were procured via the ISO-NE hourly spot market at an average cost of $40.57 per MWh (a total expense of $25.8 million). The combined expense for all supplemental energy purchases was $103.9 million.

**Q. Were there any hours in which PSNH's supply resources exceeded PSNH's energy needs?**

A. Yes. Attachment FBW-3 also summarizes the hours in which supply resources, including supplemental bilateral purchases, exceeded energy requirements resulting in sales to the ISO-NE spot market. Approximately 102 GWh of peak energy were sold at an average price of $66.08 (total revenues of $6.7 million). In addition, approximately 121 GWh of off-peak energy were sold at an average price of $48.31 (total revenues of $5.8 million). The combined revenue for all surplus energy sales was $12.6 million.

**Q. Please summarize how commodity prices (oil, natural gas, and energy) varied during 2011.**

A. Attachment FBW-4 is a chart of the 2011 daily prices for residual oil (1% sulfur at New York Harbor), natural gas (delivered to Algonquin Gate), and bilateral energy (peak hours at the Mass. HUB). The chart shows the range of commodity and energy market prices in 2011. The chart also shows the continuing correlation between natural gas prices and bilateral energy purchase prices in New England.

**Q. Please summarize the impact of commodity market volatility on the cost of serving PSNH's energy requirement.**

A. During 2011, approximately 54% of PSNH's energy requirements were met with coal, wood, hydro, and nuclear resources. Newington is capable of operating on either residual fuel oil or natural gas. Because of PSNH's fuel diverse supply portfolio, PSNH is largely insulated from volatility in the natural gas market. During periods of high and volatile natural gas prices PSNH's resource mix provides price stability, and during periods of low natural gas prices ES load can be served through low priced market purchases while PSNH's resources provide insurance against price increases.

## IV. CAPACITY REQUIREMENTS

**Q. Please describe the cost impact to PSNH's customers associated with the Forward Capacity Market during 2011.**

A. Attachment FBW-5 summarizes PSNH's monthly capacity activity. Approximately 87% of PSNH's capacity need was met with generation resources (including PSNH-owned assets, non-utility IPPs, the Vermont Yankee PPA, and the Hydro-Quebec Interconnection Capacity Credits). The remaining 13% was procured via ISO-NE at a total net cost of $10.1 million.

**Q. Please summarize the ISO-NE capacity market rules that were in effect during 2011.**

A. The Forward Capacity Market (FCM) Settlement Agreement was approved by the Federal Energy Regulatory Commission (FERC) on June 16, 2006. The FCM Settlement Agreement implemented Forward Capacity Auctions (FCA) during which capacity resources offer MWs into ISO-NE administered auctions to "procure" the lowest cost resources necessary to meet the ISO-NE Installed Capacity Requirement and to establish the market value of capacity. The first such auction was conducted in February, 2008 for the Capacity Commitment Period June 1, 2010 to May 31, 2011. The capacity price established during this auction was $4.50/kW-month. The capacity price established for the Capacity Commitment Period June 1, 2011 to May 31, 2012 was $3.60/kW-month. Additional components of the FCM which occur after the FCAs, including Reconfiguration Auctions and monthly Peak Energy Rent adjustments, result in adjustments to Capacity Supply Obligations, the overall rate paid to capacity, and the rate paid by load for capacity. Resources are paid for providing capacity, and the total payments for capacity resources in each month are charged to ISO-NE load serving entities based on their relative share of the prior year's peak demand.

**Q. Please summarize the supply resources that were used to meet PSNH's capacity requirements.**

A. During 2011, a total of 407,133 MW-months of capacity qualified for credits in the ISO-NE capacity market (this equates to a monthly average of 33,928 MWs). PSNH was allocated 4.27% (17,384 MW-months) of this capacity obligation. PSNH's supply resources qualified for 15,042 MW-months of capacity; comprised of owned generation (13,083 MW-months), non-utility IPPs (577 MW-months, including Lempster), the Vermont Yankee purchase agreement (246 MW-months), and Hydro-Quebec Interconnection Capacity Credits (1,136 MW-months). For 2011, PSNH had a net capacity obligation of 2,342 MW-months. Attachment FBW-5 provides additional details.

**Q. Can you estimate the ES customers' capacity credit associated with PSNH's owned generation resources during 2011?**

A. Yes. As noted above, for 2011, PSNH's owned resources provided 13,083 MW-months of capacity to ISO-NE. This created over $45.1 million in revenue credited to the Energy Service rate.

**Q. Are there any capacity market changes expected and how might the cost to PSNH's customers be affected?**

A. At this time, a New England stakeholder process is underway to revisit the forward capacity market structure, but any impacts will not be seen until June, 2017 at the earliest. NU and PSNH participate in this process and it is too early to predict how the market design may change. What will not change is ISO-NE will continue to conduct periodic competitive auctions to solicit a quantity of capacity resources that is sufficient to satisfy reliability standards. PSNH's generation resources will continue to provide significant customer value as an important hedge against the uncertainty related to future auction clearing prices and changes to FCM rules.

## V. FINANCIAL TRANSMISSION RIGHTS

**Q. What is a Financial Transmission Right (FTR)?**

A. An FTR is a financial instrument available to participants seeking to manage congestion cost risk or those wishing to speculate on the difference in congestion costs between two locations. These instruments have been available since the introduction of the ISO-NE Standard Market Design. All FTRs are defined by a MW amount, a source location, and a sink location (e.g. a participant may own 100 MW of FTRs that are sourced at the Merrimack node and sink at the New Hampshire load zone). For each MW of FTR, the owner will receive a credit or a charge from ISO-NE equal to the difference in the congestion component of the hourly LMP between the sink and the source. If the sink location congestion price exceeds the source location price, the FTR will have a positive value, i.e. - a credit to that participant's ISO-NE settlement in that hour. Similarly, if the sink location price is less than the source location price, the owner will be charged the difference.

**Q. Please summarize PSNH's participation in the ISO-NE FTR auction process.**

A. PSNH participated in these auctions as a method of hedging the congestion price differential between the major fossil stations (Merrimack, Schiller, and Newington) and the New Hampshire load zone for periods and in quantities according to forecasted unit operation. PSNH also procured FTRs to hedge the differential between the source location of bilateral purchases (e.g. the Massachusetts Hub) and the New Hampshire load zone. PSNH's generation resources and bilateral purchases provide an effective hedge against the energy component of the zonal LMP, but they do not guard against a congestion component differential. Therefore, even in an hour in which PSNH had sufficient resources to serve its energy requirement, it would be exposed to potential

congestion charges. The purpose of acquiring FTRs is to convert the risk associated with a variable, unknown expense (i.e. the hour-by-hour difference in the applicable LMP congestion component), to a fixed, known expense (i.e. the cost of the FTR); however, not at any cost. The prices bid to acquire FTRs are evaluated against potential congestion cost exposure to achieve a balance between risk coverage and minimizing costs for ES customers. During 2011, PSNH procured via auction 1,605 GWh of FTRs at a net cost of $15,896. Settlement of the FTRs resulted in $6,664 of congestion charges. Thus, managing a portion of PSNH's congestion cost risk with FTRs resulted in an overall Energy Service expense of $22,560.

**Q. Will PSNH continue to participate in the FTR auction process in order to hedge against unpredictable congestion costs?**

A. Yes. FTRs serve as an insurance policy against unanticipated congestion costs. PSNH procures FTRs primarily to provide cost certainty and thus reduce risk, rather than to achieve savings. If PSNH did not purchase FTRs and there was a problem on the system that resulted in congestion, the cost could be several times the cost of the FTR. Therefore, it makes sense to continue to purchase FTRs to manage the exposure to congestion costs.

**Q. Does that complete your testimony?**

A. Yes it does.