

**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 2018**

**DIRECT TESTIMONY OF
FREDERICK B. WHITE**

1 **I. INTRODUCTION**

2 **Q. Please state your name.**

3 A. My name is Frederick B. White.

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

5 A. My business address is 107 Selden St, Berlin, Connecticut. I am a Supervisor in the
6 Electric Supply department of Eversource Energy.

7 **Q. Mr. White, please describe your responsibilities at Eversource Energy.**

8 A. I supervise and provide analytical support required to fulfill the power supply requirement
9 obligations of Public Service of New Hampshire, d/b/a Eversource Energy (“Eversource”
10 or the “Company”). This included, prior to the divestiture of Eversource’s generation fleet,
11 supporting the development of default Energy Service (at times referred to herein as “ES”)
12 rates, evaluation of the need to supplement Eversource’s resources for the provision of
13 energy service, and acquisition of Financial Transmission Rights (“FTR”) to manage
14 congestion. Subsequent to the divestiture, this involves conducting solicitations for the
15 competitive procurement of power for energy service and the fulfillment of Renewable
16 Portfolio Standards (“RPS”) obligations. I am also responsible for on-going activities
17 associated with independent power producers and purchase power agreements.

18 **II. PURPOSE**

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

20 A. The purpose of my testimony is to report on how Eversource’s generation resources and
21 supplemental purchases were used to meet energy and capacity requirements during the
22 period January 1, 2018 through March 31, 2018. During this period as a load-serving

1 entity, Eversource was responsible for having sufficient energy to meet the hourly needs of
2 its customers and was also responsible for its share of the ISO-NE capacity requirement.
3 Eversource met its requirements through its owned generation, PURPA-mandated
4 purchases under short term rates and long-term rate orders, power purchase agreements,
5 and through supplemental purchases of energy and capacity from the market. I will also
6 discuss Eversource's participation in the FTR auction process.

7 Beginning on April 1, 2018 Eversource competitively procured power for ES and was no
8 longer a load-serving entity. Activities and costs associated with ES beginning on April 1,
9 2018 are not within the scope of the instant docket.

10 **III. ENERGY REQUIREMENTS**

11 **Q. Please summarize the generation resources that were available to meet Eversource's**
12 **energy requirements during the period January 1, 2018 through March 31, 2018.**

13 A. Attachment FBW-1 lists the resource portfolio available to Eversource to meet its
14 customers' energy requirements at the start of 2018. Eversource's owned fossil generation
15 resources were divested as of 1/10/18, and owned hydro generation resources as of 8/26/18.
16 As shown on the Attachment, available energy resource capacity was about 1,244 MW for
17 the winter months. These values are based on ISO-NE seasonal claimed capability ratings.
18 The portfolio was comprised of the following resource groups: hydroelectric (59 MW from
19 nine stations), coal and biomass (577 MW from Merrimack and Schiller Stations), gas/oil
20 (400 MW from Newington), combustion turbines (102 MW from five units), biomass (68
21 MW from Burgess Biopower), wind (7 MW from Lempster), and non-utility generation (31
22 MW from numerous PURPA-mandated purchases).

23 **Q. Please summarize how Eversource's resources met energy requirements during**
24 **January through March 2018.**

25 A. Attachment FBW-2 summarizes how energy requirements were met and how Eversource's
26 generation resources were utilized by month during peak and off-peak periods. 42% of
27 peak energy requirements and 48% of off-peak energy requirements were met with the
28 generation resources listed on FBW-1. The remaining energy needs were met through
29 bilateral or spot market energy purchases.

30 **Q. Were Eversource's must-take resources and economic generation sufficient to meet**
31 **energy requirements in every month?**

32 A. No. Eversource's resources did not meet its customers' energy requirements in all hours
33 and, therefore, Eversource purchased a portion of its customers' needs. The purchase

1 requirement changed hourly and ranged from zero to a significant portion, depending on
2 ownership and availability of resources, the level of demand, the migration of customers to
3 competitive energy service options, and the relative economics of Eversource's generation
4 versus purchase alternatives.

5 **Q. Please summarize how supplemental purchases were used to meet energy**
6 **requirements.**

7 A. Attachment FBW-3 summarizes the purchases made to supplement Eversource's
8 generating resources during January through March 2018. Approximately 268 GWh of
9 peak energy were purchased at an average cost of \$82.37 per MWh (a total expense of
10 \$22.1 million). 184 GWh were purchased bilaterally at an average cost of \$78.70 per MWh
11 (a total expense of \$14.5 million). All 184 GWh of bilateral purchases were procured via
12 fixed-price contracts to address forecasted supplemental requirements. The remaining 84
13 GWh of peak energy were procured via the ISO-NE hourly spot market at an average cost
14 of \$90.37 per MWh (a total expense of \$7.6 million). (Figures may not add due to
15 rounding.)

16 Approximately 229 GWh of off-peak energy were purchased at an average cost of \$64.84
17 per MWh (a total expense of \$14.8 million). 92 GWh were purchased bilaterally at an
18 average cost of \$72.62 per MWh (a total expense of \$6.7 million). All 92 GWh of bilateral
19 purchases were procured via fixed-price contracts to address forecasted supplemental
20 requirements. The remaining 137 GWh of off-peak energy were procured via the ISO-NE
21 hourly spot market at an average cost of \$59.61 per MWh (a total expense of \$8.2 million).
22 (Figures may not add due to rounding.) The combined expense for all supplemental energy
23 purchases was \$36.9 million.

24 **Q. Please discuss how forward bilateral purchases were used to replace owned fossil**
25 **resources which were divested as of 1/10/18.**

26 A. Since the precise date of ownership transfer was not known well in advance, during
27 January, after closing, Eversource made weekly and daily peak purchases. For February
28 and March, since there was sufficient lead time after closing, Eversource made monthly
29 peak and off-peak purchases. Eversource analyzed forecasted loads and developed a
30 purchase plan based on pre-existing guidelines for peak and off-peak purchases. The plan
31 was reviewed with and approved by senior management prior to execution of the
32 purchases. During February, Eversource purchased 250 MW during peak hours and 150
33 MW during off-peak hours, and during March, Eversource purchased 225 MW during peak
34 hours and 100 MW during off-peak hours.

1 **Q. Were there any hours during January through March 2018 in which Eversource's**
2 **supply resources exceeded energy needs?**

3 A. Yes. Attachment FBW-3 also summarizes the hours in which supply resources, including
4 supplemental bilateral purchases, exceeded energy requirements resulting in sales to the
5 ISO-NE spot market. Approximately 43 GWh of peak energy were sold at an average price
6 of \$148.84 per MWh (total revenues of \$6.4 million). In addition, approximately 50 GWh
7 of off-peak energy were sold at an average price of \$155.84 per MWh (total revenues of
8 \$7.8 million). The combined revenue for all surplus energy sales was \$14.1 million.

9 **Q. Please summarize how commodity prices (oil, natural gas, and energy) varied during**
10 **2018.**

11 A. Attachment FBW-4 is a chart of the 2018 daily prices for crude oil (West Texas
12 Intermediate), natural gas (delivered to Algonquin Gate), and bilateral energy (peak hours
13 at the Massachusetts Hub). The chart shows the range of commodity and energy market
14 prices in 2018. The chart also shows the continuing correlation between natural gas prices
15 and energy purchase prices in New England. Note the natural gas price spikes during
16 winter months, due to space heating demand and delivery constraints on the natural gas
17 transportation pipeline system.

18 **IV. CAPACITY REQUIREMENTS**

19 **Q. Please describe the net benefit to Eversource's customers associated with the Forward**
20 **Capacity Market during January through March 2018.**

21 A. Attachment FBW-5 summarizes Eversource's monthly capacity market activity and reflects
22 the divestiture of owned fossil generation resources as of January 10, 2018. For the period,
23 capacity market expenses exceeded capacity market revenues from generation resources
24 (including owned assets, non-utility IPPs, and the Hydro-Quebec Interconnection Capacity
25 Credits), resulting in a net expense to Energy Service customers of \$15.7 million.

26 **Q. Please summarize the ISO-NE capacity market rules that were in effect during this**
27 **period.**

28 A. The capacity market in New England is governed by the Forward Capacity Market
29 ("FCM") rules as administered by ISO-NE. ISO-NE conducts Forward Capacity Auctions
30 ("FCA"), into which capacity resources offer MWs, to "procure" the lowest cost resources
31 necessary to meet the ISO-NE Installed Capacity Requirement and to establish the market
32 value of capacity. The capacity prices established for 2018 were \$7.025/kW-month for the
33 January to March period. Additional components of the FCM which occur after the FCAs,

1 including Reconfiguration Auctions and monthly Peak Energy Rent adjustments, result in
2 adjustments to Capacity Supply Obligations, the overall rate paid to capacity, and the rate
3 paid by load for capacity. Generally, resources are paid for providing capacity, and the
4 total payments for capacity resources in each month are charged to ISO-NE load serving
5 entities based on their relative share of the prior year's peak demand.

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

8 A. During January through March, a total of 105,371 MW-months of capacity qualified for
9 credits in the ISO-NE capacity market (this equates to a monthly average of 35,124 MWs).
10 Eversource was allocated 3.01% (3,175 MW-months) of this capacity obligation.
11 Eversource's supply resources had capacity supply obligations of 1,157 MW-months of
12 capacity; comprised of owned generation (494 MW-months), non-utility IPPs (306 MW-
13 months, including Burgess Biopower and Lempster Wind), and Hydro-Quebec
14 Interconnection Capacity Credits (357 MW-months). Eversource had a net capacity
15 deficiency of 2,018 MW-months. (Figures may not add due to rounding.) Attachment
16 FBW-5 provides additional details.

17 **V. FINANCIAL TRANSMISSION RIGHTS**

18 **Q. What is a Financial Transmission Right?**

19 A. An FTR is a financial instrument available to participants seeking to manage congestion
20 cost risk or those wishing to speculate on the difference in congestion costs between two
21 locations. These instruments have been available since the introduction of the ISO-NE
22 Standard Market Design. All FTRs are defined in the day-ahead market by a MW amount,
23 a source location, and a sink location. For each MW of FTR, the owner will receive a
24 credit or a charge from ISO-NE equal to the difference in the congestion component of the
25 hourly day-ahead LMP between the sink and the source. If the sink location congestion
26 price exceeds the source location price, the FTR will have a positive value, i.e. - a credit to
27 that participant's ISO-NE settlement in that hour. Similarly, if the sink location price is
28 less than the source location price, the owner will be charged the difference.

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

30 A. Eversource participated in these auctions as a method of hedging the congestion price
31 differential between major energy resources and the New Hampshire load zone, for periods
32 and in quantities according to forecasted unit operation. Since divestiture was pending
33 regarding Eversource's fossil stations, Eversource did not participate in the FTR auctions
34 for these units. Eversource did participate to hedge the differential between the source

1 location of bilateral purchases (e.g. the Massachusetts Hub and Burgess Biopower) and the
2 New Hampshire load zone. Energy purchases provide an effective hedge against the
3 energy component of the zonal LMP, but they do not guard against a congestion component
4 differential. Therefore, even in an hour in which Eversource had sufficient resources to
5 serve its energy requirement, it would be exposed to potential congestion charges. The
6 purpose of acquiring FTRs is to convert the risk associated with a variable, unknown
7 expense (i.e. the hour-by-hour difference in the applicable LMP congestion component), to
8 a fixed, known expense (i.e. the cost of the FTR); however, not at any cost. The prices bid
9 to acquire FTRs are evaluated against potential congestion cost exposure to achieve a
10 balance between risk coverage and minimizing costs for ES customers. During 2018,
11 Eversource acquired via auction 49 GWh of FTRs for a net cost of \$196,987. Settlement of
12 the FTRs resulted in elimination of \$90,619 of congestion charges. Thus, managing a
13 portion of congestion cost risk with FTRs resulted in an overall increase in Energy Service
14 expense of \$106,368.

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

17 A. Under the paradigm of competitively procured full requirements service from wholesale
18 suppliers, suppliers incur the congestion cost risk, and therefore participation by Eversource
19 is unnecessary. As of April 1, 2018, the use of FTRs was phased out as divestiture of
20 Eversource's fossil steam units was completed and procurement of wholesale supply for
21 energy service was implemented.

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

23 A. Yes, it does.