

**Cost-Effectiveness Report:  
National Grid's 2022 Energy Efficiency Plan**

**An Assessment and Report by  
EERMC Consultant Team**

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**Working on Behalf of the**



STATE OF RHODE ISLAND  
**ENERGY EFFICIENCY &  
RESOURCE MANAGEMENT COUNCIL**

**Submitted to the Rhode Island Public Utilities Commission**

**October XX, 2021**

## Summary of Consultant Team Findings

The Energy Efficiency and Resource Management Council (EERMC) Consultant Team finds that the *Annual Energy Efficiency Plan for 2022* (the “EE Plan”), reviewed and [approved/not approved] by the Council on September 23, 2021, and to be filed [October XX], 2021 by National Grid (“the Company”), is cost-effective according to the “Rhode Island Test” (RI Test) and the historically referenced Total Resource Cost (TRC) test.

The EERMC submits these findings in compliance with the Least Cost Procurement (LCP) Standards adopted on July 23, 2020 by the Rhode Island Public Utilities Commission (PUC):

“The Council shall prepare memos on its assessment of the cost effectiveness of the EE Plans, pursuant to R.I. Gen. Laws §39-1-27.7(c)(5), and submit them to the PUC no later than three weeks following the filing of the respective EE Plans with the PUC, or in accordance with the procedural schedule set in the applicable docket.”

These findings and the remainder of this report were distributed to the EERMC on September 17, 2021 and presented to the EERMC by the EERMC Consultant Team at its September 23, 2021 meeting, where they were approved and adopted in a vote of the EERMC.

## I. Introduction

This report was prepared by the Consultant Team and the EERMC to help fulfill the requirements of R.I.G.L. § 39-1-27.7(c)(5) related to the Public Utility Commission's approval of National Grid's three-year procurement plan and related annual energy efficiency plans. Since 2010, the EERMC has directed the Consultant Team to prepare this report for all three-year and annual plans filed with the Commission. This version addresses National Grid's proposed *Annual Energy Efficiency Plan for 2022* ("the EE Plan"), reviewed and [approved/not approved] by the Council on September 23, 2021. This report submits our finding that the EE Plan is cost-effective as evidence to the Commission. It also describes the nature and process of the review.

In order to assess the cost-effectiveness of the EE Plan, the EERMC Consultant Team reviewed the details of National Grid's Benefit-Cost Models ("BC Models") for each draft of the EE Plan to ensure that they accurately reflect the proposed program designs in the Plans, recent evaluation results, and relevant TRM inputs (Section III). The Consultant Team reviewed and provided detail comments on the first draft of the EE Plan on July 20, provided technical comments on the BC Model and associated TRM on July 27, and engaged in a detailed review of the second draft EE Plan and associated BC Model and TRM upon receiving these documents from National Grid on September 8, 9, and 10<sup>th</sup>, respectively. The Consultant Team reviewed this and provided recommendations to the EERMC ahead of the September 23 EERMC vote.

## IV. Cost-Effectiveness Review

The Consultant Team reviewed the draft and final EE Plan to assess whether the cost-effectiveness analyses reflect recent evaluation results and relevant TRM inputs and are otherwise accurate.

As a result of these activities, the Consultant Team communicated with National Grid analysts and sector managers to address issues and questions related to program design and cost effectiveness. In numerous cases, this resulted in revisions to the Plan. Our key findings are that:

- The modeling and cost-effectiveness assumptions reviewed were sufficiently supported for the portfolio proposed by the National Grid, either in their original form or after iterating based on review provided during this process. Any issues identified in the BC Models or in the Plan related to cost-effectiveness analysis were addressed at the portfolio and program level by National Grid's analyst team.
- National Grid appropriately used new results from both Rhode Island and relevant Massachusetts evaluations that were recently completed to update multiple measure baselines, net-to-gross ratios, measure lives, and other measure assumptions.

The final EE Plan presents the cost-effectiveness of the proposed 2022 programs using both the TRC and the RI Test. Table 1, below, summarizes the results in terms of benefit-cost ratio. Note that for this EE Plan, the Company has begun reporting the RI Test both with and without economic benefits included in response to stakeholder interest in seeing both versions of the test. Even considering the RI Test without the economic benefits, both the electric and gas portfolios are robustly cost-effective; electric portfolio benefits are approximately 64% greater than total costs of the investments in 2022, while gas portfolio benefits exceed costs by 174%.

**Table 1. RI Test and TRC Test BCR Values**

Portfolio	RI Test (without Economic Benefits)	RI Test (with Economic Benefits)	TRC Test
<b>Electric</b>	1.64	3.50	1.15
<b>Gas</b>	2.74	3.72	2.08

The RI Test seeks to include a more complete set of benefits that better reflects state policy compared to the TRC. Importantly, the benefits associated with efficiency programs, including reductions in greenhouse gas (GHG) emissions, have been included by relying on the newly issued 2021 version of the *Avoided Energy Supply Costs in New England* report (AESC). This report projects a long-term value of reductions in carbon emission of \$125 per short ton. A small portion of this value – representing the near-term value of carbon reductions given current and likely future carbon regulation – is already included or “embedded” in the avoided energy costs that compose a portion of the benefits under the TRC Test. Therefore, the RI Test includes the remaining value of carbon emissions up to the full \$125 per ton value. The 2021 AESC also quantified benefits for non-embedded nitrogen oxide (NOx) reduction benefits. These are much smaller than the non-embedded GHG reduction benefits, but they do appear on the figures below as an additional benefit under the RI Test.

Increased spending from installing energy efficiency measures creates jobs in the local economy. Participant and program spending on efficiency often has positive benefits to the local economy as a greater portion of total efficiency costs are spent locally than is the case for the costs of additional supply. Yet these benefits are typically not included in TRC benefit calculations because they are difficult to quantify, requiring a regional economic model. Such an analysis was conducted for National Grid in 2014, and updated in 2019, the results of which form the basis for the economic benefits historically included in the RI Test.<sup>1</sup> Again, as reflected in Table 1, it is

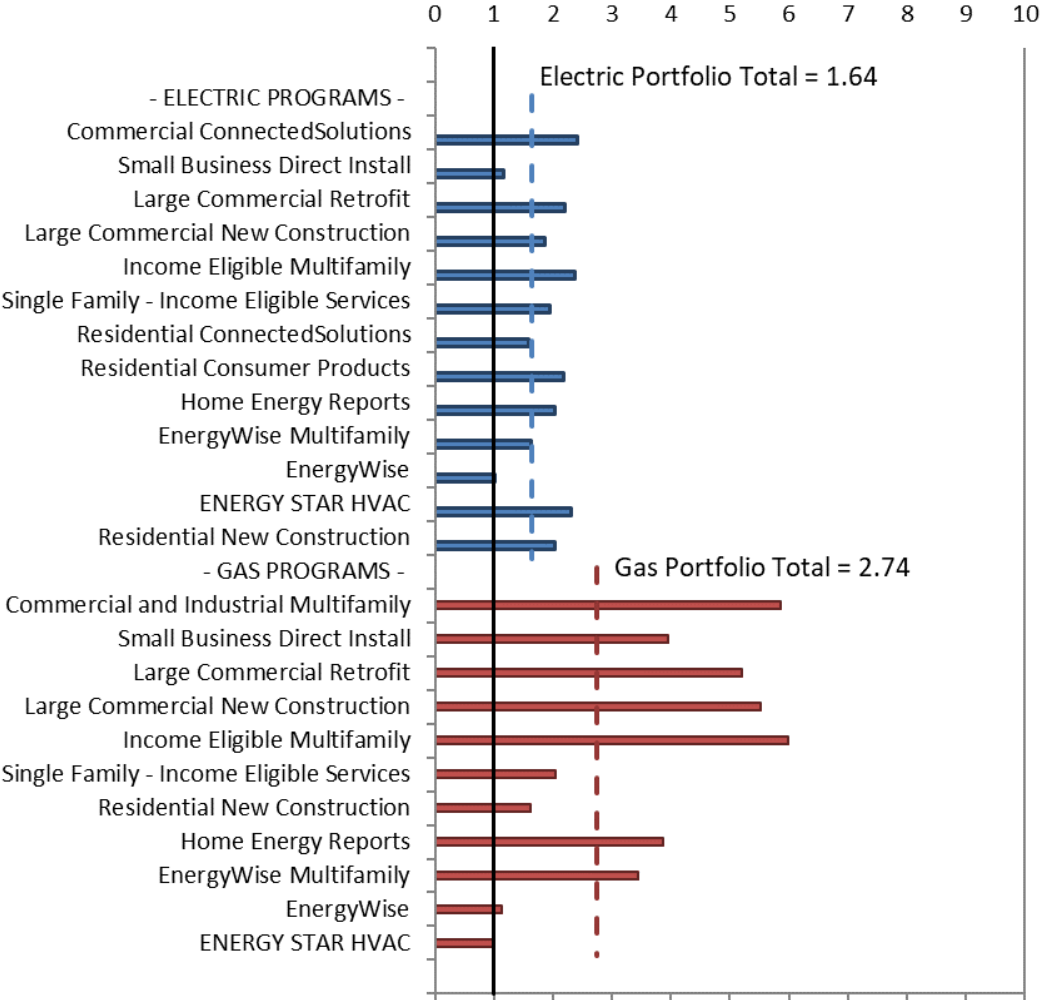
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<sup>1</sup> Macroeconomic Impacts of Rhode Island Energy Efficiency Investments: REMI Analysis of National Grid’s *Energy Efficiency Programs*, National Grid Customer Department, November, 2014.

important to note that National Grid has begun to report the RI Test both with and without these economic benefits included based on stakeholder interest in seeing both calculations.

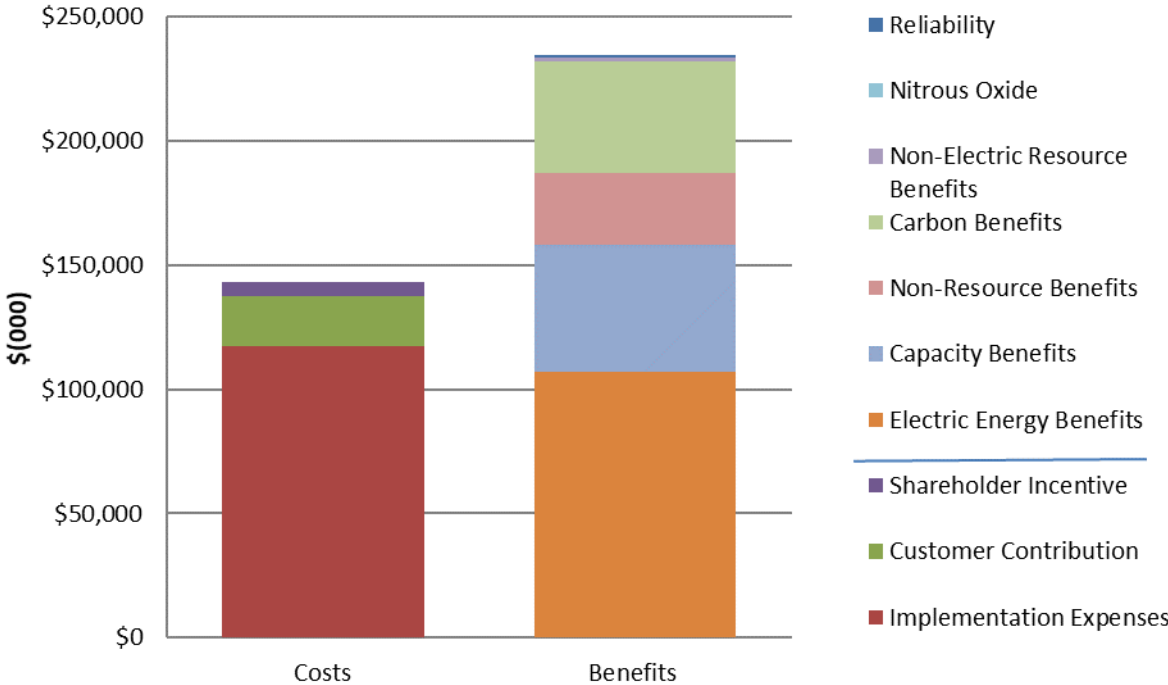
The Consultant Team has reviewed the quantification of the GHG reduction and economic benefits in the RI Test and finds them to be appropriate. Figure 1 presents the results of the RI Test for the 2022 Annual Plan in graphical form, and again demonstrates that both the electric and natural gas efficiency programs have a BCR greater than or equal to 1.0, as required by the Commission-approved Least Cost Procurement Standards and R.I.G.L. § 39-1-27.7 (c)(5).

**Figure 1. RI Test Benefit Cost Ratios by Program**

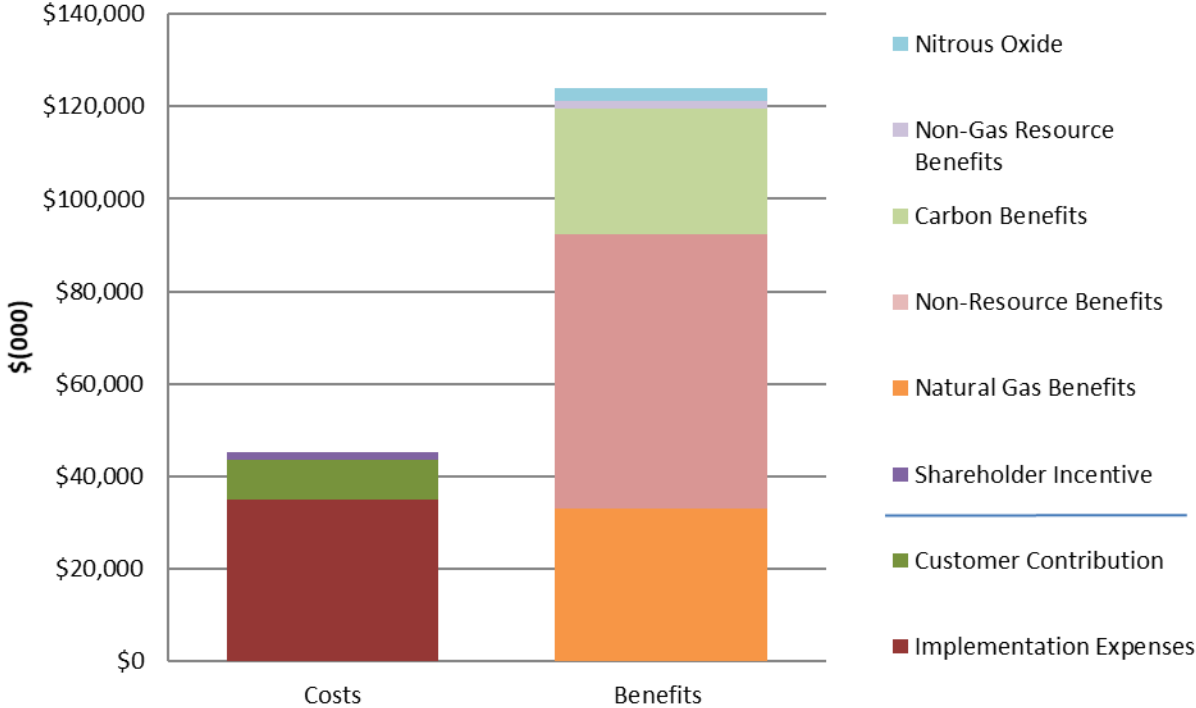


Figures 2 & 3, below, show the major components of both the costs and benefits of the portfolios for the 2022 EE Plan, reflecting the version of the RI Test that excludes economic benefits. As noted in the table above, the electric and gas portfolios are both cost-effective using this version of the RI Test. On the cost side, note that the BCR calculation includes an allowance for National Grid’s shareholder incentive at the nominal or “target” value.

**Figure 2. 2022 Planned Electric Costs and Benefits**



**Figure 3. 2022 Planned Gas Costs and Benefits**



The Consultant Team also reviewed National Grid’s assessment of the cost of efficiency as compared to alternatives; the LCP standards require that efficiency be lower cost than acquisition of additional supply. The 2022 Plan reflects the updated guidance for assessing whether the cost of efficiency is less than the cost of supply. The Plan uses the RI Test as an appropriate starting point to determine which costs to include in this assessment. This test captures the aspects of the Docket 4600A Framework that pertain to energy efficiency programs. The source for many of these values is the aforementioned 2021 AESC Study. The benefits in the RI Test are associated with the cost savings to Rhode Island from investing in energy efficiency instead of investing in additional energy supply. For the purpose of the RI Test, these values are described as a benefit of energy efficiency in the form of avoided costs. It is reasonable to assume that these avoided cost values can also be applied as the costs of procuring additional energy supply for the purpose of this assessment. The RI Test also details what is considered a cost of energy efficiency. These are costs incurred by the utility to implement the Plan and the expense borne by the customer for its share of the energy efficiency measure cost.

The Plan enumerates all of the cost and benefit categories included in the RI Test and indicates which are included as a cost of efficiency, which are included as a cost of supply, and which are excluded from this comparison. The major categories that are excluded are economic development benefits, non-energy resource impacts such as water and sewer cost reductions, and other non-energy impact benefits other than those associated with income eligible rate discounts and reductions in arrearages. Tables 2 reflects the discussion in section 7.5 of the EE Plan, and shows that both the gas and electric portfolios, as proposed, are less than the cost of supply.

**Table 2. Comparison of Cost of Electric Energy Efficiency and Alternative Supply**

<b>Portfolio</b>	<b>Electric</b>	<b>Gas</b>
<b>Cost of Supply (\$M)</b>	205.3	64.2
<b>Cost of EE Programs (\$M)</b>	143.2	45.3
<b>Difference</b>	62.1	18.9

Further, based on our participation in the discussions regarding this comparison and our review of the Plans, we believe that the Company has appropriately assessed the cost of efficiency and the cost of supply and determined that the former is less than the latter.

In summary, the EERMC Consultant Team concludes that the EE Plan meets the cost-effectiveness requirements of R.I.G.L. § 39-1-27.7(c)(5) and meets the revised LCP Standards guidance regarding the cost of efficiency and the cost of supply.

## **V. Conclusion**

For the reasons stated herein, the EERMC and the EERMC's Consultant Team find that National Grid's *Annual Energy Efficiency Plan for 2022* is cost-effective and is lower cost than the acquisition of additional supply pursuant to R.I.G.L. § 39-1-27.7 (c)(5).