

September 28, 2017

BY HAND DELIVERY AND ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

**RE: Docket 4684 – The Narragansett Electric Company, d/b/a National Grid
2018-2020 Energy Efficiency and System Reliability Procurement Plan
Responses to PUC Data Requests – Set 1**

Dear Ms. Massaro:

I have enclosed ten (10) copies of National Grid's¹ responses to the Public Utilities Commission's first set of data requests issued in the above-referenced docket.

Thank you for your attention to this filing. If you have any questions, please contact me at 781-907-2121.

Sincerely,



Raquel J. Webster

Enclosures

cc: Docket 4684 Service List
Jon Hagopian, Esq.
Steve Scialabba, Division

¹ The Narragansett Electric Company d/b/a National Grid.

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.

Joanne M. Scanlon

September 28, 2017
Date

**Docket No. 4684 – RI Energy Efficiency Resource Mgmt. Council (EERMC)
Energy Efficiency Savings Targets, 2018-2020**

Service list updated 9/18/17

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The Narragansett Electric Company
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PUC 1-1

Request:

Is the assumed cost of \$100/ton of carbon dioxide to meet an 80% reduction by 2050 based on an economy-wide or electrification-only reduction goal?

Response:

The assumed cost of \$100 per ton of carbon dioxide to meet an 80% reduction by 2050 is based on an economy-wide goal.

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PUC 1-2

Request:

Are the technologies that led to the estimate of \$100/ton estimate economy-wide or electric only?

Request:

The technologies that led to the estimate of \$100/ton estimate is economy-wide.

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PUC 1-3

Request:

Please provide a copy of the AESC and related underlying carbon dioxide related inputs and assumptions.

Response:

Please see Attachment PUC 1-3 for a copy of the 2015 AESC Study. The relevant inputs are in Exhibits 4-7, 4-14, and 4-18.

Please be advised that due to the large electronic file size and voluminous nature of Attachment PUC 1-3 (which is 351 pages), the Company is providing this attachment on CD-ROM.

PUC 1-4

Request:

How will the benefits and costs of fuel switching be calculated? Please provide underlying analysis. Please provide any updates to the Technical Reference Manual.

Response:

The Company has conducted benefit-cost (BC) screening, which demonstrates that the proposed strategic electrification measures that incentivize residential heating customers to switch from oil heating to high efficiency ductless mini-split heat pumps are cost effective under the RI Test in Replace on Failure and Early Replacement applications¹.

The energy savings for such strategic electrification measures are comprised of three main components: (1) oil heating savings from the reduced use of an oil-fired boiler; (2) electric cooling savings from the increased cooling efficiency of a ductless mini-split heat pump relative to a window AC unit; and (3) the negative savings associated with the incremental electric heating load of the ductless mini-split heat pump. The benefits calculation is broken into two stages. Stage one applies to the avoided cost values² used in the RI Test to calculate the Net Present Value of the benefits associated with the oil heating savings and the electric cooling savings components listed above. Stage two applies the same avoided cost values to the negative savings component associated with the incremental electric heating load to calculate the incremental electric heating costs. The benefits used to calculate the BC ratio are the sum of the positive benefits from the first stage and the negative benefits, or cost, from the second stage of the calculation. Equations (1) through (4) below demonstrate the calculation of benefits.

¹ Replace on Failure applications are designed to incentivize customers to install high efficiency heat pumps when the customers' existing heating systems fail. Early Replacement applications provide an additional incentive, beyond that of Replace on Failure applications, to incentivize customers to install high efficiency heat pump systems before their existing heating systems fail.

² The avoided costs values applied in the BC screening of the proposed strategic electrification measures represent the stream of cost savings that customers achieve through the installation of energy efficiency measures and are the same values that are applied to the screening of all energy efficiency programs through the RI Test.

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(1) *Total Benefits = (Oil Heating Benefits) + (Electric Cooling Benefits) – (Electric Heating Cost)*

(2) *Oil Benefits = (Oil Heating Savings) * (Avoided Costs)*

(3) *Electric coolingBenefit = (Electric Cooling Savings) * (Avoided Costs)*

(4) *Electric Heating Costs = (Electric Heating Load) * (Avoided Costs)*

The Total Resource Cost³ for strategic electrification measures represents the incremental cost of the ductless mini-split heat pump systems relative to the cost of the baseline technology purchases that customers would have otherwise made. The screening assumes that customers will use the heat pump systems for both heating and cooling and that, in lieu of the purchasing the heat pumps, customers without existing cooling systems would have purchased window AC units⁴. The screening for Replace on Failure applications assumes that customers will also avoid the cost of purchasing a new oil boiler.

Please refer to Table 1 below for a summary of the Total Resource Cost calculations for Early Replacement and Replace on Failure applications of the strategic electrification measures. Please refer to Table 2 below for a summary of the BC screening below.

Table 1: Strategic Electrification Total Resource Costs

Incentive Application	Heat Pump Cost	Window AC Avoided Cost	Oil Boiler Avoided Cost	Total Resource Cost
Early Replacement	\$16,000	\$300	N/A	\$15,700
Replace on Failure	\$16,000	\$300	\$10,000	\$5,700

³ Total Resource Cost is the cost component used in the Company’s BC screening under both the Total Resource Cost test and the RI Test.

⁴ The Ductless Mini-Split Impact Evaluation conducted by the Cadmus Group, Inc. in 2016 indicated that approximately 60% of customers who installed ductless mini-split heat pumps had not previously heated the relevant space. The evaluation also indicated that most customers installed the systems for both heating and cooling. Consequently, the cost benefit screening assumes that 60% of customers installing the strategic electrification heat pump measures will avoid the cost of a new window AC system costing \$500, resulting in a weighted average avoided window AC cost of \$300.

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Table 2: Early Replacement Benefit/Cost Screening Summary

Heating/Cooling Application	Total Resource Cost ⁵	Electric Benefits	Non-Electric Benefits ⁶	Total Benefits	BC Ratio
Oil Heating/Electric Cooling	N/A	\$686	\$20,978	\$21,664	N/A
Electric Heating	N/A	-\$1,247	-\$714	-\$1,961	N/A
Total	\$15,700	-\$561	\$20,264	\$19,703	1.25

Table 3: Replace on Failure Benefit/Cost Screening Summary

Heating/Cooling Application	Total Resource Cost	Electric Benefits	Non-Electric Benefits	Total Benefits	BC Ratio
Oil Heating/Electric Cooling	\$6,700	\$686	\$14,489	\$15,175	N/A
Electric Heating	\$0	-\$1,247	-\$714	-\$1,961	N/A
Total	\$6,700	-\$561	\$13,776	\$13,214	1.97

The Company will file the 2018 Technical Reference Manual with the 2018 Energy Efficiency Program Plan. The Company will include new entries for the proposed strategic electrification measures in the 2018 Technical Reference Manual.

⁵ The Total Resource Cost is not specific to the heating or cooling application and is applied in the calculation of the overall BC ratio.

⁶ Non-Electric benefits represent avoided costs that are not related to electric energy savings, such as oil fuel savings, the social cost of carbon that is not embedded in electric rates, and economic benefits.

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PUC 1-5

Request:

How is the Three-Year Plan consistent with 2017 - H 5175aa (Budget Article I SubAaa, Section 17) which mandates that “[t]he 2018 program year plans total budget shall not exceed the commission-approved total budget for the 2017 system reliability and energy efficiency and conservation procurement program plan”?

Response:

As stated on page 62 of the Plan, “The Three-Year Plan is designed to illustrate the new initiatives and strategies that the Company will pursue to help customers save energy, reduce carbon, create and maintain local jobs, and deliver economic benefits to the state over the next three years. This Plan does not limit the benefits of energy efficiency, specifically in 2018, due to the budget cap. The Company and Collaborative will address the budget cap in the 2018 Annual Plan.” Additionally, the Budget Article specifies that the 2018 Annual Plan shall not exceed the 2017 Annual Plan.

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PUC 1-6

Request:

Please identify how the Company proposes to comply with the Budget Article and still meet the 2018 savings targets for energy efficiency established in this docket.

Response:

The Company and settling parties are currently engaged in discussions regarding how to comply with the Budget Article, and will include the Company's proposal in the 2018 Annual Energy Efficiency Plan, which the Company will file with the PUC on November 1, 2017.

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PUC 1-7

Request:

Will the transfer of \$12.5 million from the 2018 energy efficiency program budget to the state budget impact the Rhode Island Benefit Cost Test (RI Test)? If yes, please explain.

Response:

No. The payment of \$12.5 million to the state budget does not contribute to the implementation of energy efficiency measures and programs and is, therefore, not included in the RI Test.

Attachment 4 of the 2017 EE Plan (Docket No. 4654) describes the costs that must be included in the calculation of cost effectiveness. These definitions are also applicable to the RI Test.

As written in the 2017 EE Plan, "Utility costs incurred to achieve implementation of energy efficiency measures and programs" and "the customer's costs include their contribution to the installation cost of the efficient measure." "Stated mathematically:

"The total costs will equal the sum of the NPV of each cost component:

[Program Planning and Administration + Sales, Training, Technical assistance + Marketing + Rebates and Other Customer Incentives + Evaluation + Shareholder incentive+ Customer Cost]"

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PUC 1-8

Request:

Will the \$12.5 million transfer be included in the energy efficiency program budget for purposes of calculating the Company's shareholder incentive?

Response:

The \$12.5 million transfer will be included in the 2018 Annual Plan. It will not be included in the energy efficiency spending budget for calculating the Company's shareholder incentive.

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PUC 1-9

Request:

Please verify that the formula depicted in line 17 of Attachment 1(Bates 68) is correct.

Response:

The formula included in line 17 of Attachment 1 was incorrect. However, the calculations and resulting values are correct.

Line 17 on of Attachment 1 should read: Proposed Energy Efficiency Program charge per kWh, including uncollectible recovery = $(14) + (15) / (1-(16))$.