

1 Attachment A

2 Education and Professional Background

3 Elizabeth R. Nixon

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5 My name is Elizabeth R. Nixon. I am employed as a Utility Analyst with the New  
6 Hampshire Public Utilities Commission (PUC). My business address is 21 S. Fruit St., Suite 10,  
7 Concord, NH 03301.

8 I earned a B.S. in Mathematics from the University of Vermont in 1985. I worked for  
9 ICF, a consulting firm, where we estimated, modeled, and analyzed the energy, environmental  
10 and economic impacts of various emission reduction strategies at electric utilities. At ICF and  
11 AER\*X, Inc., I assisted companies in implementing market-based emissions trading programs. I  
12 provided comments on various air quality programs affecting the electric utilities and other  
13 industries in the Northeast and other states. I also worked for the Center for Clean Air Policy  
14 where we coordinated a dialogue of states and electric utilities to discuss energy efficiency and  
15 other emission control strategies to reduce acid rain and greenhouse gases at electric utilities.

16 At the New Hampshire Department of Environmental Services, I wrote the air quality  
17 permits for many of the electric generating facilities as well as manufacturing facilities in NH. I  
18 testified before the NH Air Resources Council regarding the determination of the baseline  
19 mercury emissions for the coal-fired electric generating facilities.

20 I joined the PUC's Sustainable Energy Division in August 2012 where I managed  
21 renewable energy incentive programs, determined compliance with the renewable portfolio  
22 standard (RPS) program, and conducted analysis of and provided testimony and presentations on  
23 the RPS program and rebate programs. In August 2016, I joined the PUC's Electric Division. I

- 1 completed electric utility rate training at New Mexico State University's Center for Public
- 2 Utilities. I have worked on various proceedings related to energy efficiency, grid modernization,
- 3 proposed battery storage pilot program, alternative net metering tariff, and net metering avoided
- 4 cost calculation.

**Public Service of New Hampshire d/b/a Eversource Energy**  
**Docket No. DE 17-136**

**Date Request Received: 10/05/2018**

**Date of Response: 10/19/2018**

**Request No. OCA 2-005**

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**Request from: Office of Consumer Advocate**

**Witness: Katherine W. Peters, Eric Stanley, Mary Downes**

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**Request:**

Reference New Hampshire Statewide Energy Efficiency Plan 2019 Update, at Bates 36-37, describing the value of reliability as estimated by the AESC 2018 Study.

- a. Does the 2019 Update include the value of reliability identified in AESC 2018 as one of the benefits of the energy efficiency programs? If so, please show how or where that value is included. If not, please state why not.
- b. For each Company with a Reliability Enhancement Program before the New Hampshire Public Utilities Commission, please provide the dollar per customer minute interruption values (\$/dCMI) justifying the various investments in the Company's most recent Reliability Enhancement Program filing.

**Response:**

- (a.) Joint Utility Response: The 2019 Update includes the value of reliability identified in AESC 2018. The reliability value is included in the Summer Generation benefit on the Present Value Benefits tables.
- (b.) Eversource Response: Eversource has two capital projects in 2018 as part of the Reliability Enhancement Program. The first, titled "Circuit Tie – W185 to 4W1 along Safford Drive" has a projected cost per customer minute interrupted of \$2.87. The second, titled "Circuit Tie – 3178X3 in Hinsdale", has a projected cost per customer minute interrupted of \$4.80.

Liberty Response: Please see Attachment OCA 2-005b for the dollar per customer minute interruption values for Liberty's REP program.

Unitil Response:

Budget No.	Description	Project Cost	Customer Minutes Saved Annually	<u>\$/dCMI</u>
DRBC01	Circuit 18W2 – Install Recloser in North Direction out of Bow Bog	\$42,490	43,804	\$0.97
DRBE06	Guinea Switching – Reliability Enhancements	\$107,321	71,568	\$1.50
DRBE03	Circuit 43X1 – Install Recloser Exeter Road	\$72,462	44,649	\$1.63
DRBC06	Bridge Street S/S – Reliability Enhancements	\$80,376	41,759	\$1.92
DRBE04	3346 Line – Automatic Restoration Scheme	\$161,586	59,528	\$2.71

**Public Service of New Hampshire d/b/a Eversource Energy**  
**Docket No. DE 17-136**

**Date Request Received: 10/10/2018**

**Date of Response: 10/24/2018**

**Request No. STAFF 2-042**

**Page 1 of 1**

**Request from: New Hampshire Public Utilities Commission Staff**

**Witness: Katherine W. Peters**

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**Request:**

Reference Bates pages 38-41 regarding the use of an additional 10% adder for the HEA programs. Without the use of the additional 10% adder, would the eligibility of customers be affected, meaning would some jobs not get initiated and completed? If so, please explain in detail why.

**Response:**

Typical projects in HEA can vary greatly in cost effectiveness depending on fuel type and measure mix. Projects heated primarily with natural gas and wood have difficulty reaching a benefit cost ratio > 1.0 with standard measures. Often times there are also pre-weatherization issues with the homes that must be resolved in order to safely and effectively implement traditional energy savings measures, which have a negative effect on the overall project B/C. Examples may include roof leaks, lack of proper ventilation, rodent infestations, live knob and tube wiring or open wiring junction boxes among others. Repair to these such issues often result in an improvement in the health and safety of the customer, however, HEA does not currently account for any monetary benefit other than the 10% adder recently included portfolio wide. Without NEIs explicitly included in the calculation of B/C ratios, many HEA customers with pre-weatherization barriers may need to be deferred until the customer can address the issues on their own.

(Joint Utility Response

**Public Service of New Hampshire d/b/a Eversource Energy**  
**Docket No. DE 17-136**

**Date Request Received: 10/10/2018**

**Date of Response: 10/24/2018**

**Request No. STAFF 2-044**

**Page 1 of 1**

**Request from: New Hampshire Public Utilities Commission Staff**

**Witness: Mary Downes**

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**Request:**

Reference Bates page 38 regarding non-embedded environmental benefits for fossil fuel. Please explain how the non-embedded fossil fuel environmental benefit was calculated including the formula and the actual values used and the resulting benefit value.

**Response:**

The dollar value of emissions associated with fossil fuels is calculated as the product of:

- a) the amount of carbon emissions associated with each fuel type, and
- b) the value per ton of avoided carbon emissions based on the 2018 AESC estimates of RGGI market price trajectories

For part a, the amount of carbon emissions associated with each fuel type, the Companies used the following emissions factors per DOE's Energy Information Administration (EIA):

Natural Gas – 116.6 pounds/MMBtu

Oil – 161.3 pounds/MMBtu

Propane – 136.9 pounds/MMBtu

Kerosene- 159.4 pounds/MMBtu

For part b, the dollar value of the avoided carbon emissions associated with avoided fossil fuels resulting from the energy efficiency measures, the Companies referenced the AESC forecast of RGGI price per ton of carbon emissions as depicted in Figure 20 and Appendix D of the 2019 AESC study..

For example, to calculate the avoided emissions value of 1 MMBtu of oil, the B/C model includes a formula multiplying the emissions value of 161.3 pounds of carbon/MMBtu of oil by the RGGI price (\$2019) of \$8.98/ton of carbon x 1 ton/2000 pounds = \$0.724 per MMBtu of oil avoided. The emissions values for the other fossil fuels are calculated in a similar fashion , and the net present value of the emissions over the lifetime of the measures is included as a benefit.

(Joint Utility response)