

The Narragansett Electric Company  
d/b/a National Grid

# **National Grid 2021-2023 Energy Efficiency Plan**

October 15, 2020

RIPUC Docket No. XXXX

Submitted to:  
Rhode Island Public Utilities Commission

Submitted by:

**nationalgrid** |

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# TESTIMONY

## 1 Pre-Filed Testimony



# EXECUTIVE SUMMARY AND INTRODUCTION

# 2021-2023 RHODE ISLAND ENERGY EFFICIENCY PLAN ROAD MAP

\$2.5 - \$2.7 Billion in total lifetime benefits



## ECONOMIC



Good Green Jobs



Supporting Economic Recovery



Delivering Energy Savings to Rhode Island

## ENERGY SAVINGS



4.7 - 4.9 TWh lifetime electric savings



\$347.3 - \$364.5 million less than cost of purchasing electric supply



14.4 - 16.5 million MMBtu lifetime natural gas savings



\$53.7 - \$62.3 million less than cost of purchasing natural gas



## INVESTMENT RESULTS

\$1.13 - \$1.22 billion increase in Rhode Island Gross State Product



2.8 - 3.0 million tons of avoided carbon = 558,752 - 604,746 cars off the road



71% of companies delivering energy efficiency are based in Rhode Island





**National Grid’s 2021-2023 Energy Efficiency Plan** continues to offer the nation-leading customer energy efficiency services that provide all customers with the tools needed to take control of their energy usage and lower their costs, including access to no-cost home energy assessments and comprehensive home weatherization and efficiency upgrades for income eligible customers, opportunities to purchase high efficiency products such as thermostats and lighting upgrades through upstream vendors, and tailored programs to support commercial and industrial customers in upgrading their facilities with the latest efficiency measures to increase productivity and reduce operating costs, whether they are small businesses or large manufacturing companies.

For more information on these energy efficiency programs, tips, and other information please go to [ngrid.com/save](http://ngrid.com/save).

**5 Key Priorities**



**Deepen customer relationships**



**Drive adoption of comprehensive measures**



**Expand active demand response**



**Achieve cost optimization+efficiency**



**A deeper equity lens across all program planning and delivery**



### 3 Introduction

The Narragansett Electric Company d/b/a National Grid (National Grid or the Company) submits this 2021-2023 Three Year Energy Efficiency and Conservation Procurement Plan (Three-Year Plan or Plan), submitted alongside the 2021 Annual Energy Efficiency and Conservation Procurement Plan (Annual Plan), in fulfillment of the Comprehensive Energy Conservation, Efficiency and Affordability Act of 2006.<sup>1</sup>

Energy efficiency is the most cost-effective way to supply new energy and meet customers' energy needs. Customers who directly participate in energy efficiency programs save energy and see direct cost savings in the form of lower energy bills. Energy efficiency also lowers long-term base load and peak demand and reduces the need for additional generation and transmission infrastructure. This benefits all customers, regardless of whether they participate directly in the Company's efficiency programs. Efficiency programming enables the Company to deliver prudent, reliable, environmentally responsible, and cost-effective energy to Rhode Island customers, while generating a host of non-energy environmental, health, and other benefits for customers and society.

The purpose of the Three-Year Plan is to propose illustrative and provisional energy efficiency procurement budgets and savings goals that will help guide annual energy efficiency and conservation plans, and to provide the focus and strategies for the three years of program implementation that will help Rhode Island energy consumers meet their energy needs through optimally cost-effective, reliable, prudent, and environmentally responsible energy efficiency. Notably, in a departure from past Three-Year Plans, this Three-Year Plan includes both a "Base Case" as well as a "High Scenario" for illustrative budgets and savings. The "Base Case" savings and budgets include savings and required budgets that the Company believes it has a current delivery and technology pathway to achieving, assuming a robust economic recovery over the term of the Plan. As with the "Future Innovation Adder" included in the 2018-2020 Three-Year Plan, the savings and budgets included in the "High Scenario" do not represent savings that the Company currently views itself as having a clear path to achieving, but are included in order to signal a recognition of stakeholder desire for greater energy efficiency savings and a Company commitment to continued efforts towards those goals.

This Three-Year Plan is delivered in the context of rapidly changing energy and economic landscapes. The Plan has been drafted as Rhode Island and the nation grapple simultaneously with both the COVID-19 pandemic and an evolving understanding of equity and the need for re-doubled efforts to achieve shared equity goals. Investing in efficiency measures that deliver both energy and cost savings to customers, while supporting economic recovery and green jobs, is now more critical than ever. It is equally critical that the Company work with stakeholders to identify and address barriers to equitable access to energy efficiency, so that all Rhode Island energy consumers are empowered to make active energy choices, control their energy use, and enjoy the economic, environmental, and cost savings benefits of energy efficiency, regardless of their geographic location, income, homeownership status, primary language, business size, or other potential barriers.

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<sup>1</sup> R.I. Gen. Laws §39-1-27.7

The primary goal of the Plan is to guide annual program planning to use energy efficiency to secure energy and economic cost savings for Rhode Island consumers. As this Three-Year Plan is submitted concurrently with the 2021 Annual Plan, the Company will use the final Three-Year Plan as a roadmap, while also taking into account developments between the approval of this Three-Year Plan and the submission of the 2022 and 2023 Annual Plans, in developing the more detailed Annual Energy Efficiency Program Plans and associated binding savings goals and budgets for those years.

In proposing this Plan the Company is mindful of the prevailing economic conditions, including the unknown impacts the COVID-19 pandemic will continue to have on the Rhode Island economy. The Company is also aware that energy efficiency programming can make significant contributions towards an economic recovery. To balance these considerations the Company has set the proposed investment budget for the 2021 year to ensure that there is no increase to the energy efficiency surcharge and has weighted the investments toward helping those who may be hardest hit by the economic impacts of the pandemic, including low and moderate income customers and small businesses. The Company is also increasing its investment in workforce development to mitigate the workforce losses caused by COVID-19 and to help bring new workers into growth areas of clean energy technologies. The planned programs and budgets seek to maintain the flexibility needed to ensure that we can continue to deliver nation-leading energy efficiency services and maintain and grow clean energy jobs under multiple potential scenarios for the 2021 program year, and, at the behest of stakeholders, build on an assumption of a robust economic recovery in 2022 and 2023.

### **Programmatic Focus and Strategies for the Three Years of Program Implementation**

This Three-Year Plan seeks to maintain Rhode Island's position as a national leader in energy efficiency. It presents a robust set of ongoing efficiency programs and strategies, as well as program enhancements and innovations. The Plan details the cost-effectiveness of programs and strategies, explains how it achieves prudence and reliability, and offers a funding plan with illustrative budgets, funding sources, and savings goals. The Plan proposes a strategic set of programs and strategies that are both flexible and targeted, geared towards five key objectives across the Company's Commercial and Industrial (C&I), Residential, and Income Eligible Service (IES) sectors:

- Deepen customer relationships;
- Drive adoption of comprehensive measures;
- Expand active demand response;
- Achieve cost optimization and efficiency; and
- Apply a deeper equity lens across all program planning and delivery.

The Plan also marks a major milestone, as the transformation of the residential lighting market means that 2021 will be the final year that incentives will be offered for residential lighting at the retail level. As the highly cost-efficient savings secured in previous plan cycles from lighting decline as a portion of program portfolio savings, the Company continues to seek new opportunities to drive deeper savings and transform additional markets. Consequently, this Plan focuses on building upon existing customer

relationships to encourage comprehensive measures that accrue greater savings over their lifetime. Because these deeper and more comprehensive measures require higher upfront costs to secure the same levels of claimable energy savings that lighting provided in previous plan cycles (*i.e.*, they produce fewer savings per dollar invested), cost control and efficiency are key. The remaining measures, such as weatherization, heating, cooling and control technologies, with high savings potential and longer lifetime savings horizons, have higher costs, and while still cost effective will not deliver savings at costs comparable to lighting.

Because the low-cost savings that lighting programs have historically provided will no longer be a significant driver of savings or a cornerstone of the portfolio, the Company must now go deeper and broader to secure the next unit of efficiency. This means encouraging continuous, multi-year engagement that increases opportunities for comprehensive savings through installation of multiple efficiency measures, including new and cutting-edge technologies.

Over the next three years, National Grid will test and begin to scale new ways of achieving energy savings. Newer technologies and integrated systems come with significant product, design, and training costs, even as the lower incremental savings constrain incentive budgets. While the cost to achieve savings will therefore increase, the Company will continue to deliver cost effective efficiency programs that remain less expensive than purchasing additional supply. The effects of the COVID-19 pandemic may also continue to impact program delivery—particularly in-person services—and could therefore compound pressure on program delivery costs. In the face of this uncertainty, National Grid anticipates the need for flexibility in how energy efficiency services are delivered, and will continue to work with industry and workforce partners to prepare for and respond to unfolding events. The Company is committed, both in its immediate response and in its multi-year planning, to supporting and growing an energy efficiency workforce while adapting to the impacts and continuing uncertainties that delivery partners, workforce, and customers are experiencing.

### **Savings Goals**

The Three-Year Plan identifies the illustrative and provisional range of energy savings goals for 2021-2023 that will secure all cost-effective energy efficiency and conservation resources that are consistent with Least Cost Procurement Standards while continuing to build the infrastructure needed to achieve desired savings and benefits.

The “Base Case” savings goals presented here aim for ambitious but achievable energy savings that will secure significant cost savings and other benefits for Rhode Island energy consumers. In Docket 5023 the Rhode Island Public Utilities Commission (Commission or PUC) approved the Rhode Island Energy Efficiency & Resource Management Council’s (EERMC or Council) Proposed Energy Efficiency Savings Targets (Targets) for 2021-2023, with the exception of the proposed delivered fuels targets.<sup>2</sup> The goals in this Plan were developed using the Targets approved by the PUC for electric and natural gas energy

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<sup>2</sup> RI PUC Docket 5023. Targets approved at an Open Meeting on May 8, 2020.  
<http://www.ripuc.ri.gov/eventsactions/docket/5023page.html>

efficiency and active electric demand response as guideposts, and then applying the requisite standards of prudence and reliability.

The approved Targets represent maximum program achievable potential as outlined in the 2020 Rhode Island Energy Efficiency Market Potential Study (Market Potential Study), but did not account for prudence and reliability, which are requirements the Company must demonstrate in its Plans.<sup>3</sup> The Targets were also approved prior to a complete understanding of the likely duration and economic impact of the COVID-19 pandemic on Rhode Island's citizens, businesses, and economy was known. The savings goals proposed here therefore do not match the targets approved by the PUC for the period 2021 through 2023.

At the behest of stakeholders, and in a departure from past practice, the Company has included a range of illustrative savings goals and budgets for years 2022 and 2023 of the Three-Year Plan that reflect savings levels that the Company views to be achievable only in the context of a robust economic recovery in 2022 and 2023. The Company believes, assuming that the economic recovery expectations outlined above are met, that the "Base Case" low end of these ranges represents savings goals and budgets that meet the standard's requirements for prudence and reliability and are achievable. The higher end of these ranges, which are consistent with the electric and gas savings and Demand Response goals presented in the "Mid Scenario" of the Market Potential Study, adjusted for known evaluation, measurement, and verification impacts that differ from assumptions used in that study, do not represent savings goals that the Company believes it has a clear path to achieving in years 2 and 3 of the Three-Year Plan. Achieving these higher values would require significant market, technology or breakthrough approaches that are not currently known.

The inclusion of these higher values is consistent with the use of the "Future Innovation Adder" included in the 2018-2020 Three-Year Plan (Doc. No. 4684), where the Company recognized aspirational savings in addition to what it believed was achievable based on the information available at the time. The Company recognizes both the value of higher savings as well as the desire of stakeholders to see those savings come to fruition, and the inclusion of the higher end of the range is intended to signal to all stakeholders the Company's commitment to pursuing and evaluating paths to this higher level of achievement, even if the viability of these pathways is not currently clear.

The Company will review available technologies, programs, evaluation results, and strategies with the EERMC and Technical Working Group in subsequent Annual Plans in order to achieve our commitment to delivering cost-effective energy savings that are potentially achievable through Least-Cost Procurement as set forth in statute.<sup>4</sup> The Three-Year Plan is consistent with the revised Least-Cost Procurement Standards as approved in Docket 4684.<sup>5</sup>

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<sup>3</sup> The PUC acknowledged these Targets represent high goalposts for what is potentially achievable with efficiency programs, not accounting for other constraints, and that the Targets did not account for prudence and reliability, which are requirements the Company must demonstrate in its plans.

<sup>4</sup> R.I. Gen. Laws §39-1-27.7

<sup>5</sup> At the time of this draft plan, the PUC has not finalized revisions to the LCP Standards in Docket 5015.

The following tables summarize illustrative benefits and costs proposed in this Three-Year Plan.

Table 1. Electric Portfolio Summary, 2021 – 2023

Electric Portfolio	2021	2022		2023	
		Base Case	High Scenario	Base Case	High Scenario
<b>Savings and Benefits</b>					
Annual Electric Savings (MWh)	139,478	143,872	149,013	158,726	172,198
Lifetime Electric Savings (MWh)	1,306,562	1,571,295	1,634,312	1,800,526	1,964,585
Savings as a Percent of 2019 Sales	1.92%	1.98%	2.05%	2.19%	2.37%
Summer Passive Peak Demand Savings (kW)	22,723	21,866	22,774	22,776	25,104
Winter Passive Peak Demand Savings (kW)	27,695	32,657	33,690	32,045	34,695
Active Peak Demand Savings (kW)	39,339	46,452	59,682	53,656	76,181
Total Benefits (RI Test)	\$606,490,655	\$653,356,839	\$696,592,377	\$726,732,762	\$830,726,438
<b>Costs</b>					
<b>Total Funding Required</b>	\$122,306,026	\$135,867,936	\$143,189,075	\$148,404,519	\$166,848,275
Cost per lifetime kWh	\$0.104	\$0.100	\$0.101	\$0.095	\$0.098
EE Program Charge per kWh	\$0.01323	\$0.01813	\$0.01922	\$0.02013	\$0.02281
<b>Benefit Cost Ratio (RI Test)</b>	4.31	4.02	4.08	4.13	4.20
<b>Benefit Cost Ratio (TRC Test)</b>	2.01	1.87	1.91	1.93	1.99
<b>Participation</b>	462,114	394,616	398,176	411,247	421,954

Table 2. Natural Gas Portfolio Summary, 2021 – 2023

Natural Gas Portfolio	2021	2022		2023	
		Base Case	High Scenario	Base Case	High Scenario
<b>Savings and Benefits</b>					
Annual Natural Gas Savings (MMBtu)	425,359	448,390	501,616	525,178	634,717
Lifetime Natural Gas Savings (MMBtu)	4,206,444	4,635,880	5,317,230	5,626,011	7,030,038
Savings as a Percent of 2019 Sales	1.01%	1.07%	1.19%	1.25%	1.51%
Total Benefits (RI Test)	\$144,975,124	\$157,697,125	\$181,080,604	\$187,070,491	\$234,086,409
<b>Costs</b>					



<b>Total Funding Required</b>	\$38,616,618	\$40,839,177	\$46,643,860	\$47,806,605	\$59,395,535
Cost per lifetime MMBtu	\$11.09	\$10.85	\$10.86	\$10.63	\$10.65
Residential EE Program Charge per Dth	\$1.0110	\$1.2341	\$1.4097	\$1.4026	\$1.7431
C&I EE Program Charge per Dth	\$0.7040	\$0.8593	\$0.9816	\$0.9767	\$1.2138
<b>Benefit Cost Ratio (RI Test)</b>	3.00	3.03	3.04	3.04	3.06
<b>Benefit Cost Ratio (TRC Test)</b>	1.61	1.66	1.66	1.67	1.67
<b>Participation</b>	168,694	170,078	172,742	172,054	177,062

Table 3. 2021-2023 Docket 5023 Electric Energy Targets and Three-Year Plan Proposed Electric Energy Goals<sup>6</sup>

Ref	Electric Energy	2021	2022		2023	
			Base Case	High Scenario	Base Case	High Scenario
a	Docket 5023 Electric Energy Targets (Lifetime MWh)	1,949,782	2,037,314	2,037,314	2,059,265	2,059,265
b	Docket 5023 Electric Energy CHP Targets (Lifetime MWh) <sup>7</sup>	723,337	723,337	723,337	723,337	723,337
<b>c</b>	<b>Docket 5023 Electric Energy Total (Lifetime MWh) (a + b)</b>	<b>2,673,119</b>	<b>2,760,651</b>	<b>2,760,651</b>	<b>2,782,602</b>	<b>2,782,602</b>
d	3YP Electric Energy Goal (Lifetime MWh)	1,277,943	1,287,194	1,350,211	1,371,597	1,535,656
e	3YP CHP Energy Goal (Lifetime MWh)	28,619	284,101	284,101	428,929	428,929
<b>f</b>	<b>3YP Electric Goals Total (Lifetime MWh)</b>	<b>1,306,562</b>	<b>1,571,295</b>	<b>1,634,312</b>	<b>1,800,526</b>	<b>1,964,585</b>
g	Difference (f – c)	-1,366,557	-1,189,356	-1,126,339	-982,076	-818,017
h	Docket 5023 Electric Energy Targets (Annual MWh)	182,299	187,378	187,378	171,353	171,353
i	Docket 5023 Electric Energy CHP Targets (Annual MWh)	45,209	45,209	45,209	45,209	45,209

<sup>6</sup> The RI PUC approved Targets in lifetime savings units. The equivalent annual savings units from the Market Potential Study “Max Scenario” that is the source of the Targets are shown for comparability with prior Plans that used annual units.

<sup>7</sup> The approved targets also included 11.1 MW of annual peak demand reduction from CHP for each year of 2021 - 2023. Not shown in this table.

Ref	Electric Energy	2021	2022		2023	
			Base Case	High Scenario	Base Case	High Scenario
j	<b>Docket 5023 Electric Energy Total (Annual MWh) (h + i)</b>	<b>227,508</b>	<b>232,587</b>	<b>232,587</b>	<b>216,562</b>	<b>216,562</b>
k	3YP Electric Energy Goal (Annual MWh)	138,047	129,667	134,808	137,279	150,751
l	3YP CHP Energy Goal (Annual MWh)	1,431	14,205	14,205	21,446	21,446
m	<b>3YP Electric Goals Total (Annual MWh) (k + l)</b>	<b>139,478</b>	<b>143,872</b>	<b>149,013</b>	<b>158,726</b>	<b>172,198</b>
n	Difference (m – j)	-88,030	-88,715	-83,574	-57,836	-44,364

Table 4. 2021-2023 Docket 5023 Natural Energy Targets and Three-Year Plan Proposed Natural Gas Energy Goals<sup>8</sup>

Ref	Natural Gas Energy	2021	2022		2023	
			Base Case	High Scenario	Base Case	High Scenario
a	Docket 5023 Natural Gas Targets (Lifetime MMBtu)	9,598,108	9,948,779	9,948,779	9,958,127	9,958,127
b	3YP Natural Gas Goals (Lifetime MMBtu)	4,206,444	4,635,880	5,317,230	5,626,011	7,030,038
c	Difference (b – a)	-5,391,664	-5,312,899	-4,631,549	-4,332,116	-2,928,089
d	Docket 5023 Natural Gas Targets (Annual MMBtu)	749,344	770,569	770,569	787,805	787,805
e	3YP Natural Gas Goals (Annual MMBtu)	425,359	448,390	501,616	525,178	634,717
f	Difference (e – d)	-323,985	-322,179	-268,953	-262,627	-153,088

Table 5. 2021-2023 Docket 5023 Peak Demand Reduction Targets and Three-Year Plan Proposed Peak Demand Reduction Goals

Ref	Electric Peak Demand	2021	2022		2023	
			Base Case	High Scenario	Base Case	High Scenario
a	Docket 5023 Energy Efficiency Passive Peak Demand Reduction Target (Annual MW)	30.8	33.2	33.2	33.5	33.5
b	Docket 5023 CHP Peak Demand Reduction Target (Annual MW)	11.1	11.1	11.1	11.1	11.1
c	<b>Docket 5023 Total Energy Efficiency Passive Peak and CHP Demand Reduction Target (Annual MW) (a +b)</b>	<b>41.9</b>	<b>44.3</b>	<b>44.3</b>	<b>44.6</b>	<b>44.6</b>

<sup>8</sup> The RI PUC approved Targets in lifetime savings units. The equivalent annual savings units from the Market Potential Study “Max Scenario” that is the source of the Targets are shown for comparability with prior Plans that used annual units.

Ref	Electric Peak Demand	2021	2022		2023	
			Base Case	High Scenario	Base Case	High Scenario
d	3YP Energy Efficiency Passive Peak Demand Reduction Goal (Annual MW)	22.6	21.9	22.8	22.8	25.1
e	3YP CHP Passive Peak Demand Reduction Goal Total (Annual MW)	0.2	0.0	0.0	0.0	0.0
<b>f</b>	<b>3YP Energy Efficiency Passive Peak Demand Reduction Goal Total (Annual MW) (d + e)</b>	<b>22.7</b>	<b>21.9</b>	<b>22.8</b>	<b>22.8</b>	<b>25.1</b>
g	Difference (f – c)	-19.2	-22.4	-21.5	-21.8	-19.5
h	Docket 5023 Active Demand Response Peak Demand Reduction (Annual MW)	33.9	52.7	52.7	74.5	74.5
i	3YP Active Peak Demand Reduction Goal (Annual MW)	39.3	46.5	59.7	53.7	76.2
j	Difference (i – h)	5.4	-6.2	7.0	-20.8	1.7

### 3.1 Benefits of Energy Efficiency

Energy efficiency programming enables the Company to deliver prudent, reliable, environmentally responsible, and cost-effective energy to Rhode Island customers, while generating a host of non-energy environmental, health, and other benefits for customers and society. In total, the illustrative savings goals in the Three-Year Plan will result in significant benefits to electric and gas customers, the Rhode Island economy, and the environment. The Three-Year Plan will create cumulative net annual savings of 442,076 – 460,689 MWh (electric) and 1,398,927 – 1,561,692 MMBtu (natural gas), and net lifetime savings of 4,678,382 – 4,905,459 MWh (electric) and 14,468,336 – 16,553,713 MMBtu (natural gas). Achieving these targets will generate benefits of more than \$2.5 - \$2.7 billion over the life of the measures, with \$2.0 – \$2.1 billion in benefits coming from electric efficiency and \$500 - \$600 million from natural gas efficiency.

Energy efficiency programs help create jobs and local investment in the Rhode Island economy. The Company expects that investments made in energy efficiency under the Plan will add \$1.1 - \$1.2 billion to Rhode Island’s Gross State Product (GSP), with every \$1 spent on energy efficiency generating \$ 1.76 - \$1.77 of GSP.<sup>9</sup> While the Plan is forward looking, a recent analysis of job impacts from National Grid’s energy efficiency programs estimated that 877 full-time equivalent employees were supported by the Company’s 2019 investments in energy efficiency programs for Rhode Island customers.<sup>10</sup> The vast majority of jobs associated with the Annual Plan’s energy efficiency investments are local, because they are tied to the installation of equipment and materials; an analysis of National Grid’s 2019 energy

<sup>9</sup> Macroeconomic multipliers for the economic growth and job creation benefits of investing in cost-effective energy efficiency are derived from the “Review of RI Test and Proposed Methodology” prepared for National Grid by the Brattle Group on January 31, 2019

<sup>10</sup> RI PUC Docket 4888. “2019 Energy Efficiency Year-End Report” Attachment 5: Rhode Island 2019 Energy Efficiency Workforce Analysis Final Report. [http://www.ripuc.ri.gov/eventsactions/docket/4888-NGird-Year-End%20Report%202019%20\(5-15-20\).pdf](http://www.ripuc.ri.gov/eventsactions/docket/4888-NGird-Year-End%20Report%202019%20(5-15-20).pdf).

efficiency programs found that 71% of companies involved in the Company’s energy efficiency programs are either headquartered or have a presence in Rhode Island.<sup>11</sup> Over the next three years, the Company anticipates its programs will continue to support jobs in a wide range of energy efficiency services, including jobs for independent contractors and plumbers, rebate processors, engineers, and National Grid Staff.

Energy efficiency also generates a number of positive non-energy impacts, including environmental and health benefits, for both participants and society. Environmental benefits include greenhouse gas reductions from avoided carbon dioxide emissions and improved air quality from reduced nitrogen oxide (NOX) found in smog and other dangerous particulates. The electric, gas, and delivered fuel energy efficiency measures proposed in this Plan will avoid over 2,850,899 – 3,085,574 tons of carbon over the lifetime of the installed measures.<sup>12</sup> This is the equivalent of removing approximately 558,752 – 604,746 passenger vehicles from the road for one year.<sup>13</sup> Customers participating in energy efficiency programs gain increased comfort and health from homes and businesses that are warmer in winter and cooler in summer. Weatherization also results in drier, properly ventilated buildings, lowering the risk of mold growth and illness.

The cost of procuring 4,678,382 – 4,905,459 MWh of lifetime electric energy efficiency savings through the Plan is \$347,367,903 - \$364,578,538 less than if that electric load was met by purchasing additional electric supply. The cost of procuring 14,468,336 – 16,553,713 MMBtu lifetime natural gas energy efficiency savings through the Plan is \$53,718,499 - \$62,328,085 less than if that natural gas load was met by purchasing additional natural gas supply.<sup>14</sup>

Energy savings and benefits are measured and verified by third-party evaluation firms.

Figure 1 shows the net benefits of energy efficiency program years since 2009, with projected net benefits from this Three-Year Plan.<sup>15</sup>

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<sup>11</sup> Peregrine Energy Group, “Analysis and Recommendations regarding the Current and Future Workforce associated with Rhode Island Energy Efficiency Programs,” May 5, 2019 (filed as part of National Grid’s 2018 Year-End Report).

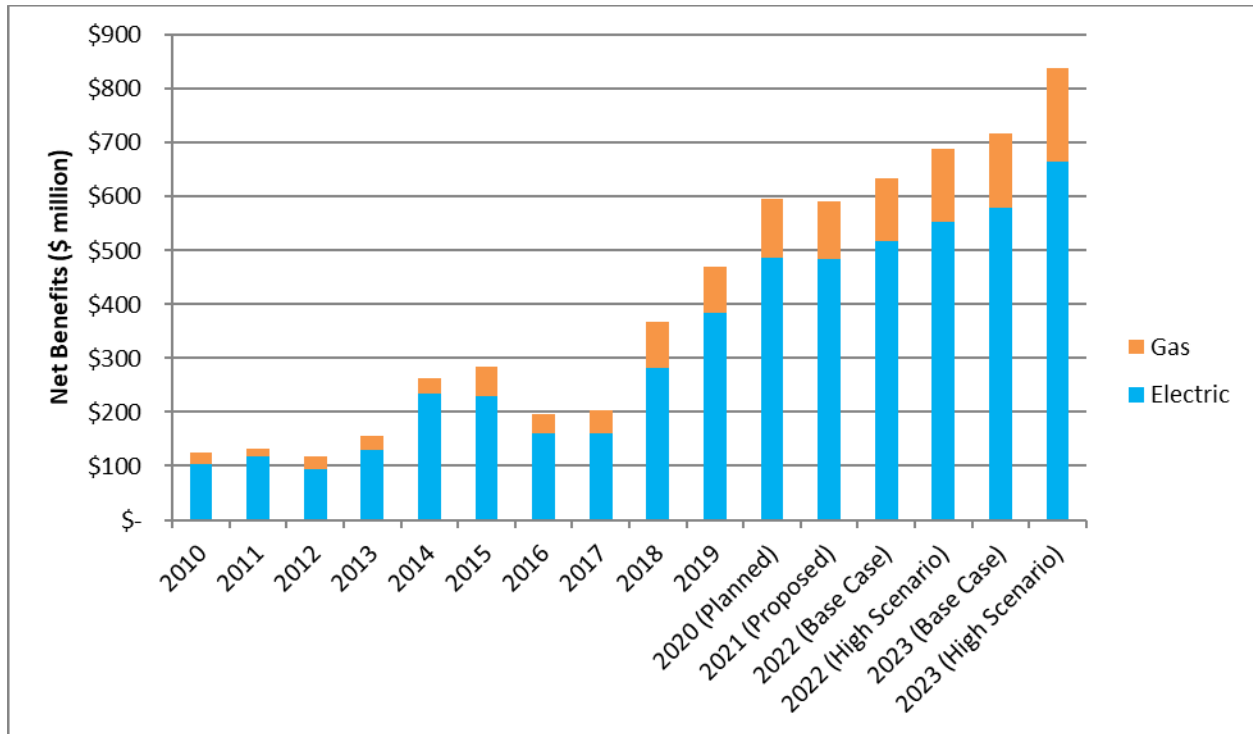
<sup>12</sup> Takes into account the net impact of EE measures on carbon emissions. The marginal carbon emission rates are from “Avoided Energy Supply Components in New England: 2018 Report” Appendix K. pages 368-370.

<sup>13</sup> <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

<sup>14</sup> For more information on how this was calculated, see Section 3 of the Main Text, “Cost of Annual Plan Compared to the Cost of Energy Supply”

<sup>15</sup> In 2018 the Company adopted a new benefits framework, the Rhode Island Test, which included additional benefits from prior years. In 2020 the Company updated its macroeconomic benefits calculation using updated methodology and multipliers resulting in higher macroeconomic benefits.

Figure 1. Net Benefits of Energy Efficiency Plans<sup>16</sup>



As detailed in Table 6 and Table 7, from 2009 to 2019 the Company served 5,163,499 electric program participants,<sup>17</sup> resulting in cumulative annual electric savings of 1,871,538 MWh and cumulative lifetime savings of 19,207,318 MWh at an average cost of \$0.0387 per lifetime kWh saved. The Company also served 969,609 gas participants,<sup>18</sup> resulting in cumulative annual natural gas savings of 3,659,729 MMBtu, and cumulative lifetime savings of 45,156,569 MMBtu at an average cost of \$4.38 per lifetime MMBtu.

Table 6. Summary of 2009-2019 Electric Energy Efficiency Year End Reports

Year	Annual MWh Savings	Lifetime MWh Savings	Total Benefits (\$000)	Total Spending* (\$000)	TRC BC Ratio**	RI Test BC Ratio (1)	EE Program Charge/kWh	\$ per lifetime kWh***	Participants
2009	81,543	899,331	\$123,045	\$29,536	3.02		\$0.00320	\$0.027	106,525
2010	81,275	929,242	\$128,864	\$29,712	3.73		\$0.00320	\$0.027	153,611
2011	96,009	1,076,778	\$151,542	\$39,308	3.35		\$0.00526	\$0.031	254,747
2012	119,666	1,288,325	\$140,104	\$50,719	2.24		\$0.00589	\$0.036	201,351
2013	159,035	1,612,371	\$192,418	\$72,875	2.24		\$0.00862	\$0.039	470,245
2014	268,468	3,278,088	\$314,673	\$80,321	2.69		\$0.00911	\$0.041	551,882
2015	222,822	2,287,785	\$312,000	\$82,897	2.38		\$0.00942	\$0.036	622,822
2016	214,329	2,034,220	\$234,234	\$74,274	2.16		\$0.01077	\$0.034	758,284
2017	232,023	2,327,916	\$249,986	\$90,012	1.91		\$0.01124	\$0.039	687,141
2018	206,209	1,848,845	\$369,835	\$88,123	1.88	2.99	\$0.00972	\$0.048	688,471
2019	190,159	1,624,417	\$489,299	\$104,620	2.49	3.43	\$0.01121	\$0.064	668,420

<sup>16</sup> Net benefits calculated as total benefits minus program implementation expenses.

<sup>17</sup> Electric participation is aggregate and includes repeat participation by individual customers. Annual Reports include a participation analysis that details unique cumulative participation since 2012.

<sup>18</sup> Gas participation is aggregate and includes repeat participation by individual customers. Annual Reports include a participation analysis that details unique cumulative participation since 2012.

\*Total Spending includes implementation, evaluation, commitments, EERMC, and OER. Does not include customer contribution or shareholder incentive.

\*\*TRC Benefit/Cost Ratio = Benefits/(Implementation Expenses + Customer Contribution + Evaluation Cost + Shareholder Incentives).

\*\*\*Implementation costs/Lifetime savings

\*\*\*\* December 2011 PUC voted to increase gas EE Program charge to \$0.411/Dth.

(1) RI Test Benefit/Cost Ratio = (Energy + Capacity + Resource Benefits + Economic Benefits + Carbon Benefits + NOx Benefits) / (Program Implementation + Customer Contribution + Shareholder Incentive)

(2) B/C Ratio changed from TRC to RI Test from 2018 onwards

Table 7. Summary of 2009-2019 Natural Gas Energy Efficiency Year End Reports

Year	Annual MMBtu Savings	Lifetime MMBtu Savings	Total Benefits (\$000)	Total Spending* (\$000)	TRC BC Ratio**	RI Test BC Ratio (1)	EE Program Charge/Dth	\$ per lifetime MMBtu***	Participants
2009	195,200	2,553,828	\$26,071	\$6,552	2.83		\$0.150	\$2.44	8,339
2010	140,097	2,155,112	\$26,309	\$5,496	2.31		\$0.150	\$2.33	5,670
2011	119,613	1,623,922	\$18,196	\$4,868	2.21		\$0.150 ****\$0.411	\$2.73	3,080
2012	229,811	3,300,583	\$36,237	\$13,310	1.68		\$0.384	\$3.72	11,681
2013	311,585	4,377,672	\$44,747	\$19,501	1.78		\$0.414	\$4.21	135,646
2014	409,029	5,958,381	\$50,417	\$20,034	2.41		\$0.600 (Resi) \$0.492 (C&I)	\$3.84	143,655
2015	419,778	5,249,170	\$54,762	\$20,129	2.60		\$0.781 (Resi) \$0.637 (C&I)	\$3.47	146,098
2016	417,820	5,282,221	\$51,103	\$23,135	1.93		\$0.748 (Resi) \$0.487 (C&I)	\$4.78	150,160
2017	468,211	4,615,034	\$70,972	\$27,513	1.86		\$0.888 (Resi) \$0.726 (C&I)	\$5.96	112,202
2018	497,119	5,513,499	\$113,117	\$27,231	2.62	3.11	\$0.869 (Resi) \$0.671 (C&I)	\$4.94	101,423
2019	451,466	4,527,147	\$115,736	\$30,142	2.17	2.66	\$0.715 (Resi) \$0.420 (C&I)	\$6.66	151,655

\*Total Spending includes implementation, evaluation, commitments, EERMC, and OER. Does not include customer contribution or shareholder incentive.

\*\*TRC Benefit/Cost Ratio = Benefits/(Implementation Expenses + Customer Contribution + Evaluation Cost + Shareholder Incentives).

\*\*\*Implementation costs/Lifetime savings

\*\*\*\* December 2011 PUC voted to increase gas EE Program charge to \$0.411/Dth.

(1) RI Test Benefit/Cost Ratio = (Energy + Capacity + Resource Benefits + Economic Benefits + Carbon Benefits + NOx Benefits) / (Program Implementation + Customer Contribution + Shareholder Incentive)

(2) B/C Ratio changed from TRC to RI Test from 2018 onwards

In sum, the benefits of the Company's implemented energy efficiency programming far outweigh the costs, providing significant cost savings to Rhode Island electric and natural gas customers. In 2020, the Company's savings trajectory has been impacted by the COVID-19 pandemic, which has touched all segments of the economy and necessitated a pause in some energy efficiency program implementation. Achievement of planned 2020 savings is likely to be negatively impacted by this significant and unanticipated situation.<sup>19</sup> In spite of such obstacles, the Company appreciates the opportunity to continue working with the PUC, the TWG, and the EERMC to deliver nation-leading cost-effective energy savings over the next three years and to meet growing customer demand for energy efficiency programs and services.

### 3.2 Three-Year Plan Development and Stakeholder Process

This Three-Year Plan was developed with entities that have historically joined the Company in settlements for the Company's Annual Plans. Together with the Company, these entities are collectively called the Technical Working Group (TWG).<sup>20</sup> Members of the TWG include the Rhode Island Division of Public Utilities and Carriers (Division or DPUC), Acadia Center, the Rhode Island Office of Energy

<sup>19</sup> <https://www.cdc.gov/coronavirus/2019-ncov/index.html>

<sup>20</sup> <https://www.nationalgridus.com/ri-energy-efficiency-technical-working-group>

Resources (OER), Green Energy Consumer's Alliance, EERMC, the City of Providence, the George Wiley Center, the Center for Justice, and the Rhode Island Infrastructure Bank. The Energy Council of Rhode Island (TEC-RI) previously participated in the TWG. The Company hosts the Technical Working Group on a monthly basis as a forum for in-depth discussion of energy efficiency topics and engages the TWG throughout the planning process to leverage their expertise and seek their feedback. In addition to TWG technical experts, the Company solicits feedback from vendors and customers to inform energy efficiency planning and implementation. This includes listening forums, surveys, results of Evaluation Measurement and Verification studies, and EERMC public meetings and comment periods.

The Company has engaged the TWG throughout the planning process to leverage their expertise and seek their feedback. In early 2020, TWG members were asked to identify their priorities for the Three-Year Plan. TWG members also previewed and provided input on key themes and major changes in a Three-Year Plan Outline Memorandum circulated in April 2020 and reviewed and provided detailed feedback on the draft 2021-2023 Three-Year Plan. The Company is grateful for the substantive critiques and innovative ideas that have come through this process of continued engagement. The Company has incorporated the priorities of TWG stakeholders into many components of this Three-Year Plan. The discussions of equity, in particular, have helped shape and elevate the Company's explicit equity commitments, establishing equity as the core overarching strategic objective of both the Three Year and Annual Plan, and adding multiple specific, measurable actions across the portfolio of efficiency programs.

In addition, this Three-Year Plan is directly informed by the Rhode Island Energy Efficiency Market Potential Study (Market Potential Study) commissioned by the EERMC and completed by Dunskey Energy Consulting in May 2020. The EERMC, OER, and DPUC managed the study, with input from National Grid. The results of this study were used by the EERMC to recommend Targets for the three-year period, further described in Section 10.1 of this Three-Year Plan. The Market Potential Study represents the most detailed assessment of the energy efficiency potential in the state over the next six years.

Throughout the Three-Year Plan development process, National Grid staff collaborated with the EERMC consultant team to identify measures from the Market Potential Study to inform the savings programs and strategies included in this Three-Year Plan. This has resulted in specific emphasis in program design on deeper measures of weatherization (insulation and air sealing), heating and hot water measures, particularly for residential and small business customers, and an increasing focus on combining sophisticated building and equipment controls alongside high potential measures offered to commercial and industrial customers. Building on the successes achieved through prior plans, this plan continues to expand active demand response programs.

During conversations with Stakeholders around the development of this plan, the parties determined a need to document approaches to addressing gaps between the goals outlined in this Plan and the results of the Market Potential Study that informed the Targets as approved by the PUC. Over the course of several months, the Company undertook an analysis of the top measures identified in the Potential Study and considered the barriers to adoption of these measures at levels that would support the Targets. The Company then presented and discussed these findings with stakeholders at Technical Working Group (TWG) and EERMC meetings. Further analysis was undertaken to group barriers into

categories with relative weighting of the impact to achieving targets. These measures were then analyzed across five categories of barriers (financial, workforce, customer information, code, other) and ranked based on ability to deliver savings. The Company and stakeholders agree that further analysis to not only identify the impact of these barriers, but develop solutions to mitigate that impact, will be needed over the course of the Three-Year Plan. This process is already underway and will continue through the next three years.

### 3.3 Timeline

Per the recent updates to the Least-Cost Procurement Standards, the Company was given the option to combine the filing of the 2021-2023 Three-Year Plan with the first year (2021) of the Annual Plans, or to continue to file Plans separately. The Company elected the combined filing option with both Plans submitted to the EERMC seeking their endorsement by formal vote on October 8, 2020.<sup>21</sup> While the revised timeline associated with the combined filing meant the Company’s 2021 Annual Plan filing was earlier than previously planned (November 2020), it also allowed more time for the Company to file the Three-Year Plan (previously planned for September 1, 2020).

The filing schedule and other key timeline considerations for 2021-2023 Three-Year and Annual Plans, as prescribed in the Standards, is summarized and detailed below. National Grid will continue to work with the EERMC and the TWG to meet these Three-Year and Annual Plan timelines.

*Table 8. Summary of Plan Filing Schedule*

Energy Efficiency and Conservation Procurement Plan	Expected Filing Date
<b>Combined 2021-2023 Three-Year and 2021 Annual Plan</b>	<b>October 15, 2020</b>
<b>2022 Annual Plan</b>	<b>October 1, 2021</b>
<b>2023 Annual Plan</b>	<b>October 1, 2022</b>

#### **Combined Three-Year and First Year of Annual Energy Efficiency and Conservation Procurement Plans**

Three-Year Plans that include a combined filing of the first year of Annual Plans shall be filed on or before October 15, 2020 and triennially thereafter. Prior to filing, the EERMC will vote whether to endorse the Plans at the monthly EERMC meeting planned for October 8, 2020.

#### **Subsequent Annual Energy Efficiency and Conservation Procurement Plans**

All subsequent Annual Plans will be filed on or before October 1 of the year preceding the implementation year. This will include the annual program implementation plan and detailed budget for the next program year. The Annual Plan filing shall also provide any adjustments, as needed, to the remaining years of the Energy Efficiency and Conservation Procurement Plan based on experience, ramp-up, and increased assessment of the resource levels available.

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<sup>21</sup> Consistent with R.I. Gen. Laws § 42-140.1-5.



National Grid will submit a draft Annual Plan to the EERMC for their review and comment at least one week before the EERMC's scheduled meeting prior to the filing date, annually. The EERMC will vote whether to endorse the Annual Plan prior to the filing date, annually.

### 3.4 How to Read This Plan

For ease of review, this Plan has been organized to align with the revised LCP Standards. There are three overarching sections: Strategies and Approaches to Planning; Consistency with Standards; and Funding Plan, Budget and Goals. The **Strategies and Approaches to Planning** section provides a detailed discussion of the Company's areas of program focus and priorities, high-level program descriptions, along with the major enhancements and innovations. This section also includes a discussion of the Company's approach to as well as planned pilots and demonstrations and assessments, evaluation, measurement and verification, coordination with other energy programs, and multi-year strategies. The **Consistency with Standards** section explains how the Plan meets Prudence (including a detailed discussion of equity and rate and bill impacts), Reliability, Environmentally Responsible, and Cost Effectiveness requirements, as set forth in the LCP Standards. **The Funding Plan, Budget and Goals** detail these elements and discusses the performance incentive plan and performance metrics. **Requested rulings** are provided at the conclusion of the plan.

There are three attachments to this Three-Year Plan which provide additional detail on specific Plan elements:

- **Attachment 1 Energy Efficiency Funding;**
- **Attachment 2 Program Level Benefit Cost Summary; and**
- **Attachment 3 Definitions.**

This 2021-2023 Three-Year Plan is filed in combination with the Annual Plan. This Three-Year Plan outlines the Company's overall programmatic focus and strategies, including illustrative and provisional budgets and savings goals for the three years of implementation. It lays out a vision for National Grid's continued transformation of the energy efficiency sector in Rhode Island, including key themes and areas of focus for 2021-2023. The Annual Plan solidifies that vision for the year 2021, formalizing budgets and savings goals associated with time tested programming, while outlining program enhancements and innovations planned for 2021.

The Three-Year Plan satisfies the statutory requirements for Least Cost Procurement and the Least Cost Procurement Standards and is consistent with the concurrently filed 2021 Annual Energy Efficiency Procurement Plan (Annual Plan).<sup>22</sup> The overarching goal of both plans is to enable Rhode Island energy consumers to meet their energy needs through cost-effective, reliable, prudent, and environmentally responsible energy efficiency.

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<sup>22</sup> The Company intends to submit the Annual Plan to the PUC on October 15, 2020, at the same time this Three-Year Plan is filed.

## STRATEGIES AND APPROACHES TO PLANNING

### 4 Programs and Priorities

#### 4.1 Strategic Overview of Programs and Priorities

The 2021-2023 Three-Year Plan sets an ambitious agenda to continue to drive energy saving benefits for Rhode Island commercial and residential consumers, while proposing new approaches to meet the challenges of the rapidly changing energy landscape. The intentional transformation of the lighting market with light-emitting diode (“LED”) technology is a signature achievement of the design and implementation of prior Three-Year and Annual Plans. LED lighting moved quickly from emerging technology to rapid scale up, as the Company recognized this valuable opportunity for customers and pushed for rapid adoption through multiple channels across the portfolio. While some savings from high efficiency LED lighting are expected through 2021, the Company anticipates a saturated market by 2022, at which point lighting will no longer be a significant driver of claimable savings or a cornerstone of residential programs.

The Market Potential Study provided a detailed assessment of the energy efficiency measures that are reaching saturation and those that offer the highest remaining opportunity. It also quantified the shift in program opportunity from easy-to-install independent energy savings measures to dependence on comprehensive packages of measures with high installation costs and customer acceptance barriers. The low-cost electric energy savings opportunity presented by lighting cannot be replaced with other measures in the portfolio. The Company’s focus has therefore, by necessity, shifted to programs with leaner savings opportunities and greater barriers, as well as customers who have been less able or inclined to pursue energy efficiency to date. The cost to achieve savings will increase as subsequent offerings require much more intense promotion, greater customer education and support, and higher incentive budgets, and require longer development cycles. Newer technologies and integrated systems come with significant product, design, and training costs, even as the lower incremental savings constrain incentive budgets. This Three-Year Plan reflects National Grid’s commitment to identify, test, and begin to scale new ways of achieving efficiency savings with programs that go deeper and broader for the long-term benefit of Rhode Islanders, while remaining cognizant of the heightened costs of such measures and the need to maintain reasonable bills for ratepayers. The Company has created a comprehensive, multi-pronged portfolio that encourages continuous engagement and continues to deliver great customer and community benefits. The primary strategies to achieve savings goals are guided by five strategic priorities: expand and deepen customer relationships; drive adoption of comprehensive measures; expand active demand response; achieve cost optimization and efficiency; and apply an equity lens across all planning and delivery.

For Rhode Island to remain a nationwide energy efficiency leader, National Grid must innovate and create new models that increase the breadth and depth of the portfolio’s reach. This means encouraging continuous, multi-year engagement that in turn increases opportunities for comprehensive savings

through the installation of multiple efficiency measures, including new and cutting-edge technologies. To meet this challenge, National Grid proposes a set of programs and strategies that are both flexible and targeted, grouped by **key themes** across the Company's Commercial and Industrial, Residential, and Income Eligible Service sectors. This Three-Year Plan is purposely designed with intensive planning and testing of program refinements and innovations in the first year.

It all starts with **deepening customer relationships** by optimizing existing tools and processes to improve residential customer targeting and marketing, while exploring new energy management frameworks for commercial and industrial customers and enhanced incentive designs for all customers that invest in deeper savings over a specific timeframe. In parallel, the Company will undertake tailored program enhancements and technology-based opportunities that **drive adoption of comprehensive measures**. This includes tailoring programs to new commercial and residential markets such as telecommunications and the sub-segment of multifamily condominiums. A new Zero Net Energy Ready and Whole Building Energy Use Intensity Reduction pathway for new construction will be incorporated and offered across all customer segments. Comprehensive technology-based measures emphasized over the next three-years include commercial Heating, Ventilation, and Air Conditioning (HVAC) systems with controls, lighting controls, and storage, while Air Source Heat Pumps will be emphasized for all customers, in support of the state's Heating Sector Transformation initiative.

National Grid will also deploy multiple forward-looking strategies and innovations that pivot the portfolio to ensure continued savings and benefits for customers. The innovations in this Three-Year Plan include expansion of the Community-Based Initiative into a new Community Solutions Initiative and a forward-looking Codes and Standards effort, both of which cut across the portfolio and seek to fundamentally broaden program partners and approaches to reach the next level of clean energy transformation. The Three-Year Plan continues to **expand active demand response** efforts that will have an impact on summer peak demand and winter reliability while supporting Rhode Island's greenhouse gas reduction goals. Active demand response offerings are included for commercial, industrial, and residential customers. The Company will also explore cutting-edge technologies, such as fuel cells and geothermal heating systems, with an aim to integrate them into the portfolio in a staged approach that supports bringing these technologies to scale. The Company will continue to assess financing programs and seek alternative funding to support program development and customer adoption to minimize increases to the customer surcharge.

In addition, **applying an equity lens** to all planning and design updates is a core strategic priority of the 2021-2023 Three-Year Plan. The Company is committed to ensuring that all customers have equal ability to access and benefit from energy efficiency programs, regardless of their geographic location, income, home ownership status, primary language, business size, or other relevant barriers; that jobs and economic development benefits of the programs reach all Rhode Island communities, with renewed emphasis on environmental justice communities; and that the energy efficiency services help the most vulnerable customers who may pay a higher proportion of their income in energy costs. Using an equity lens involves considering how programs are designed and evaluated with these goals in mind, as well as taking into account the systemic and institutional structures that may make it easier for some customers to access energy efficiency products and programs and more challenging for others. As discussed below

and in Section 9.1.2 Equity, the Company is taking several steps in conjunction with OER and other stakeholders to further our empirical understanding of several facets of equity. First among these is the creation of an equity working group composed of members of the EERMC and OER, with additional input from local experts in equity, such as statewide community-based organizations. This will help ensure that ongoing stakeholder engagement on equity issues is better informed by and includes the voices and concerns of impacted communities.

The Company is undertaking two key studies to better understand who is and who is not participating in programs: a residential non-participant study and a census of multifamily housing. In addition, National Grid will track and report to stakeholders on renter participation in the in-home/unit assessment programs, and other programs as appropriate. The Company will use data from these efforts, in combination with the insights from the aforementioned equity working group, to build program enhancements and tracking systems that incorporate the needs of identified non- or low-participating groups. It will also continue to expand and tailor marketing efforts to overcome the language-related access barriers multilingual customers face.

National Grid will focus on recruiting, training, and retaining talent from frontline and environmental justice communities, intentionally bringing more women and people of color into the energy efficiency workforce. These efforts will result in increased access to energy efficiency jobs and will help transition the workforce to better reflect the communities the Company serves. These activities will strongly support program delivery by improving customer access and experience as customers find they are increasingly working with professionals from their own communities and as these new professionals help the Company begin to identify and adjust delivery to overcome community access barriers. See Section 4.4.2 Workforce Development for more information.

In addition, the Company acknowledges the critical role that income plays in access to energy efficiency programs. The Company will increase its efforts and emphasis on identifying and encouraging customers eligible for the discount rate to move to that rate. As customers are brought into the discount rate, the Company will encourage participation in applicable efficiency programming, specifically Residential Income Eligible Services.

The Company has looked for opportunities to balance the portfolio of energy savings measures and program approaches to maximize **cost efficiency** (i.e. the amount of energy savings per dollar invested) and minimize the impact on customer bills. While all program designs maintain cost effectiveness, achieving optimal portfolio cost efficiency requires balancing the drive for comprehensive projects, which tend to be complex and challenging for customers to adopt and therefore have higher savings acquisition cost, with opportunities for highly cost efficient savings through programming that requires less intensive customer support, such as upstream programming, work on codes and standards, and highly cost efficient programs such as Strategic Energy Management Planning with very large customers.

This Three-Year Plan is delivered in the context of the COVID-19 pandemic and its devastating effects. The Company has been mindful in both its immediate efforts and its three-year planning to support and

grow an energy efficiency workforce that will aid in economic recovery, while adapting to the impacts and continuing uncertainties experienced by customers, delivery partners, and the workforce.

Navigating the transition to a greatly changed energy efficiency landscape requires a willingness to engage with customers, delivery partners, and stakeholders in a continuous process of identifying the remaining barriers to customers adopting additional energy efficiency, along with market and other systemic barriers. With these insights, the Company can continue to incrementally adjust and enhance program designs alongside its efforts to identify new approaches, technologies, and other innovations that can offer larger leaps in program innovation. The Company anticipates the first year of this Three-Year Plan to be a year of intensive planning and testing with a process of continuous enhancements to pull deeper savings from existing programs. Together these efforts will allow the Company to continuously improve the customer experience and create even greater value for customers in securing long-term savings.

Table 9 and Table 10 list the many program enhancements and innovations the Company will pursue over the next three years organized by key theme and further described in Section 4.2 Residential & Income Eligible Services Programs and Section 4.3 Commercial & Industrial Programs.

Table 9. Residential and Income Eligible Services Programs Summary

<b>Deepen Customer Relationships and Increase Participation Across All Customers</b>
<ul style="list-style-type: none"> <li>Enhanced Customer Targeting with Improved Customer Management Systems</li> <li>Enhanced Incentives for Bundling of Measures</li> <li>Explore Enhanced Finance Offers for Residential Customers</li> </ul>
<b>Drive Comprehensive Measure Adoption Through Tailored Program Enhancements</b>
<ul style="list-style-type: none"> <li>Explore Potential for Scale Up of Virtual Home Energy Assessments</li> <li>Increase Agility of Multifamily</li> <li>Expand Capacity and Delivery Models for Income Eligible Customers</li> <li>New Construction Zero Net Energy Ready Pathways</li> </ul>
<b>Drive Comprehensive Measure Adoption with Technology-Based Opportunities</b>
<ul style="list-style-type: none"> <li>Expand Promotion and Installation of Air Source Heat Pumps</li> </ul>
<b>Expand Active Demand Response</b>
<ul style="list-style-type: none"> <li>Grow the Residential Connected Solutions (Active Demand Response) Program</li> </ul>

Table 10. Commercial and Industrial Programs Summary

<b>Deepen Customer Relationships and Increase Participation Across All Customers</b>
<ul style="list-style-type: none"> <li>New Energy Management Frameworks for Large and Medium Commercial and Industrial Customers</li> <li>Enhanced Incentives for Bundling of Measures</li> <li>Explore Enhanced Finance Offers for Commercial and Industrial Customers</li> </ul>
<b>Drive Comprehensive Measure Adoption with Tailored Program Enhancements</b>
<ul style="list-style-type: none"> <li>New Telecommunication and Commercial Real Estate Initiatives</li> <li>New Program Enhancements for Small Business Customers</li> <li>Expand Community Partnerships to Bring in New Customers</li> </ul>

<ul style="list-style-type: none"> <li>• New Construction Zero Net Energy Ready Pathway</li> </ul>
<b>Drive Comprehensive Measure Adoption with Technology-Based Opportunities</b>
<ul style="list-style-type: none"> <li>• Promote Holistic Savings by Bundling HVAC with Control Systems</li> <li>• Encourage the Growth of Lighting Controls</li> <li>• Leverage Successful Deployment of Air Source Heat Pumps and VRF Systems</li> </ul>
<b>Expand Active Demand Response</b>
<ul style="list-style-type: none"> <li>• Grow the C&amp;I Connected Solutions (Active Demand Response) Program</li> <li>• Explore Adding Electric Vehicle Charging to the Active Demand Response Portfolio</li> </ul>
<b>Explore Cutting-Edge Technologies</b>
<ul style="list-style-type: none"> <li>• Explore Opportunities for Fuel Cells</li> <li>• Explore Incentives for Geothermal Systems</li> </ul>

#### 4.2 Residential & Income Eligible Services Programs

Over the next three years, National Grid will continue to offer a suite of residential energy efficiency programs, summarized in Figure 11, for both market rate and income eligible customers in single and multifamily homes.

Table 11. Residential and Income Eligible Programs

Program	Description
<b>EnergyWise Single Family</b>	Direct-to-customer in-home program that educates residents on how their home can become more energy efficient. Offering single-family customers (1-4 dwelling units) home energy assessments, weatherization, and energy usage information.
<b>Income Eligible Single Family</b>	See EnergyWise Single Family above. For income eligible customers, services are delivered at no cost by local Community Action Program (CAP) agencies.
<b>Multifamily</b>	Comprehensive energy services for multifamily customers (five plus dwelling units), including energy assessments, incentives for heating and domestic hot water systems, cooling equipment, lighting, and appliances.
<b>Income Eligible Multifamily</b>	See Multifamily above. For income eligible customers, services are delivered at no cost by local Community Action Program (CAP) agencies.
<b>Residential New Construction</b>	Promotes the construction of high-performing energy efficient single family, multifamily, and income eligible homes, as well as the education of builders, tradespeople, designers, and code officials.
<b>Home Energy Reports</b>	Encourages energy efficiency behavior through personalized print and email reports and a seamlessly integrated website.
<b>ENERGY STAR® Lighting</b>	Provides discounts to customers for the purchase of ENERGY STAR® lighting through instant rebates, promotions at retail stores, pop-up retailers, and social marketing campaigns.
<b>Residential Consumer Products</b>	Promotes the purchase of high efficiency household appliances carrying the ENERGY STAR® label. The program also offers refrigerator recycling.
<b>Residential High-Efficiency Heating, Cooling, and Hot Water (ENERGY STAR® HVAC)</b>	Incentivizes the installation of high efficiency central AC for electric customers and new energy efficient natural gas related equipment including boilers, furnaces, water heating equipment, thermostats, and boiler reset controls.
<b>Residential Connected Solutions (Active Demand Response)</b>	Uses electric active demand reduction strategies targeting consumers with eligible controllable equipment to reduce peak electrical demand periods throughout the year.

The Company’s Rhode Island residential sector portfolio has successfully driven rapid, market-transforming consumer adoption of high efficiency lighting in homes and has received recognition from national organizations including the American Council for an Energy-Efficient Economy, the U.S. Environmental Protection Agency, and the U.S. Department of Energy. Yet the state’s residential energy efficiency market has reached a turning point, with claimable savings from residential lighting projected to recede almost completely by 2022. This means that residential programs are at risk of losing

significant visibility to customers as lighting becomes a diminishing portion of the portfolio. High efficiency bulbs directly installed in customers' homes during home energy assessments provided instant value and tangible energy savings for customers. Program-supported discounting of high efficiency lighting in retail settings was a key opportunity to showcase efficiency directly to customers in the retail market. This Three-Year Plan marks the beginning of the Company's residential programs transformation to meet the changing efficiency landscape.

National Grid plans to respond to these challenges with multiple program enhancements and innovations planned for the next three years. This Three-Year Plan reexamines the residential portfolio and aims to identify opportunities to increase participation across all customer segments, broaden penetration of energy efficiency and demand reduction to new participants, and secure deeper savings from more continuous and comprehensive engagement with existing program participants. The Company has focused heavily across all market rate and income eligible residential programs on increasing weatherization, efficient heating, and hot water. The elevation of these three critical areas reflect stakeholder priorities and opportunities highlighted in the Market Potential Study. The innovations and enhancements also reflect many ideas and insights that have evolved from close collaboration with the EERMC, the EERMC Consultants, OER, the Division, vendors and customer feedback.

The residential programs are relatively mature and have successfully provided customers with incentives and support for their everyday energy choices. As the Company transitions away from lighting and in the wake of COVID-19, early focus will be on reshaping the intake and assessment process for customers, considering more virtual audits, and implementing other solutions that may reduce delivery costs and help maintain the cost effectiveness of the residential program portfolio. At the same time, intake processes must succeed in convincing customers to pursue more complex and expensive measures, such as HVAC systems. To provide services while optimizing investments, the Company must more efficiently target customers and match offers to their savings opportunities, including reshaping the EnergyWise program to more efficiently target homes with weatherization opportunities and connect customers with other energy saving needs to other program channels. Ultimately, the Company is likely to need to increase incentives to move customers to action, balancing costs against greater participation and leaner delivery to maintain the portfolio's cost effectiveness. These programs will continue to offer savings for Rhode Island customers and support Rhode Island's greenhouse gas goals and the environment by enhancing energy efficiency delivery of weatherization and targeting energy savings in the heating sector.

The sections below describe a number of Residential and Income Eligible Services program enhancements and innovations the Company plans to implement in the next three years, organized by key themes that aim to increase the breadth and depth of the portfolio's reach to deliver deeper, more comprehensive savings. The level of detail varies as some elements are more conceptual in nature at this juncture. Full detail will be provided in subsequent Annual Plans.



#### *4.2.1 Deepen Customer Relationships and Increase Participation Across All Customers*

Over the next three years, the Company must find ways to become residential customers' trusted energy advisor in order to support them in more continuous, long-term engagements that can deliver deep, cost-effective savings. The saturation of the lighting market, while indicative of the Company's past program successes, puts pressure on the current high interaction model of providing an in-home professional energy assessment as a key vehicle for securing weatherization and other deeper efficiency measures. The residential team will experiment with new ways to increase participant engagement and enhance existing program delivery models to advance residential customers along a path of continuous energy efficiency improvement. The overarching vision is to transition customer relationships across all residential programs from transactional, limited term to holistic, lifetime energy engagement. The enhancements and explorations described below, including enhanced incentives, customer management systems, and finance, cut across all residential programs to support more customers to adopt deeper savings.

National Grid is committed to ensuring that customers who have a high energy burden and/or difficulty paying their electric bills participate in, and benefit from, energy efficiency programs. Equity is an essential component of this Three-Year Plan (see Section 9.1.2), and the Company's Income Eligible Services sector continues to work to assist customers who may not have as easy access to the cost savings associated with energy efficiency. National Grid will continue to work to identify and mitigate the specific barriers and challenges faced by moderate and income eligible customer sub-segments. The Company will increase its efforts and emphasis on identifying and encouraging customers eligible for the discount rate to move to the discount rate. As customers are brought into the discount rate, the Company proposes creating a welcome package to encourage participation in applicable efficiency programming, specifically Residential Income Eligible Services. The Plan also includes incorporation of incentives that eliminate the customer's cost share for weatherization (i.e. providing a no-cost offer) to moderate income customers. The Company will work with OER, the EERMC and other stakeholders to set an operating definition of moderate income in the first half of 2021.

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#### *4.2.1.1 Enhanced Customer Targeting with Improved Customer Management Systems*

The Company will continue to engage in a continuous improvement process to employ and connect customer data to better target customers with offers. The process of using available data to segment customers by certain attributes allows customer service representatives to provide customized recommendations. When a customer's call aligns with energy efficiency, the customer is directed to participate in a home energy assessment or take advantage of National Grid's marketplace for instant rebates on efficient products. The Company will continue to refine the types of customer data that can be compared and will begin to move into more proactive engagement with customers. The Company is interested in exploring ways to leverage information from online, virtual and in-person home assessments to assist in proactive customer outreach when home heating and water heating equipment is nearing replacement.

The Company will explore opportunities to target marketing to customers when they are most likely to need heating or hot water system upgrades. It is difficult for customers to learn about and be receptive to energy efficiency offerings when an expensive critical system, such as a heating or hot water system, fails. Better consumer insight will allow the Company to educate and market to customers before failure occurs, at a time when they may be more receptive to learning about new technologies. By educating customers when they may be in the market for a replacement, the Company anticipates a better overall customer experience and less stress associated with the system purchase.

In the first year of this Plan, the Company will continue work begun in 2020 to identify companies that use publicly available information to develop initial home energy efficiency scores. Once National Grid has surveyed the landscape of companies that can provide an energy score based on public data, the Company will examine how such scores might be updated based on customer input and/or program participation, starting with the online assessment and subsequently in-person or virtual assessments. This research will help inform opportunities for the program enhancements offered in second year of this Three-Year Plan.

#### *4.2.1.2 Enhanced Incentives for Bundling of Measures*

To encourage customers to add additional deeper efficiency measures, the Company will explore methods to provide enhanced incentives for customers that commit to invest in deeper energy savings over a specific timeframe. This is a step toward a "Pay for Performance" model, encouraging customers to demonstrate initiative to invest in deeper savings measures in return for a similar growth in the portion of co-investment by the Company. The objective is to develop an ongoing relationship with the customer such that they continue to utilize the energy efficiency rebates for ongoing energy upgrades. The first programs to align with such an incentive structure will be EnergyWise (e.g. combining weatherization with heating and cooling or hot water heaters), HVAC (e.g. bundling a boiler/furnace with a WiFi thermostat), and Income Eligible Services.

#### *4.2.1.3 Explore Enhanced Finance Offers for Residential Customers*

The Company has seen very strong uptake of the 0% interest HEAT Loan among residential customers. In addition to overcoming financial barriers, the 0% interest loan has a powerful effect in marketing energy

efficiency programs, allowing customers to overcome psychological barriers to an energy audit, knowing that if the findings are significant there is a financing mechanism that would allow them to move forward. The Company has completed two HEAT Loan evaluations, both of which demonstrated that loans are provided to those who need them to overcome financial barriers. However there remain areas where the existing HEAT Loan might be further optimized.

Current options for financing energy efficiency upgrades in multifamily buildings are limited to individual condo owners through the HEAT Loan program, with no option for landlords looking to finance upgrades to their renter-occupied property. The Company will explore improvements to the HEAT Loan program that will provide financing options for landlords of both commercially and residentially metered multifamily buildings. This improvement would make it easier for owners to fund larger improvements to renter-occupied buildings, and therefore achieve deeper energy savings.

In addition, the Company will research whether EnergyWise residential customers are interested in an on-bill feature to spread out customer costs associated with energy efficiency upgrades. This Company will look to leverage other planned research such as the residential non-participant evaluation or C&I research on financing to answer these questions and provide insight for additional program financing enhancement.

As National Grid considers expanding financing solutions, the Company is interested in exploring interest mechanisms that would allow for larger loans or longer length loans, on-bill recovery of customer investment funded with a revolving loan fund, or opportunities for loan loss reserve funds.

#### *4.2.2 Drive Comprehensive Measure Adoption Through Tailored Program Enhancements*

##### *4.2.2.1 Explore Potential for Scale Up of Virtual Home Energy Assessments*

The EnergyWise program has been highly successful in providing Rhode Island homeowners with energy savings. The model historically relied upon a highly supportive customer experience with an in-home visit from a professional energy assessor. The in-home assessment provides an opportunity to educate customers, learn their priorities, and create immediate tangible energy savings benefits (e.g. high efficiency light bulbs and other direct install measures). The in-home assessment also allows very accurate estimation and design for weatherization (e.g. insulation and air sealing), HVAC, and water heating opportunities. The accuracy of the weatherization plans allowed for efficient delivery of insulation and air sealing measures with predictable costs and savings for the installer, the customer, and the Company. This in-home assessment as the gateway to cost-effective weatherization was heavily dependent on the low-cost savings provided by lighting measures. In response to reduced lighting opportunities, the Company began exploring opportunities to move to more virtual home energy assessments (VHEAs).

The Company had planned a systematic comparison of online customer input and virtual audit data to professional in-home audit data. The goal was to begin to understand how well virtual audits might work in replacing or at least helping screen homes for opportunities, particularly in estimating weatherization opportunities. Due to COVID-19, the residential team's roll out of VHEAs proceeded without the ability to provide a parallel in-home inspection to deliver the comparison. However, now that energy professionals can return to in-home visits, the Company can begin a closer examination and

refine the process of necessary data collection, including aligning weatherization scopes and conditions, contractor needs, cost implications, and customer satisfaction. The virtual assessments are facilitated by professional auditors, and the Company pays the same fee as in-home assessments. For VHEA customers, items normally installed such as light bulbs and smart strips are mailed to customers. During COVID-19, the Company offered a 100% incentive on insulation up to \$15,000, recognizing the potential for contractors to find a different opportunity upon arrival and wanting to protect the contractor's ability to secure all efficiency without presenting the customer with an unanticipated cost. The Company will closely assess customer acceptance of a VHEAs and willingness to proceed with signed contracts for weatherization work when incentives are no longer at a 100% level. The 100% incentive provides customer protection on weatherization scope changes and customer receptivity may change without that assurance in place.

This new form of engagement necessitated by COVID-19 presents an opportunity to look at customer receptivity to efficiency and assess barriers that prevent participation. The Company will assess lessons learned from deployment of virtual home energy assessments during the COVID-19 response and make improvements to the EnergyWise program as appropriate. This may involve substantial adjustments to expectations of what data can be gathered from a homeowner through online or virtual audits, in what formats (i.e. response to questions versus photo uploads), and whether the online virtual audit is more effective as an assessment tool or a screening tool with in-person follow up. Changes that help unlock savings opportunities beyond lighting or reduce cost to achieve savings will receive attention.

#### *4.2.2.2 Increase Agility of Multifamily Programs in a Changing Market*

Multifamily programs came under increased focus after not meeting their electric energy savings goals in 2018 and 2019 (both in the residential market rate and income eligible multifamily programs) due to more rapid declines in lighting energy savings than anticipated for residential programs. Over the next three years, the Company will work to increase the agility of all multifamily programs (residential income eligible, residential market rate, and commercial and industrial) to respond to the significant changes in the market, including the continued decrease in claimable lighting savings and the need to more rapidly incorporate new technologies. The Company will prioritize program refinements based on evaluation results, market influence, and market saturation of technologies. The process and impact evaluations completed in July 2020 provided critical insights to inform program refinements and possible redesign. As a result of these evaluations, in the first year of this Plan the Company will work with the multifamily vendor to increase facilitation of health and safety barrier remediation, set clearer program expectations with customers by updating language and redesigning the customer energy report and sign-up sheet, and identify the long-term role of VHEAs in multifamily buildings.

In parallel, the Company will seek to better understand the characteristics of sub-segments of the multifamily market. Having been highly successful with the larger multifamily market and the single family market, National Grid will increase its focus on the 5-20 unit market in the next three years. The aim is to identify characteristics that might allow the program to achieve more success and deeper savings with these customers. The Company will continue to explore how a tiered incentive might help influence greater participation for market rate programs.

The Company will also investigate potential in the condominium market and whether additional savings are possible from refinements to the current design and delivery model. National Grid will work with the vendor who serves both the multifamily market and the EnergyWise delivery channel to test insights generated from working with both market segments. One vendor suggestion the Company adopted and will continue to implement is creating more parity in incentives and other program elements between the EnergyWise program and multifamily delivery. The individual condominium owner shares many characteristics with the EnergyWise single family customer. Recognizing the similarities of these markets, the Company hopes reshaping delivery to provide a more consistent customer experience will support greater participation from the condominium market, more in line with current participation in EnergyWise.

#### *4.2.2.3 Expand Capacity and Delivery Models for Income Eligible Customers*

The Company will improve upon the 2019 Process Evaluation recommendations of the Income Eligible Services (IES) Single Family Program, which National Grid has already begun implementing. The Process Evaluation outlined key elements that will improve program efficiency, set the course for increasing customer participation, and improve consistent program implementation. The Company will assess new program management and delivery models for the IES Program that will respond to the current and future program needs. As the Company continues to expand its efforts to identify eligible customers for the gas and electric discount rates, IES will leverage the efforts to increase enrollment.

Leveraging funding from third party sources will remain a priority to expand the reach and equity of energy efficiency services. In the first year of this Plan, the IES program will implement a third-party support model to expand capacity to serve customers. To support increased participation in an equitable manner, a third-party service provider will be made available to seamlessly conduct assessments and complete weatherization projects.

#### *4.2.2.4 New Construction Zero Net Energy Ready Pathways*

Over the next three years, the goal of the New Construction program is to continue to influence the design and construction industry towards higher performing buildings, including developer attainment of LEED, Energy Star, Zero Net Energy Ready, and Passive House certifications.

The new construction program offers a unique opportunity to work at the innovative edge of high-performance building. National Grid can influence the design and construction of new buildings and additions, as well as major renovations. By engaging with the construction industry at critical moments, the Company creates opportunities to shift the building and design community towards new technologies and techniques that create ever higher performing buildings.

National Grid's success in promoting high efficiency technologies and practices, both through the new construction and retrofit programs, has positively influenced adoption of high-performance building techniques and highly efficient technologies. This has resulted in ever-higher baselines of industry standard practice. Taken in combination with Rhode Island's adoption of the IECC 2015 building code in late 2019 and likely adoption of at least one energy code update during the 2021-2023 Plan cycle, the elevated program baselines will result in diminished efficiency program claimable savings. The lower claimable savings will constrain the Company's ability to offer direct incentives.

To maintain and grow National Grid’s ability to influence new construction, the Company will introduce new pathways for Zero Net Energy Ready buildings and continue to refine pathways to move the industry to highest performing, zero energy buildings in 2021. The Company will explore opportunities to quantify non-energy benefits associated with various levels of performance or certification and redesign the program to promote options that deliver higher levels of benefits.

#### *4.2.3 Drive Comprehensive Measure Adoption with Technology-Based Opportunities*

##### *4.2.3.1 Expand Promotion and Installation of Air Source Heat Pumps*

The Company will support the promotion and installation of air source heat pumps to the extent possible within regulatory guidelines. Current guidelines allow for the replacement of electric resistance heating systems with air source heat pumps and support for customer access to high efficiency heat pumps for accessory heating and cooling. At this time, regulation does not enable the Company to pursue heat pump conversion or displacement for delivered fuels. The Process Evaluation outlined key improvements to enable program efficiency and increased capacity for the number of customers that can be served each year. By offering air source heat pumps, the Company will help develop the market to enable electric resistance customers to purchase a more efficient electric heating system. Air source heat pumps also provide opportunities for customers to participate in demand response.

#### *4.2.4 Expand Active Demand Response*

##### *4.2.4.1 Grow the Residential Connected Solutions (Active Demand Response) Program*

During the next three years, Connected Solutions will grow residential active demand response through continued offerings and targeted program enhancements. Support will continue for smart thermostats, which allow customers to participate in reducing the system peak demand during a limited number of summer events. Small-scale batteries are an existing performance-based active demand response offering where up to sixty events can be called throughout the year and incentives are earned based on the amount of energy curtailed. Additionally, the Company will investigate offering an active demand response electric vehicle offering.

National Grid was able to adapt results from a Massachusetts study that looked at the evolution of smart devices and appliances and the market potential of these devices in an active demand program. Based on the results of the research, Connected Solutions now offers the top three items identified in that research. The Company will continue to watch the development and adoption of connected devices and make decisions on when to bring new technologies into the program. Additionally, National Grid provides feedback to manufacturers through its demand response management system vendor that works with nearly fifty utilities across the nation and lends more weight in signaling manufacturers about interest in connected device offerings. Location specific demand response will be pursued through non-wires alternative work and leverages the network developed through Connected Solutions.

### **4.3 Commercial & Industrial Programs**

The Company will continue to offer its five core programs for commercial and industrial customers, summarized in Table 12, across both new and existing buildings. The Commercial and Industrial programs consistently offer highly cost-efficient savings. The Company is continuously evaluating and

responding to customer needs and market dynamics to develop enhancements that secure deeper, more comprehensive savings while strategically evolving program designs to drive market transformation across multiple end uses.

Table 12. Commercial and Industrial Programs

Program	Description
<b>Large Commercial and Industrial New Construction</b>	Offerings target ground up new construction, major renovations, tenant fit-outs, and end of life replacement equipment. Note these offerings are also available to small business customers.
<b>Large Commercial and Industrial Retrofit</b>	Includes all services and technologies needed for existing building retrofits. Note these offerings are also available to small business customers.
<b>Small Business Direct Install</b>	Provides turn-key solutions for many types of small businesses.
<b>Connected Solutions (Active Demand Response)</b>	Aim to reduce peak electric demand and associated costs for large and small commercial and industrial customers
<b>Commercial and Industrial Multifamily Program</b>	Comprehensive energy services for market-rate multifamily customers (buildings with five plus dwelling units).

The Company has focused on non-lighting opportunities across all commercial programs and program enhancements that help drive progress toward deeper comprehensive measure adoption in every customer class. The specific priority measures vary by customer but are reflective of opportunities highlighted in the Market Potential Study. The innovations and enhancements also reflect many ideas and insights that have evolved from the close collaboration with the EERMC and the EERMC consulting team, OER, the Division, and our vendors, as well as customer feedback. There are new market segment designs under development to engage new customers with tailored approaches to comprehensive savings adoption (e.g. new Telecommunication Initiative), enhancements that make participation easier or more attractive (e.g. Equipment and Systems Performance Optimization Initiative and Small Business Direct Install Program), and multiple enhancements that focus on reducing barriers to comprehensive measure adoptions (e.g. new pathways for new construction including Zero Net Energy Ready, Whole Building Energy Use Intensity Reduction, and Whole Building Streamlined).

The sections below describe a number of program enhancements and innovations the Company plans to implement in the next three years, organized by key themes that aim to increase the breadth and depth of the portfolio to deliver deeper, more comprehensive savings. The level of detail varies as some elements are more conceptual in nature at this juncture. Full detail will be provided in subsequent Annual Plans.

#### 4.3.1 Deepen Customer Relationships and Increase Participation Across All Customers

The Strategic Energy Management Program (SEMP) offers a successful process for continuous customer engagement that delivers increasing depth and comprehensiveness of energy savings over multiple years. SEMP participants are the Company’s largest customers, including large manufacturers, university campuses, and large health care systems. The SEMP partnership allows the customer to share their long-

term goals and vision, which the Company uses to provide tailored support to help identify energy opportunities and approaches that align with the customers' needs. The Customer and the Company then mutually commit to a formal memorandum of understanding outlining the financial incentives tied directly to the savings the customer commits over the next three or four years. The SEMP represents an ideal model in which customers are well educated and actively engaged in building and implementing multiyear plans, in partnership with the Company, that deliver highly cost-effective energy savings. The challenge is that this model only applies to a small number of very large customers with large savings potential and the scale to support human and financial resource commitments over a longer-term planning and investment cycle.

As the Company moves into the next three years, it is essential to find ways to achieve more continuous, long-term customer engagements that can deliver deep, cost-effective savings, applying lessons learned from SEMP to all C&I customer classes, starting with the next tier of large and medium commercial customers for whom the SEMP is not an exact fit. National Grid's C&I team aims to enhance existing program delivery models and experiment with new ways to increase participant engagement. National Grid proposes taking actions to create a culture of continuous energy efficiency improvement with this next tier of customers by addressing the specific barriers and systematically working to develop comprehensive efficiency packages and delivery that are easily accepted and adopted.

Currently the Company has six SEMP agreements in place. The Company plans to increase the number of SEMP agreements year after year to a total of nine SEMPs in 2023.

#### *4.3.1.1 New Energy Management Frameworks for Large and Medium Commercial and Industrial Customers*

The goal of the energy management framework is to create customer energy efficiency action plans that offer two to five-year efficiency roadmaps that allow customers to understand their opportunities and align those with incentive structures and support to incorporate longer term commitments to efficiency in their operations. To be successful, models must align with customers' business objectives and financial abilities without requiring substantial customer time commitment to planning.

In National Grid's current delivery model, vendors identify comprehensive opportunities and present these to customers. However, there are often barriers to a customer adopting the full suite of opportunities. In addition to the traditional energy efficiency barriers, customers often lack the will or ability to manage complex energy projects or have concerns that larger projects will require long disruptions to operations. Often larger, more complex projects require more attention that is simply not available from businesses managers, for whom energy efficiency is not a core responsibility.

Commercial customers have frameworks for normal business operations and energy efficiency tends to be outside these standardized operations frameworks. Even when a customer has a successful engagement with a vendor, i.e. offered a suite of opportunities with payback and agrees to implement, there is no automatic loop to bring the customer the next opportunity. It is highly inefficient, for both the business and the vendor, to return to assess opportunities each year. By analyzing the success factors from comprehensive multiyear customer engagements, National Grid hopes to identify best practices and translate those into tailored frameworks that can integrate into existing business



operations. The Company anticipates the energy management frameworks will help vendors work with customers to review consumption data and create simplified multiyear energy action plans with annual energy reduction targets. The energy management frameworks will be tailored to each business segment. The objective is both to increase participant engagement and to create a series of next best actions for energy efficiency improvements.

This program enhancement will require some adjustments to the current sales process and information capture. It also requires development of tools that allow the vendor to seamlessly provide the customer with a suite of near term and future opportunities and a simplified multiyear implementation plan that ensures a multiyear relationship. For example, as part of the initial energy audit, the vendor could catalog all major equipment, including the nameplate information, installed date, run hours, load/consumption data, and operation and maintenance reports if possible. Creating this shared data catalogue will allow the Company to provide customers increased insights to optimize energy using equipment, including modifications and replacement timing. The Company will look to establish a database that catalogues specific attributes associated with major equipment, including energy consumption, years in use, lifecycle, and annual maintenance hours. This catalogue will be used to tailor energy efficiency offerings, create energy action plans, and to better integrate energy efficiency measures as a solution to customer pain points.

The National Grid sales representative or vendor can use the equipment catalog to establish a multiyear (two- to five-year) energy efficiency action plan that takes into consideration equipment nearing its end of life, operation and maintenance expenses, and operational pain points. In creating the energy efficiency action plan, the sales representative/vendor can establish site energy reduction targets as a percentage of total site consumption. In conjunction with this effort, the sales representative/vendor will present the energy management frameworks in a simple template tailored to the customer's industry, business segment, or energy profile (if an industry or business segment is not available). By taking the lessons learned from prior engagements and creating these frameworks that reflect an understanding of and are easily incorporated into the businesses' standard operations, it can allow energy efficiency action to become a continuous rather than one time part of customers' business operations.

The initial target for this enhancement will be customers with significant electric and gas loads with little to no energy efficiency program engagement within the past five years. Prioritizing customers by energy efficiency potential will help the total cost efficiency. This is important because the program will be expensive, with considerable investment in developing frameworks and relationships, identifying savings opportunities, and partnering with the customer to move to action. To successfully secure these new savings opportunities, the program will need to invest in completing the data review and research to highlight and build reproducible simplified templates for action, work with vendors to ensure the audit process captures new data that allows for longer term plan development, and ensure there is a data storage system that allows the program and sales teams to anticipate and reach out to customers as next actions become available based on the longer term framework or plan.

#### *4.3.1.2 Enhanced Incentives for Bundling of Measures*

The Company will explore providing enhanced incentives to those customers that commit to implementing comprehensive energy efficiency measures within a specified timeframe. The objective is to balance longer-term and shorter-term energy savings, and to accelerate customer investments in energy efficiency. The Company will explore two sets of comprehensive bundle types and identify which offers the best opportunity to engage customers in deeper, more comprehensive measure adoption. The first approach to bundling is at the system level, for example, HVAC units with variable frequency drives (VFDs), lighting with controls, fryers with hood vents. The theory is that the customer is already interested in an upgrade to a specific system and may be convinced, with enhanced incentives, to install additional, similar measures (i.e. bundle) to achieve greater efficiency within that energy system. The second approach is to bundle items that pair well together for specific businesses because of the businesses' energy profile and likely energy savings opportunities. For example, lighting and VFDs are frequently early high priority opportunities for many businesses.

In 2021, the Company will look at historical data on measure implementation, with attention to specific systems measures. The Company will also research how specific customer segments advance through energy efficiency to identify those struggling to advance comprehensively. This data and research review will be paired with further investigation of measures identified in the Market Potential Study with significant remaining achievable potential and filtering for measures with synergistic effects when bundled. In 2022, the Company will look to develop a bundled measure solution and offering for customers.

The Company will look at enhanced incentives as well as bounded time frames within which these bundled measures are installed. The Company will begin with a 10% incentive increase added to those custom or prescriptive measures that the customer does not initially agree to install. The Company will collect information from our salespeople and vendors to judge whether this offer increases the number of bundled measures.

#### *4.3.1.3 Explore Enhanced Finance Offers for Commercial and Industrial Customers*

The Company will identify any gaps in the large selection of financing products currently offered to C&I customers, and opportunities to enhance finance offers, while also educating customers on the value and appropriate timing of current and future finance tools. The Company wants to ensure that the barriers to investing in energy efficiency are as low as possible. As National Grid asks customers to engage more continuously and in more comprehensive projects, as described above, there will be higher costs. The Company's primary tools to alleviate cost barriers for customers are incentives and financing. The Company is committed to balancing these against each other to ensure an optimal amount of savings for the right cost.

Part of the review and refinement to finance offers will be to ensure that the finance products meet the needs of Rhode Island customers. There has been an explosion of new energy efficiency finance models over the past decade. Some are niche products that may not be taken up by Rhode Island customers. Ultimately the greater the complexity of finance offers, the higher the administrative costs to the Company of time expended developing and deploying finance products that serve very few or no

customers, and the greater potential for customer and vendor confusion. This distracts from National Grid's ability to focus on optimizing and making more accessible the existing mix of finance and incentive packages that the Company knows can move customers with significant savings opportunities to action.

#### *4.3.2 Drive Comprehensive Measure Adoption with Tailored Program Enhancements*

##### *4.3.2.1 New Telecommunication and Commercial Real Estate Initiatives*

Within the large C&I retrofit program, the Company will explore adding telecommunication and commercial real estate to its successful industry-specific initiatives. National Grid has found that creating initiatives tailored to specific building types or market segments allows for a customized and efficient delivery system that supports capture of more non-lighting savings. The current Grocery Initiative, the Chain Restaurant Initiative, and the Industrial Initiative have succeeded in engaging customers by providing industry specific information from trusted industry-knowledgeable advisors. These advisors help the company offer a tailored approach to concerns and opportunities unique to the segments. These programs will also continue to be refined in the next three years.

National Grid is exploring telecommunications because of the high energy savings potential in this segment and low participation in energy efficiency. Telecommunications companies are rarely based in the Company's jurisdiction but have substantial energy using assets, including data centers and transmitters with base stations, which offer equipment replacement and HVAC opportunities. Telecommunications customers require a vendor that they trust and that they have had success working with in other areas of the country. The Company has been working to identify existing energy efficiency vendors who have established relationships with telecom companies. The Company hopes to find a vendor to work with to establish programming with these companies.

The commercial real estate market is complex, with a multitude of building types and ownership structures. In Rhode Island, this is further complicated by the relatively small size of the market. For states with a large central city or many medium-sized cities there is sufficient market size to support an active group of property management and ownership firms. Rhode Island's lack of office towers and other large holdings with common management creates challenges to efficiently targeting the sector and designing a segment initiative that can scale. To overcome this barrier, the Company is looking closely at characteristics that might offer better segmentation targets within the commercial real estate market, including building size, ownership structure, and owner occupancy, to determine if there is a segment that provides the opportunity to build a scalable initiative. In addition to the segment-specific design challenges, COVID-19 may create new challenges in these sub-segments as core market dynamics change. How and when people return to working in office settings will impact how and when commercial real estate customers will be interested in engaging. The Company will look to pursue this segment in 2022-2023.

##### *4.3.2.2 New Program Enhancements for Small Business Customers*

The Company's planned program enhancements for small businesses include digital auditing, including equipment logging, which will support long term customer engagement. Digital auditing will allow the Company to learn more about customer needs and follow up with them on measures not currently

included in the direct install model. Additional enhancements include increased weatherization and a focus on increasing lighting and HVAC controls. The Company will also explore offering services like the online marketplace, similar to the residential program. All efforts recognize the inherent challenges for small businesses with limited time, staff, and expertise to engage with the efficiency programs. These efforts focus on making small business efficiency programming easy and accessible.

#### *4.3.2.3 Expand Community Partnerships to Bring in New Customers*

The Company will work to expand community partnerships to bring in new customers. As part of the cross-cutting Community Solutions Initiative detailed in Section 4.4, the C&I team will work to develop new partnerships and engagement with industrial and technology parks in support of energy efficiency.

#### *4.3.2.4 New Construction Zero Net Energy Ready Pathway*

The goal of the New Construction program is to continue to influence the design and construction industry towards higher performing buildings including developer attainment of LEED, Energy Star, Zero Net Energy Ready and Passive House certifications.

The new construction program offers a unique opportunity to work at the innovative edge of high-performance building. National Grid can influence the design and construction of new buildings and additions, major renovations, and substantial alterations in connection with events like tenant or space changes. By engaging with the construction industry at these critical moments, the Company can create opportunities to shift the building and design community towards new technologies and techniques that create ever higher performing buildings.

National Grid's success in promoting high efficiency technologies and practices, both through the new construction and retrofit programs, has positively influenced adoption of high-performance building techniques and highly efficient technologies. This has resulted in ever-higher baselines of industry standard practice. Taken in combination with Rhode Island's adoption of the IECC 2015 building code in late 2019 and likely adoption of at least one energy code update during the 2021-2023 plan cycle, the elevated program baselines will result in diminished efficiency program claimable savings. The lower claimable savings will constrain the Company's ability to offer direct incentives.

To maintain and grow National Grid's ability to influence new construction, the Company must focus on engaging with customers early in the design process and continuing to explore and refine pathways to move the industry to highest performing, zero energy ready buildings. The key primary areas of exploration anticipated include:

- Set energy use intensity targets and an aligned path to Zero Net Energy Ready buildings, which includes post occupancy verification.
- Implement an energy conservation measures-based worksheet methodology to encourage program participation by those working on smaller buildings who do not have the design team support or timing to engage with the more comprehensive support tools of the new construction program. A simplified methodology can overcome many of the barriers that smaller projects face in adopting high-performance best practices.

- Work with architectural firms to achieve EUI targets across their entire portfolio and align with the AIA 2020 Challenge for energy performance standards. For large projects this would allow the Company to leapfrog the development process to the earliest design stages and help ensure the most aggressive energy savings techniques are considered and explored with customers at the very earliest stage of design. The early design is also the moment of engagement that offers the most cost-effective savings opportunities.

In addition to the explorations described above, which focus on providing customers direct support for enrolled projects, the Company will study the market effects and spillover of the new construction program to help address the limitations on program savings driven by higher baselines, which are often a direct result of the program's success.

#### *4.3.3 Drive Comprehensive Measure Adoption with Technology-Based Opportunities*

Adoption of these advanced technologies are dependent on the program enhancement strategies described above and successful workforce development efforts detailed in Section 4.4.

##### *4.3.3.1 Promote Holistic Savings by Bundling HVAC with Control Systems*

The Company will look to identify all near-term HVAC failures and approach the customer with enhanced incentives for bundling new HVAC systems with controls. Providing enhanced incentives for the bundling of HVAC measures with controls allows the Company to offer customers a more holistic energy efficiency solution. The most significant barrier to the installation of HVAC measures and controls is the upfront capital investment. However, increasing the incentives for the bundling of HVAC, as described above, may lower this barrier and allow the customer to benefit from the more comprehensive savings that occurs when HVAC is coupled with controls. Additionally, the Company will research strategies to increase the installation of control systems on existing HVAC units.

##### *4.3.3.2 Encourage the Growth of Lighting Controls*

The Company will look to increase customer adoption of luminaires with lighting controls and network lighting controls (NLC). Luminaires with built in controls allow customers to save additional energy through daylight harvesting and more granular occupancy sensing without the need to hard wire additional sensors. A properly designed NLC project can save even more energy than luminaires with built in controls through the ability to control plug loads, provide feedback to the system controlling the HVAC, and advanced scheduling. These systems can also respond to demand response signals. Both of these pathways require additional cost and installation expertise but may yield substantial energy and non-energy benefits. In the next three years, the Company will work with experts in the lighting industry to make sure that customers and partners are trained on the benefits and proper installation of these technologies, modify incentives to encourage the growth of this area of the lighting market, and work on a system to support post installation training or check-ins to ensure the system is functioning properly over the long term.

##### *4.3.3.3 Leverage Successful Deployment of Air Source Heat Pumps and VRF Systems*

Heat pumps and Variable Refrigerant Flow (VRF) systems can be dramatically more efficient than traditional heating and cooling technologies. Understanding what makes a building a good fit, timing

issues, and customer concerns are critical to further deployment of these technologies. The Company will look to define the characteristics that make for the successful deployment of air source heat pumps and VRF systems in commercial and industrial market segments for both heating and cooling applications.

#### *4.3.4 Expand Active Demand Response*

##### *4.3.4.1 Grow the C&I Connected Solutions (Active Demand Response) Program*

The Company implemented an active demand reduction program in 2019 based on the successful pilot initiated in 2017. The purpose of the demand response program is to reduce the system electrical demand on the grid during summer peak events. The active demand response program currently has two offerings: a targeted dispatch which generally targets a maximum of eight events per summer, and a daily dispatch with a maximum of 60 events.

The Connected Solutions program uses Curtailment Service Providers (CSPs) and existing energy efficiency sales teams to assess curtailment opportunities at a facility and deliver curtailment services to enrolled customers. The Company leverages the existing consultative sales approach employed for large customers to market to and recruit customers. CSPs then identify specific curtailment opportunities, as well as demand charge and Installed Capacity (ICAP) tag management opportunities and present a complete curtailment proposal to the customer.

Customers with interval meters, time of use rates, and demand charges are eligible for participation. Under the program, the Company calls an event when conditions occur that typically result in system peak. Customers and CSPs respond to dispatch signals or criteria specified by the Company, generally using a system peak trigger. Events are called the day before curtailment as needed. The goal of the offering is to call events at times of peak energy use, however daily peak calls (i.e. daily dispatch offering) may be able to access greater system benefits. For customers participating in ISO New England demand response markets, ISO New England event days are excluded from baseline calculations to avoid interfering with that program or penalizing customers for participating in both programs. The customer is incentivized to respond to event calls using performance-based incentives. Performance is measured against a baseline in alignment with ISO New England methodology.

The approach is technology agnostic. Customers can utilize single end use control strategies or combine multiple end uses and approaches to reduce demand when an event is called. Common technologies used by customers to participate in demand response include lighting with both manual and automated controls, HVAC with both manual and automated controls, process loads, scheduling changes, excess Combined Heat and Power (CHP) capacity, and energy storage. The active demand response offering provides value to large C&I customers and generates claimable benefits, primarily avoided capacity, transmission, distribution, and capacity demand reduction induced price effects.

The demand charge and ICAP tag management provide opportunities for direct bill savings to customers. This fully integrated approach relies on sales delivery teams promoting efficiency and active demand offerings to customers as they assess opportunities at customer facilities. This approach of using the existing efficiency delivery apparatus is key to the growth of C&I active demand reduction.

The robust relationships the Company has with target customers (typically large electric customers with interval meters, time of use rates, and demand charges) have been critical to the success of the program and are believed to be the source of forward progress on this new program.

Over the next three years, the Company will look to scale energy storage participation with various customer segments to reduce peak demand. As storage becomes more prevalent in the marketplace, maximizing the storage potential for demand response benefits the electrical grid to reduce peak demand, while still meeting customers' reliability needs.

#### *4.3.4.2 Explore Adding Electric Vehicle Charging to the Active Demand Response Portfolio*

Electric vehicles, similar to batteries, are becoming more prevalent in the market. They serve an opportunity to reduce peak demand on the electric grid. The Company will explore adding electric vehicle charging to the active demand response portfolio if it does not adversely affect the evaluation of the electric vehicle time of use charging pilot and appears to be a more cost-effective strategy than the current pilot.

#### *4.3.5 Explore Cutting-Edge Technologies*

##### *4.3.5.1 Explore Opportunities for Fuel Cells*

Fuel cells provide an alternative solution to traditional CHP, while offering different operational benefits that can appeal to specific customer segments. Fuel cells produce electric power using the chemical energy of a fuel stock to cleanly and efficiently produce electricity. Fuel cells work like batteries, but do not run down or need recharging. They produce electricity and heat as long as fuel is supplied. Some fuel cells can also transition to use hydrogen as the fuel stock, offering the potential for the fuel cell to be a renewable form of electricity and heat.

While it is possible to find a use for the heat produced in the fuel cell process, there are applications where fuel cells' operating characteristics are not intended for heat reclamation but rather provide resiliency or process-related benefit. The target customers for this technology are very large electricity users with critical reliability needs, such as large supermarkets and others with products or processes requiring continuous refrigeration. These customers can see multiple value chains from fuels cells while not necessarily having a parallel need for heating. For these customers, fuel cell technology holds the potential to maximize the efficiency benefit, as well as the demand reduction and other grid benefits.

The best opportunities for fuel cells are in applications with continuous electric power run cycles. Additional attention is needed to define this market, the unique and full value propositions for different customers including the performance characteristics needed, and the current state of the art of commercial systems. The Company commits to researching the performance, barriers and potential market size for fuel cell installation in Rhode Island, while continuing to work through the existing program delivery chain to serve customers now. The potential savings and benefits of fully realizing the potential of fuel cell technology both for CHP and non-CHP application are likely large. However, like CHP, the savings are uneven and hard to predict. Like traditional CHP, these projects involve substantial capital investments, complex technical requirements for installation, and long horizons for interconnection. As with the Company's approach to CHP systems, National Grid will use the Annual

Plans to identify and include fuel cell projects with realistic expectations of completion within the calendar year.

#### *4.3.5.2 Explore Incentives for Geothermal Systems*

Ground-source heat pumps (GSHP) can deliver the highest energy and emissions savings of all HVAC systems, but uptake is limited due to high upfront costs. Despite these upfront costs, GSHP systems can be economically competitive over the lifetime of the equipment. As such, National Grid will continue to explore appropriate incentive options for GSHPs in the next three years, while taking into consideration additional policy and regulatory matters such as non-pipeline solutions and utility-ownership of GSHP ground loops.

### 4.4 Cross-Cutting Programs

#### *4.4.1 Community-Based Initiative*

The Rhode Island Community-Based initiative is the Company's energy efficiency awareness campaign grounded in deep municipal engagement whereby local officials become energy efficiency advocates, driving residential and small business participation in programs. Since 2013, the Company has successfully partnered with 23 of the state's 39 municipalities through this initiative. This initiative has resulted in greater adoption of energy efficiency measures within the community while incentivizing towns and cities in Rhode Island to focus on energy efficiency. The Company will continue to grow its in-depth partnerships with Rhode Island municipalities in 2021-2023. In the past, the Company has focused on 4-5 communities each year. National Grid will continue to engage the same number in 2021 and look to expand this initiative in 2022 and 2023.

Building upon the success and lessons learned from this initiative, the Company plans to expand these activities under a Community Solutions initiative during 2021-2023. The Community Solutions initiative will look to develop new partnerships with other types of organized communities. This will include geographic communities that encompass multiple towns (e.g. Aquidneck Island), industrial and technology parks, and other organized communities such as industry groupings with common end uses (e.g. indoor agriculture). The Community Solutions model will allow the Company to take an effective process and set of solutions developed with municipalities and expand to non-municipal communities with similar characteristics. The Community Solutions initiative will provide customers the benefit of a single point of contact for the Company's varied energy solutions including energy efficiency, EVs, demand response and other new technologies, in addition to driving deeper and greater adoption of energy efficiency measures within a given community. Additionally, the Community Solutions initiative will allow the Company to develop longer term partnerships with communities and set long-term goals that will result in adoption of more comprehensive energy efficient solutions over a longer period of time.

The key elements of all Community Solutions engagements are:

- A single point of contact;
- A shared long-term goal for the partnership including quantifiable energy efficiency savings;
- Solutions designed to meet the needs of the community; and



- Opportunity for streamlined program delivery.

These partnerships offer opportunities for customer education on technologies and energy best practices. This education element will remain a key component of the initiative. Education supports increased participation by commercial customers in facilities upgrades, as well as employee and resident participation in residential offers.

The Company plans to continue to develop mechanisms to make information on energy efficiency participation and performance within the community easily accessible to support increased action. The Company will also explore opportunities for additional external funding to support communities to execute energy efficiency measures and solutions.

#### *4.4.2 Workforce Development*

The Company anticipates increasing its workforce development budget to roughly 1 percent of total portfolio expenditures to expand the size and skillset of the efficiency workforce over the next three years. The Company will utilize a three-prong approach. First, the Company will refine efforts to quantify current workforce gaps launched in 2020, including updating analyses amidst economic volatility. Second, the Company will, beginning in January 2021, facilitate training and other professional development opportunities such as mentorship programs to help fill these gaps using approaches tailored to match the need of the particular market. Third, the Company will expand our work with Community colleges, high schools (including vocational and technical schools), and middle schools to steer more candidates toward careers in energy efficiency and leverage existing educational and job training infrastructure within the communities National Grid serves to provide additional support to disadvantaged groups. The Company will coordinate with state and local authorities, including the Department of Labor and Training's Real Jobs Rhode Island program and Rhode Island Department of Education's PrepareRI initiative, to guide the development and delivery of these efforts and help promote existing solutions to reduce or eliminate duplication of effort and expenditures.

Workforce Development efforts will complement programmatic activities aimed at increasing the adoption of advanced technologies and unlocking deeper savings. In the commercial and industrial sector, this includes training on advanced controls for HVAC and lighting and growing the commissioning workforce. In the residential and income eligible sectors, this includes engagement around advanced HVAC and heat pump design and installation. To support all sectors, the Company will build relationships with schools and communities to help grow the constrained pipeline of trades that enable energy efficiency projects like HVAC technicians, electricians, and plumbers.

#### *4.4.3 Codes and Standards*

After demonstrating the viability of energy code advancement support in 2019-2020, the Company will expand its codes and standards work from its historical focus on code compliance to advance the development and adoption of progressively more efficient energy codes (including stretch codes), appliance/equipment efficiency standards, and existing building energy performance standards. National Grid will provide technical guidance to stakeholders, including Rhode Island's Building Code Commission and OER, the U.S. Department of Energy, and others to support the development of enhanced codes and standards at the state and national levels, with efforts weighted toward the

former. The Company is committed to collaborating with stakeholders on an updated incentive mechanism for codes and standards activities targeting inclusion in the 2022 Annual Plan.

The Company will also continue the industry training and outreach activities performed under its Code Compliance Enhancement Initiative (CCEI). Pending passage of new state appliance standards, the Company will investigate providing compliance assistance services for these products to relevant market actors using a similar approach to CCEI.

Reaching untapped markets and underserved customers through this work is a key element of the Company's overarching strategy of maximizing clean energy from energy efficiency. Codes and standards development support activities will typically be made at least one year in advance of the resulting generation of savings since multiple years typically separate development, adoption, and enforcement of these policies. The Company expects to report savings generated by this expanded codes and standards initiative starting in 2022 based on efforts undertaken in 2019-2020 to support the State's current building code update process.

## 5 Pilots, Demonstrations, and Assessments

The Company will continue to identify opportunities to identify, test, analyze, and deliver new and innovative solutions and services that are technically feasible, desirable to customers, and viable for inclusion in the portfolio. The Company plans to explore logical program extensions like new or substitute measures, adaptations to program or delivery approaches to drive incremental improvement, and completely new offers. While the Company is always looking for incremental improvements to existing programs and offerings, the process outlined here is specifically meant to mitigate risks around totally unproven technologies and offerings and will not be applied to existing programs. The Company will use evaluation studies, customer and market research, the Market Potential Study, and stakeholder feedback to identify areas for potential exploration and will prioritize efforts based on materiality, speed of development, and area of impact. Each customer segment and savings technology has unique barriers to adoption and will be assessed on a situational basis.

Table 13. Defining Pilots, Demonstrations and Assessments<sup>23</sup>

	Pilot	Demonstration	Assessment
<b>Defining Characteristics</b>	<ul style="list-style-type: none"> <li>• May result in independent program.</li> <li>• Long term and comprehensive engagement required to test and develop offering.</li> <li>• Market capabilities may need to be developed.</li> </ul>	<ul style="list-style-type: none"> <li>• Technology requires information gathering and field installations.</li> </ul>	<ul style="list-style-type: none"> <li>• Technology addresses program need that can't be met with other, more defined options.</li> <li>• Technology does not have a robust basis for energy savings.</li> </ul>
<b>Cost Effective Savings Information</b>	Estimated savings	Estimated savings	Unknown or limited
<b>Evaluation Options*</b>	Vendor or Independent	Vendor or Independent	Vendor, Independent, or Internal Review
<b>Savings Contribution to Shareholder Incentive</b>	No	Yes	No
<b>Cost Recovery from SBC</b>	Yes	Yes	Yes

\* Each evaluation option will include input from EERMC and OER. Evaluation option selected based on factors such as uncertainty of savings, scope of offering, and whether technology is considered a pilot, demonstration, or assessment.

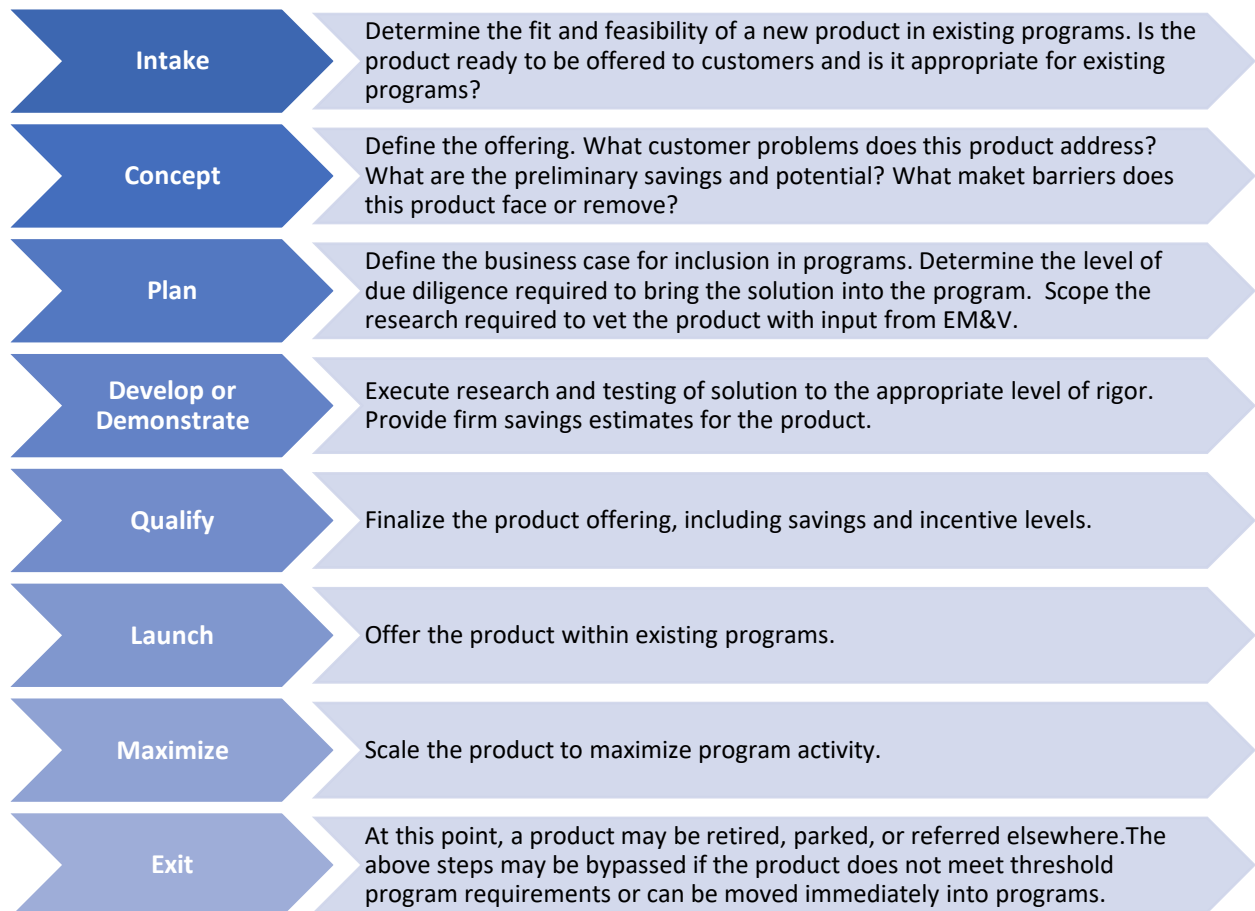
<sup>23</sup> Docket No. 4600-A PUC Guidance Document, October 27, 2017. Section V. Pilots.

## 5.1 Process to Identify and Develop Potential New Measures, Approaches, and Solutions

National Grid has a team that works within New England jurisdictions to identify and develop potential new measures, approaches, and solutions to compliment or grow programmatic offerings in efficiency, demand reduction, or optimization. In addition to a reactive response to new product and technology ideas, the Company is also proactive, participating in regional and national groups, maintaining relationships with efficiency program administrators (PAs) in other jurisdictions, and following national research. National Grid will use our regional footprint to attract and explore as many of these diverse ideas for new products, efficiency measures, demand reduction approaches, or optimization opportunities as possible. The Company will coordinate efforts with internal and external stakeholders, such as Evaluation Measurement and Verification (EM&V), Customer Energy Management (CEM), OER, and EERMC, at various points in the development process to ensure appropriately rigorous evaluation and attention is given to each pilot, demonstration, and assessment. Updates will be provided to OER and the EERMC consultant team on a quarterly basis and will solicit input during the Company’s collaborative annual planning process.

The Company will continue to systematically review opportunities to add to the portfolio through a consistent and transparent process, which involves the following general stages:

Figure 2. Process for Reviewing Potential Additions to the Portfolio



National Grid uses a standardized idea intake process to ensure consistency in review for inclusion in our program offerings. The **Intake stage** is designed to ensure product/technology market readiness and compatibility within the efficiency, demand reduction, or optimization regulatory and programmatic criteria. National Grid has taken a proactive stance to finding new ideas as well as continuing to examine ideas originating internally and externally by customers, vendors, other solution providers, or stakeholders.

After the Intake stage, the Company ranks ideas based on programmatic fit, savings feasibility, and initial impression. If the idea already fits within portfolio offerings it will be referred to the appropriate program. If there is not programmatic fit or feasible savings the idea may be moved to the **Retired stage** or placed in a **Parking Lot stage** until certain specified conditions change (e.g. if a solution requires AMI as a baseline condition the Company would hold off on that type of intervention until that functionality was closer to ready). National Grid has a broad and mature portfolio of energy efficiency and demand reduction programs and measures that can accommodate many manufacturer's products and solutions. Frequently vendors and manufacturers need assistance in finding where their products and services fit. When a technology has a fit in existing offerings the Company will move to **Refer** the requestor to the existing appropriate program offerings, thus exiting and concluding the process for that idea.

Ideas determined at a cursory ranking level to be a good fit and feasible can next progress to the **Concept** stage. In the Concept stage the Company will define what problems the product addresses, where the product is expected to fit within the programs and begin to develop research questions and requirements to help define what "success" means for a given product. It is important in this stage that market barriers are considered, which could mean barriers that could inhibit uptake of the solution, or barriers the solution addresses.

Vetted concepts will move next to the **Plan** stage. In the Plan stage, the Company looks to make a business case for a given idea by assessing and estimating potential unit savings, cost of savings, likely cost-effectiveness, and materiality at scale. National Grid determines the level of due diligence required, type of evaluation necessary, and proposes the appropriate pathway for inclusion in an Annual Plan, either as a pilot, demonstration, or assessment, as defined in Three-Year Plan Attachment 3. *Definitions*. The Company's EM&V team, EERMC, and OER will participate in the Plan stage. The Company will determine if the pilot, demonstration, or assessment will be evaluated using an independent evaluation or a vendor evaluation during the Plan stage, depending on the specifics of the technology.

The **Develop or Demonstrate** stage will finalize scope and execute the planned research as determined in the Plan stage. During this stage, all research questions identified in the Concept and Plan stages will be answered and savings estimates finalized. Where appropriate, the Develop or Demonstrate stage will include necessary market research, customer recruitment and installation, pre and post metering, analysis, and evaluation. If the technology will be assessed by an independent evaluation, EM&V and the independent evaluator will assist in designing the demonstration and then will evaluate the installations after they are complete.

The **Qualify, Launch, and Maximize** stages all relate to post-demonstrated program eligible products and offerings. The Company will Qualify the offer including developing incentive levels, marketing approaches, implementation considerations, IT system requirements, and more. At the Launch stage the product offering will be available to customers and then look to Maximize customer uptake and savings.

## 5.2 Regional Collaboration to Assess Potential New Measures, Approaches, and Solutions

One example of National Grid's regional collaboration is the participation in the Massachusetts Technical Assessment Committee (MTAC), who acts as the reviewing body to assess savings claims of potential new technologies for program inclusion, if cost-effective. MTAC is both a proactive and reactive body, consisting of key Massachusetts PA technical staff including several National Grid representatives working on both the MA and RI portfolios. The committee addresses residential, commercial and industrial technologies, drawing on the subject matter experts from the committee, PA staff, or outside expertise as necessary. It establishes threshold technical requirements to qualify products or processes as eligible for program incentives. It documents its findings in a standardized manner and disseminates them to the PA program managers, technical staff, account managers, and outside parties such as vendors, customers, and other interested parties, as appropriate. Any manufacturer or vendor of an emerging or newly commercialized efficiency technology can make a science-based case for acceptance of their product into the Program Administrator offerings.

## 5.3 Ongoing Pilots, Demonstrations, Assessments

This subsection will detail ongoing pilots, demonstrations, and assessments initiated in prior plans that will continue during at least part of the 2021-2023 plan term, which currently include:

- Gas Demand Response

The Company plans to target 40-45 dekatherms (DTh) of hourly peak reduction in the winter of 2020/21, with the below stated DR offerings. The Company continues to expect that the majority of these peak reduction savings will come from customers participating in the full day Extended Demand Response (EDR) pilot offering, with the remainder from customers participating in PPDR pilot offering. These demand reduction pilot offerings are described in detail below. The above stated target is dependent on enrollment levels and setting an appropriate incentive level to drive participation.

- **Continuous Energy Improvement Model for Strategic Energy Management**

The Company plans to continue Continuous Energy Improvement, previously known as the Strategic Energy Management pilot, through 2021. CEI is a set of processes for business energy management. The main goal of CEI is to activate industrial and manufacturing customers through a multiplicity of interventions, including individual and group coaching, to address operation and maintenance measures in the short term, pursue capital measures in the medium term, and, most critically, establish a culture of continuous improvement in energy performance over a longer period. The Company is also working to test new energy management frameworks for commercial and industrial customers, described in Section 4.3.1 based on lessons learned in the first year and a half of this ongoing pilot.

- **Network Lighting Controls Plus HVAC**

The Company expects the Network Lighting Controls Plus HVAC demonstration to continue into 2021. The Company concluded the initial market readiness portion of the demonstration and is progressing into customer installations and M&V. These projects are expected to have a long lead time, so customer recruitment, installations, and savings assessment will continue into at least 2021.

- **Kitchen Exhaust**

In 2020 the Company researched three commercial kitchen products: demand control ventilation, electrostatic filtration, and energy recovery. The initial research indicated specific market barriers for each of the measures, as well as target customer characteristics. Because the National Grid has already incentivized a number of kitchen exhaust demand control ventilation projects in the past, the Company has decided to move kitchen exhaust demand control directly into the programs to be offered at scale to customers instead of continuing as a demonstration. The company will continue to pursue customer installations and M&V for electrostatic filtration and for energy recovery in 2021. The continued demonstration will prioritize installations at facilities with existing DCV to examine the interactivity between these three products.

- **Gas Heat Pumps**

In 2020 the Company researched available and forthcoming gas heat pump technology for applicability in the C&I sector. Initial research indicated some examples of positive customer economics and comparable system performance to existing heating and cooling systems. Further, this research indicated some opportunities for new product introduction for gas heat pumps in the Residential sector. As such, the Company is proposing to expand gas heat pump research and looks to demonstrate installations in both the Residential and C&I sectors in 2021.

#### 5.4 Anticipated Areas of Exploration for Future Pilots, Demonstrations, Assessments

The Company will investigate new solutions and services for customers across all sectors, segments and program intervention types, in accordance with the process described above. Additionally, the Company will look for opportunities for new intervention types to continue to maintain our leadership status and innovation, while continuing to support state priorities.

The Company will continue to opportunistically collect solutions as they are raised from internal and external stakeholders, as well as seek out new solutions in emerging areas and based on the needs and gaps of the programs. All new products and solutions will be prioritized and examined through the process laid out above.

##### 5.4.1 Residential, Multifamily, and Income Eligible Areas of Exploration

As identified in the plan, the Company expects to turn towards energy solutions with leaner savings and greater barriers as lighting opportunities diminish. This term the Company will explore solutions that offer new HVAC system options for customers, such as gas heat pumps, solutions that improve upon existing program offerings, such as alternative air sealing and insulation products, as well as ways in which existing customer solar can be used to improve the grid, as with the solar inverter direct load control demonstration. Especially since these solutions may come at a higher price point, it's important that the measures are vetted and barriers identified and eased prior to offering the solution to customers at scale.

Table 14. Residential, Multifamily, and Income Eligible Areas of Exploration

Electric	Area of Exploration	Gas	Area of Exploration
<b>Air to Water Hydronic HPs</b>	New or Substitute Product	<b>MF Shared Laundry</b>	Existing Buildings
<b>Lighting Controls</b>	New or Substitute Product	<b>Radiator Upgrade &amp; Controls</b>	Existing Buildings
<b>Pre-Fab Energy Retrofits</b>	Existing Buildings	<b>Gas HPs</b>	New or Substitute Product
<b>Hybrid Geothermal HPs</b>	New or Substitute Product	<b>PV Inverter Connected Solutions</b>	Existing Buildings

#### 5.4.2 Commercial & Industrial Areas of Exploration

The Commercial and Industrial programs face similar broad challenges as residential, multifamily, and income eligible programs- future energy reduction opportunities may necessarily come with higher barriers and costs compared to prior years. The Company is exploring new ways to work with customers to achieve deeper savings, as in the Continuous Energy Improvement demonstration. National Grid is broadening our performance optimizations options with solutions like the enzyme-based HVAC coil cleaning product and refrigeration leak repair. The Company is examining how to remove market barriers for new control options, like integration of HVAC controls with network lighting controls, to provide a deeper level of savings with customers. The Company will also look to solutions that may be implemented now and enable greater demand response and energy savings opportunities in the future, such as HVAC Automation for Demand response. Some of the forward-looking solutions require the Company to revisit long standing policies, such as the policy not to incentivize submetering, in order to enable future savings opportunities.

Table 15. Commercial & Industrial Areas of Exploration

Electric	Area of Exploration	Gas	Area of Exploration
<b>Enzyme-based HVAC Coil Cleaning</b>	Existing Buildings	<b>High Efficiency DOAS</b>	Existing Buildings
<b>Refrigeration Leak Survey &amp; Repair</b>	Existing Buildings	<b>Radiator Upgrade &amp; Controls</b>	Existing Buildings
<b>HVAC Automation</b>	New or Substitute Product	<b>Gas HPs</b>	New or Substitute Product
<b>Use of Submetering to Support EE</b>	Enabler	<b>PV Inverter Connected Solutions</b>	Existing Buildings



## 6 Evaluation Measurement and Verification

### 6.1 EM&V Process and Outlook for the Next Three Years

Evaluation, Measurement & Verification (EM&V) provides independent verification of impacts to ensure that savings and benefits claimed by the Company through its energy efficiency programs are accurate and credible. In addition, EM&V provides insight into market characteristics and guidance on program design to support continuous process improvement of energy efficiency programs.

The Company hires third-party firms to conduct evaluation using industry standards and protocols such as the International Performance Measurement and Verification Protocol (IPMVP) issued by the Efficiency Valuation Organization, Department of Energy's State and Local Energy Efficiency Action Network's Guide for States: Evaluation, Measurement, and Verification Frameworks and DOE's Uniform Methods Project evaluation guidelines. The types of evaluation may include (but not limited to) the following:

- **Impact Evaluations:** Comparisons of claimed savings against actual realized savings using methods such as literature review, billing analyses, engineering methods and onsite data logging as a means of verification.
- **Process Evaluations:** Broad examinations of existing practices, such as program delivery methods, for the purpose of gathering information to draw conclusions about effectiveness of existing processes, highlight best practices, and offer suggestions for future improvements.
- **Market Assessment Studies:** Broad studies aimed at assessing changes in market conditions, such as evolving adoption rates of current energy efficiency technologies.
- **Net-to-Gross Evaluations:** Studies aimed at quantifying the rate of free-ridership and spillover associated with energy efficiency participants and non-participants. The free-ridership rate is the percentage of savings attributable to participants who would have installed the measures in the absence of program intervention while spillover includes the effects of two components:
  1. Participants in the program who install additional energy efficient measures outside of the program as a result of participating in the program, and
  2. Non-participants who install the installation of energy efficient measures as a result of being aware of the program

The evaluation process is managed by the Company, in consultation with the EERMC and OER. The EERMC and OER follows each study closely and is involved in planning, work plan development, and results review. The results of the studies are used to update the benefit-cost calculations during

planning. The study methodologies and savings assumptions are documented in the Rhode Island Technical Reference Manual<sup>24</sup> and reports are published on the EERMC’s website.<sup>25</sup>

In the next three years, the Company’s EM&V efforts will continue to focus on evaluating Rhode Island customer projects, markets, and energy efficiency programs, while leveraging as many resources as possible from evaluation studies in other states where National Grid operates to maximize value for ratepayers while minimizing costs. Evaluation tasks that are planned to be conducted regionally or in conjunction with other National Grid jurisdiction will be identified following guidelines from National Grid Piggybacking Diagnostic Study<sup>26</sup>. This study was completed in Q1 2020 and provided guidance on when it is appropriate to “piggyback” or combine Rhode Island evaluation efforts with Massachusetts studies or adopt Massachusetts results as a proxy for RI values versus conducting stand-alone Rhode Island studies.

The study areas to be proposed in annual plans during the course of 2021-2023 will be chosen based on a number of factors including the relative amount of savings in that program or end use, the date and relative precision of the most recent evaluation study, and the available evaluation budget. Specific studies to be conducted in each program year will be determined by the Company, with input from EERMC and OER, during the annual planning process. The list of planned studies may be modified as the year progresses, and different evaluation priorities are identified. Some key research questions include issues surrounding equity, updates to the building code, demand response, and continued improvement of existing programs. Please refer to the 2021 Annual Plan for detailed descriptions of the studies planned for the coming year.

As described above, the Company’s EM&V team will provide guidance beginning at the Plan stage for all pilots, demonstrations, and assessments, to ensure design and data collection are suitable to allow for effective evaluation of the pilot, demonstration, or assessment. In cases where an independent evaluation is appropriate, the EM&V team will run the evaluation with the assistance of a third-party evaluation vendor.

## 6.2 EM&V Studies Influencing Savings and Programs in the Three-Year Plan

The table below indicates studies that influenced savings and program design in the Three-Year Plan. Note that some listed studies intended to inform the three-year planning process were delayed from their anticipated completion date due to the ongoing COVID-19 pause in many EM&V studies and program activities. EM&V activities such as on-site data collection and customer surveys have been hampered due to COVID-19. At the beginning of the pandemic, the company put a pause on data collection efforts. Efforts have since resumed, but in a limited fashion, at a slower pace, and with a lower response rate from customers.

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<sup>24</sup> Rhode Island Technical Reference Manual 2020 Program Year <http://rieermc.ri.gov/wp-content/uploads/2019/11/ngrid-ri-2020-trm.pdf>

<sup>25</sup> EM&V Reports are available at <https://rieermc.ri.gov/plans-reports/evaluation-studies/>

<sup>26</sup> This study can be found at: <http://rieermc.ri.gov/wp-content/uploads/2020/09/rhode-island-piggybacking-diagnostic-study-final-final-report-20200114.pdf>

Table 16. Rhode Island EM&V Studies that Influenced the 2021-2023 Energy Efficiency Plan

Sector	Study name	Description	Study Completion Date (*delay due to COVID)
Res	RI-20-RX-EWSFImpact – Impact Evaluation of EnergyWise Single Family Program	The study verified energy savings estimates for measures offered through the EnergyWise Single Family program. The results of this study were used to update savings assumptions for each electric, natural gas, propane and oil measures and/or measure groups based on installations from 2017 and 2018 period.	September 2020
Res	RI-20-RX-EWSFProcess – Process Evaluation of EnergyWise Single Family Program	The study assessed the overall effectiveness of EnergyWise Single Family program delivery and new program elements (i.e. 100% landlord incentive and the Department of Energy home energy scores). This study also assessed free-ridership/spillover rates, offering a qualitative complement to the EnergyWise Single Family impact evaluation.	September 2020*
Res	RI-20-RX-EWMFImpact – Impact Evaluation of Multifamily Program	The study verified energy savings estimates for measures offered through the Multifamily program. The results of this study were used to update savings assumptions for electric, natural gas, propane and oil measures based on installations from 2017 and 2018 period.	September 2020
Res	RI-20-RX-IEMFImpact – Impact Evaluation of Income Eligible Multifamily Program	The study verified energy savings estimates for measures offered through the Income-Eligible Multifamily program. The results of this study were used to update savings assumptions for electric, natural gas, propane and oil measures based on installations from 2017 and 2018 period..	September 2020
Res	RI-20-RX-EWMFProcess – Process Evaluation of Multifamily Program	The study examined customer participation, vendor participation, and overall program processes of the Multifamily program. The evaluation also assessed free-ridership/spillover rates, offering a qualitative complement to the Multifamily impact evaluation.	September 2020*
Res	RI-20-RX-IEMFProcess – Process Evaluation of Income Eligible Multifamily Program	The study examined landlord and tenant participation, vendor participation, and overall program processes of the Income-Eligible Multifamily program. The study assessed effectiveness of program delivery procedures and determined barriers to program delivery and	September 2020*

Sector	Study name	Description	Study Completion Date (*delay due to COVID)
		participation, offering a qualitative complement to the Income-Eligible impact evaluation.	
<b>Res</b>	RI-20-RX-HERImpact – Impact Evaluation of the Home Energy Reports Program	The study verified electric and natural gas savings for each group of participating customers in the HER program for periods 2017 through 2019. The study also assessed how the HER program impacts participation in other energy efficiency programs.	<b>August 2020</b>
<b>Res</b>	RI-20-RE-UpstrLight – Residential Lighting Market Assessment	This study assessed 2019 shelf stocking data analysis to inform planning activities for both retail and direct install lighting in 2021 and beyond.	<b>August 2020</b>
<b>Res</b>	RI-20-RE-UpstrLight – Residential Lighting Market Assessment1	This study assessed 2019 lighting sales data to inform planning activities for both retail and direct install lighting in 2021 and beyond.	<b>Expected October 2020</b>
<b>Cross-cutting</b>	RI-18-XX-Piggybacking – Piggybacking Diagnostic Study	This study assessed the validity and strategic value of Rhode Island’s historic practice of using evaluation results from other states and/or leveraging evaluation studies from other states with a Rhode Island sample. This study identified key parameters for consideration when determining if a Rhode Island-specific evaluation should be undertaken. It outlined best practices for utilizing data from other states, either in combination with Rhode Island data or through direct adoption.	<b>January 2020</b>
<b>Cross-cutting</b>	RI-19-XX-DataCollect – Market Characterization Data Collection Study	This study collected primary data in preparation for a potential study in Rhode Island. This effort included C&I on-site data collection at 87 customer sites. The potential study was managed by the Office of Energy Resources.	<b>March 2020</b>
<b>Cross-cutting</b>	RI-20-XX-CSNC – Residential and Commercial New	The study will calculate the savings projected to be achieved by the Code Compliance program for the 2021-2023 period by updating the 2017 residential	<b>July 2020</b>

Sector	Study name	Description	Study Completion Date (*delay due to COVID)
	Construction and Code Compliance Study	and commercial code compliance potential savings and attribution studies. The methodology used will be determined when the policy decision has been made on whether or not to deem savings for the Code Compliance program.	
<b>Cross-cutting</b>	RI-19-XE-HPmarket – Heat Pump Market Assessment	The study assessed the status of the heat pump market and the potential for future growth of heat pumps in Rhode Island for displacing electric heat and for fuel switching for space heating and resulting cooling over the next five years (2020-2024). The study collected data from heat pump owners, contractors, manufacturers and distributors and reviewed existing research and evaluation in the small commercial and residential markets to understand the current status of both supply-side and demand-side markets, trends, and perceptions. The study did not reach the targeted number of completes for the C&I research area and this hindered the studies ability to complete the potential heat pump growth portion of the study for the C&I sector of the study. One of the primary drivers for the challenges with the C&I surveys is believed to be due to COVID and many C&I contacts working from home during the past summer.	<b>Expected October 2020*</b>
<b>Cross-cutting</b>	RI-19-XX-M&VLegislation – Legislated M&V Study	The study will verify claimed energy savings from the Company’s energy efficiency programs and review the Company’s evaluation process as required by the M&V legislation in Rhode Island. The Company is providing full cooperation and will carefully review all recommendations and implement those that are feasible when developing future evaluations. This study is managed by the OER.	<b>Expected December 2020*</b>
<b>C&amp;I</b>	RI-20-CG-CustGasPY18 – Impact Evaluation of PY2018 Custom Gas Installations	The study will verified natural gas savings estimates for a sample of custom gas projects through site-specific inspection, metering, and analysis. The results of this study were used to determine the realization	<b>September 2020</b>

Sector	Study name	Description	Study Completion Date (*delay due to COVID)
		rates for custom gas energy efficiency offerings based on installations from 2018.	
<b>C&amp;I</b>	RI-19-CE-CustElec – Impact Evaluation of PY2018 Custom Electric Installations	The study will verify electric savings estimates for a sample of both lighting and non-lighting custom electric projects through site-specific inspection, metering, and analysis. The results of this study will be used to determine the final realization rates for custom electric energy efficiency offerings based on installations from 2018. Due to a pause in on-site work as a result of COVID concerns, the results delivered in September and applied in the Three-Year Plan were based on desk reviews of the 2018 installations. National Grid is planning to conduct on-site M&V in 2020 for these installations, when feasible after accounting for COVID constraints.	<b>September 2020</b>
<b>C&amp;I</b>	RI-20-CX-FRSO – Commercial and Industrial Free-Ridership and Spillover Study	The study will assess free-ridership and spillover values based on behavior of both participants and nonparticipants of C&I energy efficiency programs. The results will be used to quantify the net impacts of C&I electric and natural gas energy efficiency programs in Rhode Island. This study will include both custom and prescriptive measures from new construction and retrofit programs.	<b>Expected October 2020</b>
<b>Demo</b>	RI-20-CX-SEM – Strategic Energy Management Demonstration Evaluation	The study will review the methodologies and processes used to obtain and calculate the savings claimed. The results will be used to assist in monitoring and making continuous improvements to the demonstration.	<b>Expected October 2020</b>

## 7 Coordination with Other Energy Policies, Programs, and Dockets

Continuing to provide the best value to Rhode Island ratepayers necessitates that the Company coordinate with other parts of the energy system, rather than pursuing savings programs and strategies in isolation. This Three-Year Plan will be implemented in coordination with other Company filings and activities, described below. Efforts have also been taken to ensure the Three-Year Plan is aligned with relevant state policies and objectives, with specific coordination opportunities detailed below.

### 7.1 System Reliability Procurement and Infrastructure, Safety and Reliability

The Company will submit its System Reliability Procurement (SRP) 2021-2023 Three-Year Plan for the PUC's review and consideration in a separate filing, to be filed in November 2020. The SRP Three-Year Plan describes the strategies, goals, and funding request for SRP. The purpose of SRP is to identify targeted alternative solutions, through customer-side and grid-side opportunities, for the electric and gas distribution systems that are cost-effective, reliable, prudent and environmentally responsible and chart a path to lower supply and delivery costs for customers in Rhode Island.

The SRP Plan and its Non-Wires Alternative (NWA) proposals are separate and unique from the Energy Efficiency Plan customer measures because NWA projects are targeted solutions for electric grid reliability, as compared to energy efficiency's goal of bulk energy savings from customers for the regional electric grid. These two main distinctions are illustrated by a difference in scope of area (i.e. feeder- or substation-level for SRP versus state or regional for energy efficiency), and in scope of intent (i.e. electric grid reliability for SRP via NWA projects versus energy savings via energy efficiency measures and programs). In addition, in the 2021-2023 SRP Three-Year Plan, the Company will introduce efforts to address Non-Pipeline Alternatives for the first time by performing further background research on NPAs, exploring how NPAs align with Company policy and the LCP Standards, and building out the NPA program over the three years. Analysis from this process will be used by National Grid's energy efficiency team to determine if state-wide gas demand response offerings, separate from and additional to localized gas demand response projects within SRP, should be piloted in 2023 or beyond. National Grid's energy efficiency team will provide a summary of the results of analyses and/or pilots for state-wide gas demand response in the 2021-2023 year-end reports.

The Company continues coordination between SRP and customer offerings in the Energy Efficiency Plan to ensure that efforts, projects, and programs are optimal and not duplicated. As is the practice now and going forward, energy efficiency and demand response are examined during National Grid's distribution planning process as part of the development of NWA opportunities. This assessment of energy efficiency and demand response for NWAs occurs before the Company goes out to market with requests for proposals (RFPs) for solution bids from third-party solution providers. Energy efficiency or demand response may be deployed as part of an NWA solution so long as the targeted energy efficiency or demand response programs are least-cost, cost-effective, reliable, and technically feasible for the electric system need. The Company ensures cost-competitive utilization of targeted active DR by evaluating market prices and comparing third-party active demand response proposals to the incremental costs of targeted active DR which would build upon National Grid's existing ConnectedSolutions program.

Additionally, the Company also coordinates communications between the SRP Technical Working Group and the Energy Efficiency Technical Working Group, with members of each team participating in counterpart TWGs. The Company will also work with these groups and the PUC on changes in filing schedules to better align the SRP filing with the Infrastructure, Safety and Reliability (ISR) filing.

## 7.2 Heating Sector Transformation and National Grid's Northeast 80x50 Pathway

In an Executive Order issued on July 8, 2019, Governor Raimondo directed the Division of Public Utilities and Carriers (DPUC) and Office of Energy Resources (OER) to lead a Heating Sector Transformation (HST) with the goal of reducing emissions from the heating sector while ensuring Rhode Islanders have access to safe, reliable, and affordable heating. The HST recommendations were to be provided to the Governor by April 2020 and identify the energy, economic, and environmental opportunities and challenges posed by Rhode Island's heating sector in the face of a rapidly changing climate.<sup>27</sup>

The HST initiative resulted in an analysis conducted by the Brattle Group, on behalf of the DPUC and OER, outlining several solutions for decarbonizing the heating sector, described in the April 2020 report "Heating Sector Transformation in Rhode Island: Pathways to Decarbonization by 2050."<sup>28</sup> The report summarized opportunities in three broad categories relevant to the Company's efficiency planning: (1) reducing energy needs by improving building energy efficiency; (2) replacing current fossil heating fuels with carbon neutral renewable gas or oil; and (3) replacing current fossil-fueled boilers and furnaces with electric ground source or air source heat pumps powered by carbon-free electricity.

Additionally, in June 2018, the Company released the Northeast 80x50 Pathway<sup>29</sup> (Northeast Pathway) whitepaper that highlights National Grid's approach to reduce greenhouse gas emissions below 1990 levels while supporting economic growth, maintaining affordability, and providing customer choice. The Northeast Pathway and HST are aligned in several key areas related to energy efficiency, including the need to transform heating, in part, by increasing rates of efficiency retrofits and deep conversions of delivered-fuel heat to electric heat pumps.

Efforts in support of HST and the Northeast Pathway in this Three-Year Plan will include a continued focus on weatherization and building efficiency to prepare for efficient heating system replacement in the future. Going forward, the Company will continue to work with the state to analyze the steps needed to further the second two heating sector transformation objectives and the electrification transitions identified in the Company's Northeast Pathway analysis.

## 7.3 Heat Pump and Delivered Fuel Policy and Objectives

Per the PUC's ruling on the 2020 Annual Energy Efficiency Plan in Docket 4979, the Company may not offer incentives for electrification of heating for delivered fuel customers in 2020. The Company will not offer incentives for these measures in 2021 and will continue to pursue opportunities to engage, including supporting OER's efforts to advance the heat pump market and supporting weatherization for delivered fuel customers. The Company looks forward to working with stakeholders and policy makers

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<sup>27</sup> Executive Order 19-06, <https://governor.ri.gov/documents/orders/Executive%20Order%2019-06.pdf>

<sup>28</sup> Heating Sector Transformation in Rhode Island, Pathways to Decarbonization by 2050. <http://www.energy.ri.gov/documents/HST/RI%20HST%20Final%20Pathways%20Report%204-22-20.pdf>

<sup>29</sup> National Grid's Northeast 80x50 Pathway, <https://www.nationalgridus.com/News/Assets/80x50-White-Paper-FINAL.pdf>



to identify the appropriate role and funding mechanisms for an electric utility to play in this transition and then executing on an approved pathway. In addition, pending availability of Regional Greenhouse Gas Initiative (RGGI) funds, the Company plans to combine our delivery pathways and standard air source heat pump (ASHP) incentives with RGGI-fund supported enhanced incentives for delivered fuel displacement in the near term until a more permanent mechanism to support these offerings is possible.

### *7.3.1 Heat Pump Implementation, and Education*

The programs and strategies included in the Three-Year Plan will support the installation of heat pumps for heating and cooling for customers that utilize electric resistance heating. In an effort to further develop this market, the Company will continue to seek ways to educate consumers and installers on the associated cost savings from efficient heat pumps as compared to electric resistance heating. The Company will coordinate its efforts with state agencies to realize the opportunities related to heat pumps identified in the Heating Sector Transformation report and Company's Northeast Pathway study described in Section 7.2.

### *7.3.2 Delivered Fuels*

The Company supports the state's objective to provide energy efficiency for delivered fuel customers and is working to serve these customers in multiple ways. Income eligible customers in single family and multifamily homes receive the same services as electric and gas customers, with no customer-incurred costs. The Company plans to continue these services over the next three years. For non-income eligible delivered fuel customers in single family (one- to-four-unit) and multifamily (five-plus unit) homes, the Company will continue to support weatherization, with financing available via the HEAT loan.

The Company will not offer additional energy efficiency surcharge funded incentives for customers to convert from delivered fuels to heat pumps per the aforementioned PUC ruling in Docket 4979; however, National Grid will continue to seek ways to support the state, including OER, in providing opportunities for delivered fuel customers to utilize efficient heat pumps for their heating needs. For example, the Company will coordinate with OER to support use of RGGI funding to offer enhanced heat pump installations for customers using those systems to displace the use of delivered fuels.

## **7.4 Power Sector Transformation**

Governor Raimondo tasked the PUC, OER, and DPUC with developing a new regulatory framework for the state's electric system, which resulted in the Rhode Island Power Sector Transformation (PST) initiative in Dockets 4770 and 4780.<sup>30</sup> This initiative consists of four parallel work streams: 1) utility business model, 2) distribution system planning, 3) grid connectivity functionality, and 4) strategic electrification of transportation and heating. The Company will continue to incorporate outcomes of this initiative into the final Three-Year Plan and subsequent Annual Plans. This includes the Company's active demand response program, which will begin educating customers on real-time management of energy consumption to prepare them for future tools that may be available through grid modernization. These efficiency programs are planned in coordination with the Company's advanced metering functionality (AMF) and grid modernization efforts, discussed subsequently.

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<sup>30</sup> RI PUC Docket 4770: <http://www.ripuc.ri.gov/eventsactions/docket/4770page.html>  
RI PUC Docket 4780: <http://www.ripuc.ri.gov/eventsactions/docket/4780page.html>

#### 7.4.1 *Advanced Metering Functionality and Grid Modernization*

In addition to its energy efficiency planning, the Company also has teams actively working on grid modernization plans (GMP) and AMF. These three teams work closely to ensure the Company has a comprehensive view of the benefits and impacts of the roll out of grid modernization and AMF. These programs will provide increased visibility into customer usage (from AMF) and insights into the operation of the local distribution system (from grid modernization investments, including AMF). This will allow for improved efficiency program marketing, more personalized savings offers, more targeted measure deployment, and optimization of demand side resources. The Market Potential Study included scenario analysis that explored the impact of AMF and time-of-use rates on energy efficiency programs, specifically demand response programs.

The Company is in the process of initiating a GMP and AMF proceeding in Fall 2020. The Energy Efficiency team will continue to coordinate with the GMP and AMF teams to ensure that the Company has a comprehensive view of the benefits and impacts of the roll out of grid modernization and AMF. Specifically, the Company is working to ensure that the benefits estimated in the GMP and AMF Benefit Cost Analyses (BCA) would constitute a new baseline of savings upon which future energy efficiency goals are based and to ensure energy savings are not double counted. In addition to the calculation of benefits, the Company will also examine any possible overlap of costs.

If AMF is launched, the Company still anticipates energy efficiency programs would continue to offer customer incentives for in-home/in-business technologies, such as Wi-Fi programmable thermostats and smart appliances to drive the achievement of additional incremental energy savings to meet annual energy savings targets. The Company recognizes that the future energy efficiency plans would include the total participant costs (i.e., ratepayer-funded rebates and customer contribution costs) associated with such measures in its BCA methodology.

While the Energy Efficiency, GMP, and AMF teams have been coordinating closely through the filing process, the need to bifurcate savings and costs associated with these plans would not arise until grid modernization and AMF investments are approved, deployment begins, and data is collected and visualized for customers in later years. Therefore, the energy efficiency team anticipates that should the PUC approve AMF, the important overlap and distinction between GMP, AMF, and energy efficiency would most likely not arise until after (or, at a minimum, in the later years) of this Three-Year Plan. At that point the Company anticipates undertaking a more robust discussion of evaluation methodologies and other key considerations. In the interim, the Company will continue to work with the TWG to ensure all stakeholders are aware of any future transition.

#### 7.5 *Rate Cases*

The Energy Efficiency program teams will continue to coordinate with the electric and gas businesses as they develop new rate cases during the term of the Three-Year Plan. For example, the Company currently earns a performance incentive for Annual MW Capacity Reduction from active electric demand response that was included in an electric rate case. In the future, the Company may revisit whether this performance incentive is more appropriate to include as part of annual energy efficiency programs rather than a rate case.

## 7.6 Integration with Renewables

As Rhode Island moves toward a clean energy future per Governor Raimondo and the General Assembly, National Grid will work to better integrate its energy solutions offerings. In addition to energy efficiency and demand response, this includes electric vehicles, renewable technologies, and battery storage. National Grid will work to create a seamless experience for the customer to select from these diverse solutions. As demonstration of these technologies and programs is necessary to determine effectiveness, benefits, and ease of use, this will require continued work to align Company funding for efficiency and the current renewables programs (net metering, and Renewable Energy Growth). Working with both internal and external stakeholders, the Company will identify new opportunities to enable the delivery of, and benefits from, integrated energy efficiency and renewable solutions.

## 7.7 Codes and Standards Program and Accounting for New Codes and Standards

Accelerating the state's adoption of, and compliance with, residential and commercial building energy codes helps ensure that energy efficiency is incorporated into buildings when it is least costly – at the time of construction or alteration. The Company has operated a Code Compliance Enhancement Initiative (CCEI) since 2013, one of the country's only utility programs of its kind. From 2019-2020, the Company also provided technical support to the state's energy code update process for the first time. Both code compliance and development support activities will continue in the next three years, with the latter scaling up to build upon the 2019-2020 demonstration.

As Rhode Island adopts more stringent energy codes and transforms the new construction market, the Company will continue to support the state's aggressive energy policies in promoting the next-generation building sector. The Company will continue to work with state and local building departments and OER to update and implement the state's residential and commercial stretch codes. The CCEI initiative will offer trainings and assistance related to promoting compliance with the stretch code as well as preparing the market for the zero-energy building future. The initiative will also investigate opportunities to support increased use of the stretch code.

The Company will also continue to work with OER, the Appliance Standards Awareness Project (ASAP), and Northeast Energy Efficiency Partnerships (NEEP) to provide technical support for the adoption of state-level appliance standards and investigate providing analogous support of federal appliance standards.

# MULTI-YEAR STRATEGIES

## 8 Multi-Year Strategies

To some degree, all program strategies are multi-year strategies. Marketing investments in a particular year may be expected to drive customer awareness, engagement, and program participation in that year, but are also designed and intended to drive broader awareness of general programmatic offerings and benefits and reduce customer acquisition costs in future years. Similarly, workforce development efforts are intended to support near term vendor capacity expansion while also positioning the industry for longer term growth.

This being said, the Company has identified two specific program strategies that it believes warrant specific attention within the multi-year strategies section of this Three-Year Plan:

**Combined Heat and Power (CHP) Projects:** By their very nature, CHP projects require long sales cycles, have an unusual degree of implementation and other project uncertainties, and are frequently individually large enough that specific project risk cannot be managed through a portfolio approach. As such, the Company has proposed including best estimates of anticipated large projects within the illustrative annual savings goals and budgets included within Three-Year Plans, and refreshing these estimates within each Annual Plan as projects included with binding Annual Plan savings targets and budgets will, by definition, be more certain by the time of each year's Annual Plan submission.

**Rhode Island Infrastructure Bank (RIIB) Transfers:** Company support for RIIB and the Efficient Buildings Fund remains a policy priority of the Rhode Island state government and other key stakeholders. Temporal disconnects are likely between the time Company transfers to RIIB are budgeted and effectuated to support RIIB financing requirements, and the period in which those transfers will likely lead to claimable savings and benefits. This requires a multi-year approach to planning for and justifying these expenditures. To this end, the Company has included current expectations of anticipated multi-year savings linked to specific projects over the course of this Three-Year Plan associated with the requested 2021 RIIB transfer of \$5 million in this section and anticipates supporting future requests in ensuing Annual Plan budgets.

This subsection further describes these areas and strategies and proposes a path forward for including funding and savings expectations associated with strategies in both illustrative Three-Year Plan goals and budgets, as well as binding Annual Plan goals and budgets.

### 8.1 Combined Heat and Power

Combined Heat and Power (CHP) projects involve long cultivation, planning and design timelines, and complex approval processes. CHP projects are a cost-effective way to reduce operating costs, increase resiliency, and decrease greenhouse gas emissions. Historically, the CHP program has resulted in significant energy savings to Rhode Island customers. Key to this success is National Grid's go-to-market strategy that includes a CHP manager, sales and technical staff, and technical vendors, all of whom play a role in identifying opportunities and delivering projects. In order to realize additional CHP savings, National Grid will focus its outreach on customer segments that have been identified as suitable

candidates for CHP, such as large industrial facilities that have sufficient and coincident thermal and electric loads, large multifamily units that have significant and steady thermal loads, and wastewater treatment facilities or agricultural operations that can leverage opportunity fuels. Additionally, the Company will look to increase the number of smaller CHP units, and target facilities and places of business that can leverage opportunity fuels or renewable natural gas (e.g. methane from a landfill) as a primary or secondary fuel source.

CHP projects also present challenges from an implementation perspective. These projects involve substantial capital investments, complex technical requirements for installation, and long time horizons for interconnection. Taken as a whole, the lead times for CHP projects can range from 12-36 months from the initial scoping until before the equipment is installed and interconnection is complete (and therefore full savings can be claimed by the Company). Additionally, incremental regulatory requirements associated with the approval and payment of the significant incentives typically associated with larger CHP projects introduces a level of timing and completion uncertainty that is uncommon in other areas of the Company's energy efficiency portfolio. These complexities introduce challenges in predicting the specific year in a forward looking, multi-year plan in which savings will be realized within a year. Additionally, given the large size and associated savings of many individual CHP projects, a delay in any one project could lead to a loss of planned savings that is unlikely to be made up for with other, non-CHP projects. For example, a large CHP project may account for as many as 345,000 net Lifetime MWh of anticipated savings (representing 20%-30% of the C&I sector anticipated savings in any given year), at an average cost of \$300 per MWh. If the project is delayed, there is little chance that other projects can be completed in time to make up for the anticipated 345,000 Lifetime MWh in savings (or associated cost) within an annual plan year if those projects were not already in development.

In order to provide incremental transparency and visibility into the state of the CHP project pipeline, the Company proposes a two-fold approach to CHP project planning:

- Forecasts, including those in Table 17 below, within each three-year plan of specific, large CHP projects that the Company believes have a reasonable likelihood of moving forward within the plan term. Anticipated savings and incentives spend associated with these projects are also included in the illustrative annual savings goals and budgets embedded in each three-year plan.
- Inclusion of expected savings and benefits, and the specific budget required to realize those outcomes, within each annual plan's binding savings and budget targets for those projects the Company anticipates will achieve milestones necessary to claim savings and associated benefits within the term of that annual plan.

National Grid will only include CHP projects in each annual plan's savings target and budgets that the Company believes have a good likelihood of achieving completion milestones necessary to claim savings within that annual plan's calendar year. Typically, this means that the customer has placed an order for CHP equipment and is expecting the equipment to be installed within the calendar year. For planning purposes, this will help to ensure the energy savings targets can be achieved within the calendar year, and that budgeted incentives costs will be utilized in the year in which they are planned for (and collected from customers).

For CHP projects, a maximum of 80% of the energy efficiency incentive payment and project savings are withheld until after the project has been interconnected and post-inspected. A minimum of 20% of the energy efficiency incentive payment and project savings are withheld until the project has been commissioned. Depending on the post-inspection date and project complexity, the energy efficiency incentive payments and project savings can span multiple years.

Table 17 includes the initial budget estimates and preliminary anticipated savings values for the CHP projects included in the illustrative savings and budget goals in this Three-Year Plan that are expected to span multiple years. The three projects listed below are currently in different design stages and therefore have different levels of risk and uncertainty. Of the three projects, only the 600 kW CHP has completed a full technical assistance study. The 13,200 kW and 7,800 kW projects are currently in the initial scoping phase and may be subject to design modifications that could impact the savings estimates and incentive payments. Additionally, the 13,200 kW and 7,800 kW projects may encounter interconnection, engineering, or implementation challenges that could prevent or delay the installation of the CHP projects.

*Table 17. Initial Budget Estimates and Anticipated Savings for Multi-Year CHP Projects*

CHP Nameplate Capacity	2021			2022		
	Gross Annual Savings (kWh)	Gross Lifetime Savings (kWh)	Incentive Payment	Gross Annual Savings (kWh)	Gross Lifetime Savings (kWh)	Incentive Payment
600 kW	2,188,000	43,760,000	\$513,000	548,000	10,960,000	\$120,000
13,200 kW				21,172,232	423,444,640	\$10,522,918
7,800 kW						
<b>Total</b>	2,188,000	43,760,000	\$513,000	21,720,232	434,404,640	\$10,642,918

CHP Nameplate Capacity	2023		
	Gross Annual Savings (kWh)	Gross Lifetime Savings (kWh)	Incentive Payment
600 kW			
13,200 kW	5,293,058	105,861,160	\$2,762,140
7,800 kW	27,499,648	549,992,960	\$5,600,000
<b>Total</b>	32,792,706	655,854,120	\$8,362,140

## 8.2 Rhode Island Infrastructure Bank (RIIB)

The Efficient Buildings Fund (EBF) provides attractive, long-term financing to municipalities and quasi-public agencies for the completion of energy efficiency. EBF seeks to finance energy retrofits in public buildings that will result in electric and heating savings greater than 20% across all properties receiving improvements. To date, the Infrastructure Bank has made \$20.5 million in loans through the Efficient Buildings Fund resulting in savings of 5,551 net annual MWh (76,578 lifetime MWh) and 56,092 net

annual therms (390,592 lifetime therms). More than 85% of the claimed electric savings generated since inception come from streetlighting projects.

Eligible properties include municipal buildings, schools, publicly-owned utilities, such as wastewater or drinking water facilities, and quasi-state entities. Financing can be repaid over terms of up to 15 years and can be structured to provide annual cash-flow savings to the borrower. The Rhode Island Office of Energy Resources is the Bank’s regulatory partner for the program. For a project to be eligible for financing, it must first be placed on OER’s Project Priority List (PPL). OER ranks and scores project applications based on transparent scoring criteria, which results in the production of a PPL at least once annually. More details can be found in the 2021 Annual Plan, Attachment 2.

In addition to planned annual transfers to RIIB, the Company has included potential savings and incentives in this Plan that are anticipated to be associated with projects financed through EBF (see Table 19, Table 20, Table 21, and Table 22). These savings are based on a pipeline provided by RIIB to the Company during the preparation of the 2021 Annual Plan (see Table 18), which shows a potential for 11,700 gross MWh. Although the Construction Estimates show 2021-2022 for most projects/loans, the Company believes it is most appropriate to spread out the savings across the three-year period, given the inherent uncertainties associated with the implementation timing of these projects. The process of working with municipalities frequently encounters decision making and funding issues that may delay parts of the process. In addition, the Company cannot claim savings until projects are paid and post inspected, which may lead to substantial project completion in one year, though claimed savings are not realized until the following year.

For Annual Plan savings targets and budgeting purposes, National Grid has estimated that 1,000 gross MWh will be completed and claimable in 2021. The remaining 10,700 MWh of estimated gross savings were 75% allocated to 2022 and 25% to 2023. A similar process was followed for estimating and allocating gas savings. In both cases, although the savings estimates are spread over multiple years, RIIB has indicated their expectation that many of these municipalities will commit to borrow money in 2021.

The Company has included a transfer of \$5,000,000 to RIIB in the 2021 budget tables for both this Three-Year Plan and the 2021 Annual Plan. The Company has also included placeholder anticipated annual transfers of \$5,000,000 in the illustrative Three-Year Plan budgets for 2022 and 2023 based on expressions of anticipated need by RIIB.

*Table 18. Potential Savings Associated with Projects Financed through EBF*

<b>Project</b>	<b>Estimated Loan Amount</b>	<b>Like-lihood Weighing Factor</b>	<b>Weighted Financing Estimate</b>	<b>Construction Estimates</b>	<b>Savings Estimate - MWh annual</b>	<b>Savings Estimate - therms annual</b>	<b>Savings Estimate - MWh lifetime</b>	<b>Savings Estimate - therms lifetime</b>
1	\$4,000,000	0.75	\$3,000,000	2021-2022	1,600	-	24,000	-
2	\$2,500,000	0.75	\$1,875,000	2021-2022	867	16,667	13,000	250,000
3	\$5,000,000	0.75	\$3,750,000	2021	1,733	33,333	26,000	500,000

4	\$5,000,000	0.75	\$3,000,000	2021-2022	1,400	26,667	21,000	400,000
5	\$15,000,000	0.75	\$11,250,000	2021-2022	5,267	100,000	79,000	1,500,000
6	\$2,000,000	0.50	\$1,000,000	2021-2022	733	13,333	11,000	200,000
<b>Total</b>	<b>\$33,500,000</b>		<b>\$23,875,000</b>		<b>11,700</b>	<b>190,000</b>	<b>174,000</b>	<b>2,850,000</b>

Table 19. Estimated Electric Savings from EBF-funded Projects 2021-2023 (net kWh)

	<b>2021 Annual</b>	<b>2021 Lifetime</b>	<b>2022 Annual</b>	<b>2022 Lifetime</b>	<b>2023 Annual</b>	<b>2023 Lifetime</b>
New Construction	313,587	4,703,809	2,448,904	41,841,431	932,501	15,932,502
Retrofit	306,726	6,134,520	3,040,373	39,136,372	924,130	10,230,621
<b>Total</b>	<b>620,313</b>	<b>10,838,329</b>	<b>5,489,277</b>	<b>80,977,803</b>	<b>1,856,631</b>	<b>26,163,123</b>

Table 20. Estimated Electric Incentives Associated with EBF-funded Projects 2021-2023

	<b>2021</b>	<b>2022</b>	<b>2023</b>
New Construction	\$190,000	\$1,040,578	\$396,234
Retrofit	\$105,000	\$1,465,719	\$478,156
<b>Total</b>	<b>\$295,000</b>	<b>\$2,506,297</b>	<b>\$874,391</b>

Table 21. Estimated Gas Savings from EBF-funded Projects 2021-2023 (net MMBtu)

	<b>2021 Annual</b>	<b>2021 Lifetime</b>	<b>2022 Annual</b>	<b>2022 Lifetime</b>	<b>2023 Annual</b>	<b>2023 Lifetime</b>
New Construction	242	4,122	1,086	20,187	1,330	24,337
Retrofit	2,884	26,878	9,192	88,772	5,526	59,789
<b>Total</b>	<b>3,126</b>	<b>31,000</b>	<b>10,278</b>	<b>108,959</b>	<b>6,856</b>	<b>84,127</b>

Table 22. Estimated Gas Incentives Associated with EBF-funded Projects 2021-2023

	<b>2021</b>	<b>2022</b>	<b>2023</b>
New Construction	\$7,625	\$56,993	\$64,660
Retrofit	\$52,148	\$167,250	\$102,984
<b>Total</b>	<b>\$59,773</b>	<b>\$224,242</b>	<b>\$167,643</b>



## CONSISTENCY WITH STANDARDS

### 9 Least-Cost Procurement Law and Standards

Rhode Island’s Comprehensive Energy Conservation, Efficiency and Affordability Act of 2006 (Act) provides the statutory basis for Least-Cost Procurement of energy efficiency and conservation resources and system reliability in Rhode Island. Energy efficiency procurement includes “energy efficiency and energy conservation measures that are prudent and reliable and when such measures are lower cost than acquisition of additional supply, including supply for periods of high demand.”<sup>31</sup> System reliability procurement includes, but is not limited to, renewable energy resources, distributed generation, targeted energy efficiency, direct load control, and demand response. These are the two main areas that National Grid is authorized to work on under the Act. The Act requires the Company submit plans for energy efficiency and conservation, and system reliability procurement to the PUC on a triennial basis.<sup>32</sup> Such plans must include “measurable goals and target percentages for each energy resource, pursuant to standards established by the Commission, including efficiency, distributed generation, demand response, combined heat and power, and renewables.”<sup>33</sup>

Figure 3. Relationship Between the Statutory Basis for Least-Cost Procurement Standards and the Company’s Procurement Plans

#### **Comprehensive Energy Conservation, Efficiency and Affordability Act of 2006 (RI Legislature)**

- Established statutory basis for Least-Cost Procurement in Rhode Island.

#### **Least-Cost Procurement Standards (RI Public Utilities Commission)**

- Set standards and guidelines for Energy Efficiency and Conservation and System Reliability Procurement Plans.
- Provide guidance on setting three-year energy efficiency savings targets.
- Reviewed and amended triennially.

#### **Three-Year & Annual Energy Efficiency and Conservation Procurement Plans (National Grid)**

- Describe the Company's three-year strategy (Three-Year Plan) and yearly progress (Annual Plan) towards EE savings targets in a manner that is prudent, reliable, environmentally responsible, cost-effective, and less than the cost of supply.

#### **Three-Year System Reliability Procurement Plan (National Grid)**

- Describe planning principles and areas of focus for system reliability procurement for the three years of implementation (filed separately).

<sup>31</sup> R.I. Gen. Laws § 39-1-27.7.

<sup>32</sup> R.I. Gen. Laws § 39-1-27.7.

<sup>33</sup> R.I. Gen. Laws § 39-1-27.7.

## 9.1 Prudency

Over the course of its history implementing energy efficiency programs in Rhode Island, the Company has considered and continues to consider several key components in the analysis of prudency. These components can be summarized as considerations of:

- How the investment supports the goals of the electric or natural gas system and the purposes of Least Cost Procurement and what the potential for synergy savings may be based on alternatives that address multiple needs.
- What groups of customers can the Company reach with program offerings? How can we ensure that all customers are served equitably and share in the cost of energy efficiency?
- What impacts to customer rates and bills will be required to deliver the efficiency goals, and how can those impacts be mitigated through alternative funding? What risks, if any, will customers and the Company see from the investments in energy efficiency and conservation procurements?
- What constraints, such as available workforce and prevailing economic conditions, exist in the marketplace that may impact the achievement of the goals as developed and proposed in the Plan?

For the proposed investments detailed in this Plan, the Company has assessed each of these elements and how they can be balanced to provide a comprehensive set of programs that will be achievable within known and anticipated constraints.

### 9.1.1 *General Considerations of Prudency*

One of the very first considerations of prudency within the Standards is that the Company assess how an investment supports the goals of the electric or natural gas system and the purposes of Least Cost Procurement. This Plan secures cost effective energy efficiency resources that drive the realization of benefits as enumerated in the Rhode Island Test including Electric Energy Benefits, Electric Generation Capacity Benefits, Electric Transmission Capacity and Distribution Capacity Benefits, Natural Gas Benefits, Fuel Benefits, Water and Sewer Benefits, Non-Energy impacts, Price Effects, Non-embedded Greenhouse Gas Reduction Benefits, Economic Development Benefits, Non-embedded NO<sub>x</sub> Reduction Benefits, and Value of Improved Reliability.

As an example of the way that the proposed investments in this plan address multiple needs, the electric demand response program continues to grow in magnitude of savings and in offerings while utilizing channels and technologies that drive not only energy savings but also reduced cost and deferred infrastructure benefits that flow from reducing peak demand.

In aggregate the portfolios included in this Three-Year Plan submission are robustly cost effective, as the benefits exceed the costs to acquire the efficiency resources and implement the programs. The electric portfolio achieves a BC Ratio range of 4.14 – 4.19 and the gas portfolio achieves a BC Ratio range of 3.03 – 3.04.

Furthermore, the cost of procuring 4,678,382 – 4,905,459 lifetime MWh (electric) Plan is \$347,367,903 - \$364,578,538 less than if that electric load was met by purchasing additional electric supply. The cost of procuring 14,468,336 – 16,553,713 lifetime MMBtu (gas) is \$53,718,499 - \$62,328,085 less than if that natural gas load was met by purchasing additional natural gas supply.<sup>34</sup>

### *9.1.2 Equity*

This Three-Year Plan is designed to ensure equity across residential programs. In the context of energy efficiency, this means programs serve all customer segments, the energy efficiency rate has parity, and energy efficiency services provide assistance to the most vulnerable customers who may pay a higher proportion of their income towards energy costs.

National Grid remains committed to ensuring that the distribution of energy efficiency funding is equitable across income and geographic sectors. The Company intends to continue to identify groups and geographic areas with historically low participation. Over the course of the coming three years, the Company will work with the Office of Energy Resources to engage stakeholders through an equity working group to identify areas of importance and focus. At this point, OER and National Grid envision the working group to be comprised of representatives from OER, other state agencies, National Grid, community-based organizations, advocacy organizations, and local subject matter experts in equity. The working group will be a key resource for the Company as it develops future annual plans and further studies equity through a number of evaluation efforts.

Next, the Company will initiate several studies to better understand historic customer participation and the extent to which geography, income, homeownership status, and primary language may be different among participants and non-participants. The Company's first step towards doing so will be to undertake a residential non-participant study to understand the attributes of non-participants and why they are not participating. This study is to be commissioned in early 2021, with anticipated completion in mid-2022, and will build on lessons learned from recently-completed Massachusetts non-participant studies. Secondly, the Company commits to undertake a census of multifamily housing to understand multifamily participation and non-participation. Thirdly, National Grid will track and report to stakeholders on renter participation in the in-home/unit assessment programs, and other programs as determined appropriate. The Company also proposes to use data from the proposed evaluations to build program enhancements and tracking systems that are driven primarily by the needs of identified non- or low-participating groups, as well as additional marketing efforts better tailored to multilingual customers.

In addition, the Company acknowledges the critical role that income plays in access to energy efficiency programs and proposes further immediate action in 2021 to enhance income eligible customer participation that may be found at Sec. 8 of the 2021 Annual Plan and within Attachment 1.

### *9.1.3 Rate and Bill Impacts*

Investment in energy efficiency is funded by a surcharge on customers' bills. Energy efficiency investments can impact rates and customer bills through avoided energy usage, price suppression, and avoided infrastructure investments, the increased cost of the surcharge, and revenue recovery. These

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<sup>34</sup> These ranges represent the 3YP Base Case – 3YP High Scenario.

components can have upward and downward effects on rates and bills. In annual plans and the present Three-Year Plan, the Company has assessed the impact of the proposed energy efficiency investments through analyses that assess the long term rate and bill impacts of the proposed portfolios, pursuant to the Standards. These analyses are one element of the set of quantitative data points that the Company considered in developing these portfolios, in conjunction with the benefit cost analysis and the cost of supply analysis.

For several years, National Grid has analyzed the rate and bill impacts of the electric portfolio using a model that assesses the long term impacts to rates due to the presence of the annual energy efficiency portfolio in contrast to a counterfactual where the energy efficiency programs, and their corresponding upfront costs and savings over the duration of the measures' lives did not exist.

In 2020, National Grid, in collaboration and consultation with the EERMC, OER, and the DPUC, undertook an effort to revise the rate and bill impact analysis for the gas portfolio to more closely align the modeling approach between the electric and gas portfolios. Synapse Energy Economics, who originally developed the electric bill and rate impacts model, was retained to develop the natural gas rate and bill impact model that is first applied in this plan. The new gas rate and bill impact model is closely aligned with the existing electric model in that it shows the change in long term rates and bills due to the presence of the energy efficiency programs in contrast to a counterfactual where the energy efficiency programs were not in place. While the methods are largely aligned between the electric and natural gas portfolios, there are key differences between the analyses, including the presence of avoided costs for transmission and distribution in the electric models.

Additional detail on the methods and results from both models are provided in Attachment 7, Rate & Bill Impacts of the 2021 Annual Energy Efficiency Plan. In addition, summary results are presented below for the electric and natural gas portfolios included in this Three-Year Plan.

#### *9.1.3.1 Electric Rate and Bill Impact Results*

The electric bill impact models used to generate the electric results were adapted from models originally built by Synapse Energy Economics on behalf of the Division of Public Utilities and Carriers in 2013. These models are distinct from the traditional electric bill impacts models the Company presents in Rates proceedings before the PUC. The models analyze two cases: the fulfillment of the each of the years of the 3 Year Plan and the absence of an efficiency plan in each of those years. This comparison isolates the effects of the each years' proposed EE program charge and Fully Reconciling Funding Mechanism. These assume energy efficiency plans have been implemented before 2021 but will not be offered starting in 2021. The analysis also incorporates how system-wide reduction in energy consumption affects the different elements of rates such as transmission, distribution, and commodity charges.

Five separate electric models were developed, one for each of the main customer segments: Residential, Income Eligible, Small Commercial, Medium Commercial, and Large Commercial and Industrial. The

table below shows the mapping of efficiency programs to rate classes for the five models.<sup>35</sup> The diversity of the commercial customer profile means that customers from multiple rate classes can participate in any commercial program. Assumptions for these rate classes were made based on historical program participation data.<sup>36</sup>

Electric Bill Impact Model	Rate Class(es)
Residential Electric	A-16
Income Eligible Electric	A-60
Small Commercial	C-06
Medium Commercial	G-02
Large Commercial	G-32, G-62

The results of the models are shown in the tables below. The columns in the Tables are as follows:

- Long-term rate impacts are defined as the average rate increase percentage from over the following 20 years (positive numbers indicate rate increase).
- Long Term Average Change in Bills is defined as average percentage of bill decrease to total customer bill over the next 20 years (negative numbers indicate electricity bill reduction).

The long-term rate impacts, and long term average change in bills are shown for average participants in energy efficiency programs, non-participants, and average customers within each of the five main customer segments. Average customers combine the bill impacts of EE participants and non EE participants to show the impacts of all customers combined.

See Attachment 7 of the 2021 Annual Plan for additional details on bill impacts methodology.

### Electric Rate and Bill Impacts

Table 23. 2021 Electric Rate and Bill Impacts

Sector	Long Term Rate Impacts	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential	0.41%	0.41%	-0.42%	-0.42%
Income Eligible	1.23%	1.23%	-2.46%	-2.54%
Small C&I	0.37%	0.37%	-0.81%	-8.88%
Medium C&I	0.03%	0.03%	-1.66%	-9.02%
Large C&I	-0.16%	-0.16%	-2.72%	-4.44%

<sup>35</sup> Delivery service rate tariffs is R.I.P.U.C. Tariff No. 2095 for rates A-16 (basic residential rate), A-60 (low-income residential rate), C-06 (small C&I rate), G-02 (medium C&I rate), G-32 (large C&I rate). Standard Offer Service rates used in the analysis are R.I.P.U.C. No. 2096 and R.I.P.U.C. No. 4809 A-16 & A-60 total commodity charge for standard and low income residential rate group, C-06 total commodity charge for small C&I rate group, G-02 total commodity charge for medium C&I rate group and G-32 total commodity charge for large C&I rate group.

<sup>36</sup> Savings and participation modeled by C&I rate classes is partitioned and estimated based on historical data.

Table 24. 2022 Illustrative Base Case Electric Rate and Bill Impacts

Sector	Long Term Rate Impacts	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential	0.60%	0.60%	0.06%	-0.03%
Income Eligible	1.22%	1.22%	-1.48%	-1.63%
Small C&I	0.65%	0.65%	-0.70%	-8.81%
Medium C&I	0.40%	0.40%	-1.60%	-8.92%
Large C&I	0.31%	0.31%	-2.58%	-4.23%

Table 25. 2022 Illustrative High Scenario Electric Rate and Bill Impacts

Sector	Long Term Rate Impacts	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential	0.66%	0.66%	-0.03%	-0.14%
Income Eligible	1.28%	1.28%	-1.52%	-1.63%
Small C&I	0.69%	0.69%	-0.72%	-8.73%
Medium C&I	0.43%	0.43%	-1.65%	-8.84%
Large C&I	0.34%	0.34%	-2.67%	-4.18%

Table 26. 2023 Illustrative Base Case Electric Rate and Bill Impacts

Sector	Long Term Rate Impacts	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential	0.74%	0.74%	0.03%	-0.06%
Income Eligible	1.42%	1.42%	-1.37%	-1.48%
Small C&I	0.81%	0.81%	-0.68%	-10.69%
Medium C&I	0.56%	0.56%	-1.67%	-10.95%
Large C&I	0.51%	0.51%	-2.60%	-4.83%

Table 27. 2023 Illustrative High Scenario Electric Rate and Bill Impacts

Sector	Long Term Rate Impacts	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential	0.84%	0.84%	0.09%	0.02%
Income Eligible	1.57%	1.57%	-1.47%	-1.53%
Small C&I	0.91%	0.91%	-0.72%	-10.44%
Medium C&I	0.64%	0.64%	-1.80%	-10.71%
Large C&I	0.59%	0.59%	-2.83%	-4.68%

### 9.1.3.2 Natural Gas Rate and Bill Impact Results

As noted above, the Natural gas programs are projected to generate slight upward movement in average long term rates between 0.0% and 1.0% depending on the sector, year, and scenario (base case or high scenario). For the income eligible customer participants, the Small C&I participants, and Large C&I participants, modeling shows a reduction in bills between 1.16% and 7.12%, again depending on year, sector, and scenario (base case or high scenario)

With respect to the residential sector, the Company used three distinct model instances to explore the rate and bill impacts for this customer sector in each year and scenario (base case or high scenario). The three residential model instances explored 1) the Home Energy Report (HER) program in isolation, 2) the EnergyWise, EnergyStar HVAC, EnergyWise Multi-family, Residential New Construction together (excluding HER program), and 3) All five programs together. It is important to note that each of these three parts of the residential sector analysis has been developed using a separate instance of the gas rate and bill impacts model. Attachment 7 to the 2021 Annual Plan provides additional detail on the modeling approach for this sector.

Relative to the other four residential programs, The HER program has a short measure life (1 year), while reaching the significant majority of residential customers. The period of time covered by the analysis is determined by the average measure life of the longest included program. Consequently, the model instance analyzing the HER program in isolation covers a much shorter period of time than the other two model instances, which means that the three instances are not directly comparable, and the first two model instances do not additively result in the third instance.

For example, in the 2021 results, when the HER program is considered in isolation (Residential Model 1), average participants see a reduction in bills of on average 0.01%. When all other residential programs are considered together (Residential Model 2), the model shows average participants see a 5.29% reduction in average bills. Lastly, when all residential programs are considered together (Residential Model 3), the modeling shows the long-term average change in bills is very slightly positive (0.03%). As discussed in more detail in Section 4.3 of Attachment 7 to the 2021 Annual Plan, this result is largely a byproduct of the modeling approach that combines the short-lived HER program with other longer-lived measures.

Table 28. 2021 Natural Gas Rate and Bill Impacts

Sector	Average change in rates due to 2021 Base Case Programs	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential (Model 1: HERs only)	0.0%	0.02%	0.00%	-0.01%
Residential (Model 2: All Programs Except HERs)	0.4%	0.41%	0.15%	-5.29%
Residential (Model 3: All Programs)	0.4%	0.43%	0.15%	0.03%
Income Eligible	0.7%	0.75%	-0.16%	-4.48%
Small C&I	0.3%	0.25%	0.19%	-7.12%
Large C&I	0.4%	0.41%	0.00%	-1.16%

Table 29. 2022 Illustrative Base Case Natural Gas Rate and Bill Impacts

Sector	Average change in rates due to 2022 Base Case Programs	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential (Model 1: HERs only)	0.0%	0.02%	0.00%	-0.01%
Residential (Model 2: All Programs Except HERs)	0.5%	0.49%	0.20%	-5.36%
Residential (Model 3: All Programs)	0.5%	0.51%	0.20%	0.06%
Income Eligible	0.8%	0.83%	-0.09%	-4.48%
Small C&I	0.3%	0.32%	0.21%	-7.07%
Large C&I	0.5%	0.49%	0.06%	-2.48%

Table 30. 2022 Illustrative High Scenario Natural Gas Rate and Bill Impacts

Sector	Average change in rates due to 2022 High Scenario Programs	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential (Model 1: HERs only)	0.0%	0.02%	0.00%	-0.01%
Residential (Model 2: All Programs Except HERs)	0.5%	0.51%	0.18%	-5.34%
Residential (Model 3: All Programs)	0.5%	0.52%	0.17%	0.02%
Income Eligible	0.9%	0.89%	-0.17%	-4.42%
Small C&I	0.3%	0.32%	0.20%	-7.06%
Large C&I	0.5%	0.29%	0.00%	-2.48%

Table 31. 2023 Illustrative Base Case Natural Gas Rate and Bill Impacts

Sector	Average change in rates due to 2023 Base Case Programs	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential (Model 1: HERs only)	0.0%	0.02%	0.00%	-0.01%
Residential (Model 2: All Programs Except HERs)	0.6%	0.56%	0.22%	-5.60%
Residential (Model 3: All Programs)	0.6%	0.58%	0.22%	0.05%
Income Eligible	0.9%	0.89%	-0.05%	-4.50%
Small C&I	0.4%	0.37%	0.22%	-7.03%
Large C&I	0.6%	0.56%	0.00%	-3.22%



Table 32. 2023 Illustrative High Scenario Case Natural Gas Rate and Bill Impacts

Sector	Average change in rates due to 2023 High Scenario Programs	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential (Model 1: HERs only)	0.0%	0.01%	0.00%	-0.01%
Residential (Model 2: All Programs Except HERs)	0.6%	0.60%	0.17%	-5.57%
Residential (Model 3: All Programs)	0.6%	0.61%	0.16%	-0.03%
Income Eligible	1.0%	1.00%	-0.17%	-4.40%
Small C&I	0.4%	0.38%	0.19%	-7.02%
Large C&I	0.6%	0.58%	-0.12%	-3.20%

## 9.2 Reliability

The programs developed under this Three-Year Plan will continue the Company’s extensive history of offering best-in-class energy efficiency programs to customers, while introducing new implementation approaches and expanding the Company’s existing programs to serve more customers. Existing programs that have significant experience and traction in the market will be extended and refined to deploy low-risk cost-effective energy efficiency to the marketplace. The Company continues to collaborate with a diverse set of stakeholders including the EERMC, OER, Division, and community and advocacy organizations to continually analyze the programs and identify opportunities for improvement.

In building this Three-Year Plan, the Company’s Customer Energy Management team worked closely with industry experts, vendors, and program implementation professionals to assess the current state of existing programs, the potential for program scalability, the economic environment, and the ability to deliver reliable energy savings as a result. By speaking with on-the-ground implementers and engaging in discussions on regional and national best practices in the face of the COVID-19 pandemic, the Company positions the programs for success in what is a generally uncertain time.

Supporting the Company’s efforts to deploy energy efficiency to Rhode Island customers is a robust and long-standing evaluation, measurement, and verification (EM&V) apparatus. As noted in Section 6, the Company hires independent third-party consulting firms to regularly conduct evaluation studies as part of its EM&V process. A distinct group of personnel within National Grid that includes analysts with specialized skills in engineering, statistics, and economics are tasked with the EM&V function and coordinate all elements of the EM&V process internally and externally. Evaluations incorporate industry standard methods to assess the actual energy and demand savings of measures incented by the programs. All elements of the EM&V process are closely monitored by the EERMC, their Consultants, and OER. The EM&V process is continual, and every year results from EM&V studies are used to update the savings in the benefit cost calculation of the measure, programs, and portfolios. In addition, process evaluations and market studies conducted in the EM&V process provide an independent perspective on

the performance of the programs and provide insight into the state of the market and ways that the Company can address new opportunities with its programs.

In total, these EM&V processes provide a transparent, externally vetted approach to ensuring that claimed savings provide an accurate picture as possible of the impact of the Company's energy efficiency programs, accounting for spillover, free ridership, and other industry standard adjustment factors

The EM&V process also supports the Company's participation in the ISO-NE Forward Capacity Market (FCM). Passive demand savings achieved via electric energy efficiency and Combined Heat and Power projects, and verified by the EM&V process, continue to participate in the FCM as Passive On-Peak Demand Resources. As detailed further in Section 11, the Company bids the passive demand savings attributed to energy efficiency measures and Combined Heat and Power facilities in the FCM and manages the associated capacity resources to maximize the resulting FCM revenue. The EM&V process provides the necessary verification of claimed savings in order to participate in the FCM.

Additionally, the Company anticipates that the 2021 Annual Plan will be the last year in which a residential efficiency lighting program will be offered. Due to the Company's successful efforts to transform the lighting market through its efficiency programs, the opportunities for cost-effective claimable lighting savings are anticipated to be exhausted by the end of 2021. In this time of transition, the Company will continually evaluate ways that other existing programs can be enhanced to generate savings that in the past were accomplished through relatively simple lighting measures. Increased complexity of measures will require new approaches to maintain the same levels of reliability of goals and savings in future plans.

### 9.3 Environmentally Responsible

The energy efficiency programs and portfolios described in the Three-Year Plan are environmentally responsible. They provide significant emissions reductions benefits, reduce the potential environmental costs and footprint of avoided infrastructure investments, support the ongoing growth and development of a sustainable, green job ecosystem in Rhode Island, and contribute to the realization of state environmental policy goals and initiatives.

#### 9.3.1 Emissions Reductions

Both electric and natural gas efficiency portfolios will make a meaningful contribution to reduction in emissions by driving reductions in customer energy usage in both the short and long term. The electric and natural gas portfolios, considered together, will reduce lifetime emissions of between 2.74 and 2.85 Million tons of Carbon Dioxide. The non-embedded values of CO<sub>2</sub> benefits generated by the 2021-2023 plans over the lifetime of the measures range from \$169.8 million – \$184.7 million. The non-embedded values of NO<sub>x</sub> range from \$12.4 million – \$14.0 million

#### 9.3.2 Support for an Environmentally Responsible Local Jobs Infrastructure

In 2019, the Company's Energy Efficiency programs directly supported 877 FTEs. In providing for these jobs and demonstrating the availability and attractiveness of local, green jobs to Rhode Island's existing and emerging workforce, the Company's energy efficiency programs help to ensure that the local workforce will exist to support the state's environmental policy goals.

### *9.3.3 Raised customer awareness of environmental issues and the impacts of their choices*

Educating and engaging residential and business customers on the potential environmental impacts and benefits of the implementation of energy efficiency measures is a foundational element of the Company's energy efficiency go-to-market strategy. Whether in the form of conveying potential environmental benefits of customer recommendations through Home Energy Reports, *EnergyWise* home energy assessments, or retail marketing initiatives, or by connecting SMB audits or large C&I customer sales efforts to business customer sustainability initiatives, the Company's energy efficiency program presence will continue to help to support the prominence of environmental issues in customers' minds. Additionally, through the Community-Based Initiative, the Company partners with municipalities and works through local energy and environmental sustainability committees to connect individual customers' energy efficiency decisions and actions to broader municipal sustainability goals and messages. In doing so, the Company's programs continue to link energy savings and efficiency to real and visible benefits for the communities in which their residents and small business reside.

## 9.4 Cost Effectiveness

The Company has determined the proposed investments in this Three-Year Plan to be cost effective using the RI Test. In addition to cost-effectiveness per the RI Test as required by the Standards, the Company also presents and compares the results of the TRC test to enable comparison with past plans. The RI Test is a robust societal test that attempts to incorporate all costs and benefits associated with energy related investment before the PUC.

### *9.4.1 RI Test*

In accordance with the revised Least-Cost Procurement Standards (see Section 9), the Company has evaluated the cost-effectiveness of the proposed investments in this Three-Year Plan using the Rhode Island Benefit Cost Test (RI Test). The RI Test was refined to comply with the Docket 4600 Benefit-Cost Framework, which defines how utility ratepayer investments should be assessed in Rhode Island, and has been in use since 2018. Prior to the PUC's completion of the Docket 4600 Benefit-Cost Framework, the Least Cost Procurement Standards issued triennially defined the categories of benefits and costs to be included in the RI Test.

The shift to using the RI Test has been a positive development for energy efficiency. The RI Test more fully reflects the policy objectives of the state with regard to energy, its costs, benefits, and environmental and societal impacts. Accounting for all costs and benefits associated with energy efficiency provides a more robust accounting of the societal benefits that energy efficiency programs deliver to electric and gas customers, the state, and society.

The cost-effectiveness analyses of the proposed programs use avoided energy supply costs developed by Synapse Energy Economics as part of the "Avoided Energy Supply Components in New England: 2018 Report" (2018 AESC Study), sponsored by New England's electric and gas efficiency program

administrators.<sup>3738</sup> The avoided costs reflect current and expected market conditions and are highly influenced by the cost of fossil fuels and expectations about ISO-New England’s forward capacity market. Company-specific transmission and distribution capacity values are also included. The cost-effectiveness analyses also includes estimates of the economic benefits of energy efficiency. These benefits are calculated by a set of macroeconomic multipliers for the economic benefits of investing in cost-effective energy efficiency were also updated from a recent study “Review of RI Test and Proposed Methodology” prepared for National Grid by the Brattle Group, January 31, 2019.

Prior to 2018, the Company assessed the cost-effectiveness of measures, programs, and portfolios in its Three-Year and Annual Plans according to the Total Resource Cost Test (TRC Test). The TRC includes a narrower set of benefits than the Rhode Island test. The TRC does not include carbon or economic benefits that are included in the RI Test. The TRC includes the same set of costs as the RI Test. The equations below indicate the general categories of benefits and costs that are included in each of the tests.

*Equation 1. RI Test Specification*

$$\begin{aligned}
 & \text{RI Test B/C Test} \\
 & = (\text{Energy} + \text{Capacity} + \text{Resource Benefits} + \text{Economic Benefits} \\
 & \quad + \text{Carbon Benefits}) / (\text{Program Implementation} + \text{Customer Contribution} \\
 & \quad + \text{Performance Incentive})
 \end{aligned}$$

*Equation 2. Total Resource Cost (TRC) Test Specification*

$$\begin{aligned}
 & \text{TRC B/C Test} = (\text{Energy} + \text{Capacity} + \text{Resource Benefits}) / (\text{Program Implementation} \\
 & \quad + \text{Customer Contribution} + \text{Performance Incentive})
 \end{aligned}$$

Refer to Three-Year Plan Attachment 2. Program Level Benefit Cost Summary for the RI Test results for each program in each year of the plan

*9.4.2 Comparison of TRC Test to RI Test*

In accordance with Section 1.2(B)(vi) of the Standards as approved in Docket 4684, and in effect for this Three-Year Plan, the Company continues to provide the benefits and cost-effectiveness ratios using the TRC Test and the RI Test in Three-Year Plan Attachment 1. Energy Efficiency Funding Plan. Table 33 below compares the categories of benefits and cost in the TRC and RI Test.

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<sup>37</sup> Synapse Energy Economics, Avoided Energy Supply Components in New England: 2018 Report, Amended October 24, 2018.

<sup>38</sup> The Company is currently participating in the next iteration of the AESC Study, scheduled to produce a new set of avoided costs for use in screening energy efficiency portfolios in early 2021. If new avoided cost categories are developed through this new study, they will be considered for inclusion in this study. Further, if other benefit or cost categories can be quantified and monetized prior to the 2022 Annual Plan filing they will be included in the screening of the RI Test.

Table 33. Comparison of Benefit and Cost Categories in the TRC and RI Test

	TRC Test	RI Test
<b>Energy Efficiency Program Benefits</b>		
Avoided Energy Costs	Yes	Yes
Avoided Capacity Costs	Yes	Yes
Avoided Transmission and Distribution Costs	Yes	Yes
Avoided Natural Gas Costs	Yes	Yes
Avoided Delivered Fuel Costs	Yes	Yes
Demand-Reduction-Induced Price Effects (DRIPE)	Yes	Yes
Water and Sewer Benefits	Yes*	Yes
Non-Energy Impacts	Yes**	Yes
Avoided cost of Environmental Compliance	Yes	Yes
Non-embedded Greenhouse Gas Reduction Benefits	No	Yes
Non-embedded Nitrous Oxide (NOx) Benefits	No	Yes
Economic Development Benefits	Only for CHP	Yes
Reliability Benefits	No	Yes
Other emissions generated or reduced through LCP	CHP - Yes EE – Not specified (compliance costs embedded)	Yes
<b>Energy Efficiency Program Costs</b>		
Utility Costs (Marketing, PP&A, STAT, Incentive, Evaluation,	Yes	Yes
Shareholder Incentive	Yes	Yes
Customer Cost	Yes	Yes

Both the electric and natural gas portfolios are highly cost-effective under the RI Test and the TRC Test, as shown in Table 34. For example, the 2021 RI Test result for the electric portfolio shows a RI Test BC Ratio of 4.31. This means that for every \$1 of investment in energy efficiency \$4.31 of benefits are generated.

Table 34. Comparison of Portfolio-level RI Test and TRC Test

Fuel	Test	2021	2022		2023	
			Base Case	High Scenario	Base Case	High Scenario
Electric	RI Test	4.31	4.02	4.08	4.13	4.20
	TRC	1.95	1.81	1.84	1.86	1.91
Gas	RI Test	3.00	3.03	3.04	3.04	3.06
	TRC	1.61	1.66	1.66	1.67	1.67

## 9.5 Cost of Supply

The Company assessed the cost of energy supply and the cost of energy efficiency using all applicable costs enumerated in the Rhode Island Benefit Cost Framework (Framework). The Framework is a

requirement of the Standards and was approved by the PUC in Docket 4600. This same method, i.e. performing the RI Test using the cost enumerated in the Framework, was used in the 2020 and 2019 Annual Plans.

The RI Test (see also Section 9.4.1) is an appropriate mechanism to determine which costs to include in this assessment. The RI Test captures the aspects of the Framework that pertain to energy efficiency programs and details what is considered a cost of energy efficiency. The RI Test includes the benefits to Rhode Island derived from investing in energy efficiency instead of investing in additional energy supply. For the purpose of the RI Test, these energy efficiency benefits are described as *avoided costs*. The avoided costs can also be applied as the costs of procuring additional energy supply or *cost of supply*. These include costs incurred by the utility to implement the Three-Year Plan and the expense borne by the customer for its share of the energy efficiency measure cost. The 2018 AESC Study is the source for many of the values used in running the RI Test analysis for this Three-Year Plan.<sup>39</sup>

The Company will perform the RI Test to compare the cost of energy efficiency to the cost of energy supply using the costs categories illustrated in Table 35. The table offers an explanation for why the Company believes each cost category is either appropriate or not appropriate for inclusion in the assessment.

Table 35. List of the Cost of Energy Efficiency and Costs of Energy Supply

<b>Cost of Energy Efficiency</b>		
Cost	Included	Explanation
Utility Costs	Yes	These costs are incurred to achieve implementation of energy efficiency measures and programs. Includes all costs in Three-Year Plan Attachment 1. Energy Efficiency Funding Plan.
Participant Costs	Yes	Customer contribution to the installation cost of the efficient measure. Customer costs included in Three-Year Plan Attachment 1. Energy Efficiency Funding Plan.
<b>Costs of Energy Supply</b>		
Electric Energy Costs	Yes	Represents the cost of purchasing electric energy supply.
Electric Generation Costs	Yes	Represents cost of generation capacity in ISO-NE.
Electric Transmission Capacity Costs	Yes	Represents Pool Transmission Facilities (PTF) cost.
Electric Distribution Capacity Costs	Yes	Represents the cost of distribution capacity related to increased load.
Natural Gas Costs	Yes	Represents the cost of purchasing natural gas supply.
Fuel Costs	Yes	Non-regulated delivered fuels are an energy supply cost to customers that utilize these fuels for heating. The fuel costs in this category are

<sup>39</sup> Synapse Energy Economics, Avoided Energy Supply Components in New England: 2018 Report, March 30, 2018.

		separate from those embedded in the cost of the electric market. While not a direct cost of electric energy supply, National Grid includes incentives for delivered fuel energy efficiency measures in its electric portfolio. Therefore, to achieve symmetry with costs associated with electric energy efficiency, delivered fuels costs should be included in this comparison.
Water and Sewer Costs	No	While avoided water and sewer costs are a benefit of installing certain energy efficiency measures, they are not a direct cost of energy supply.
Non-Energy Impact Costs	No*	*Unless listed below. While non-energy impacts are a benefit of installing certain energy efficiency measures, they are not a direct cost of energy supply.
Income Eligible Rate Discount	Yes	Costs associated with energy being sold at the income eligible rate.
Arrearages	Yes	Costs associated with arrearage carrying costs as a result of customers not being able to pay their energy bills.
Price Effects	Yes	Represents costs associated with the impact of demand reduction on ISO-NE energy and capacity markets.
Non-embedded Greenhouse Gas Reduction Costs	Yes	Represents the social cost of carbon. The social cost of carbon is the cost associated with meeting the goals of the Resilient Rhode Island Act. Carbon emissions come from the production of energy and should be considered a cost of supplying that energy.
Economic Development	No	While economic development is a benefit of investment in energy efficiency measures it is not a direct cost of energy supply.
Non-embedded Nitrous Oxide (NOx) Costs	Yes	NOx emissions come from the production of energy and therefore the health impacts of NOx emissions should be considered part of the cost of supplying that energy.
Reliability Costs	Yes	Increased energy demand can lead to declining reserve margins and decrease reliability so should be associated with the cost of energy.

For the assessment, the Company applies the above costs of supply to the lifetime electric energy, lifetime delivered fuels energy, demand, and natural gas savings for each measure included in the Three-Year Plan in present value terms, for each year of the Plan. The costs for each year are not discounted because they occur in the first year of the program.

Applying this methodology, based on the Company’s calculation, the cost of energy efficiency and supply for each year for the Three-Year Plan are presented below in Table 36 (Electric) and Table 37 (Natural Gas).

Table 36. Comparison of Cost of Electric Energy Efficiency and Alternative Supply

	2021	2022		2023	
		Base Case	High Scenario	Base Case	High Scenario
Cost of Supply	\$262.0	\$270.9	\$283.9	\$293.8	\$328.0
Cost of EE Programs	\$140.7	\$162.4	\$170.9	\$176.1	\$197.7
Difference	\$121.3	\$108.5	\$112.9	\$117.6	\$130.4

Table 37. Comparison of Cost of Natural Gas Energy Efficiency and Alternative Supply

	2021	2022		2023	
		Base Case	High Scenario	Base Case	High Scenario
Cost of Supply	\$62.5	\$68.8	\$78.9	\$84.2	\$105.2
Cost of EE Programs	\$48.4	\$52.0	\$59.5	\$61.5	\$76.6
Difference	\$14.2	\$16.8	\$19.5	\$22.7	\$28.7

Based on these calculations, as a result of the proposed Three-Year Plan, implementing energy efficiency plans represents \$347.3 to \$364.5 million in savings for electric energy efficiency, and between \$53.7 to \$63.3 million savings for gas energy efficiency over the lifetime of the energy efficiency measures.



# FUNDING PLAN, BUDGET AND GOALS

## 10 Savings Goals and Potential

The savings goals presented here reflect energy savings that are ambitious but also achievable (under specified circumstances), and that secure significant cost savings and other benefits for Rhode Island energy consumers. These goals were developed using the Targets approved by the PUC for electric and natural gas energy efficiency and active electric demand response as guideposts and then applying the requisite standards of prudence and reliability. The application of these standards resulted in savings goals that do not meet the Targets approved by the PUC for the period 2021 through 2023.

Proposing savings goals is one of the primary purposes of the Three-Year Plan, as outlined in the State of Rhode Island Public Utility Commission's Least Cost Procurement Standards. The three-year savings goals, along with budgets, are specifically called out as "illustrative and provisional" in section 3.3 Three Year Energy Efficiency and Conservation Plan of the Standards and are meant to guide the Annual Energy Efficiency and Conservation Procurement Plans.

"ii. The Three-Year EE Plan will propose overall and initial Energy Efficiency and Conservation Procurement budgets, savings goals, and program focus and strategies for the three years of implementation beginning with January 1 of the following year. These initial budgets and goals shall be illustrative and provisional and shall guide Annual Energy Efficiency and Conservation Procurement Plans (Annual EE Plans) over the three-year period."

The EERMC proposed, and the PUC adopted, savings Targets based on the Maximum Achievable scenario within the recently completed Market Potential Study. In approving these Targets, the PUC acknowledged that the Targets did not account for prudence and reliability, which are requirements the Company must demonstrate in its Plans. Further, the Commissioners acknowledged this differs from past target-setting processes and that these Targets represent high guideposts for what is potentially achievable with efficiency programs, not accounting for other constraints. Notably, these Targets were also approved prior to a complete understanding of the likely duration and economic impact of the COVID pandemic that continues to impact Rhode Island citizens, businesses, and the economy as of the submission of this plan.

The Company's savings goals and associated budgets are intrinsically linked, and long-term benefits must be balanced against short-term rate impacts in order to ensure that programs meet all the criteria of Least Cost Procurement as described in the Standards (i.e. cost-effective, reliable, prudent, environmentally responsible, and lower than the cost of additional energy supply). During program planning for this Three-Year Plan and the concurrently filed 2021 Annual Plan, the Company applied more detailed cost estimates to savings opportunities, incorporated reliability considerations (i.e. workforce, market continuity, and program scalability), further refined program plans to ensure proposed investments and program designs supported equitable access, and considered rate and bill impacts on all customers as required to meet the prudence criteria. Incorporating these considerations

had the effect of reducing planned savings relative to the PUC's targets, particularly in 2021, in order to ensure that the filed plans achieve the prudence and reliability requirements as laid out in the Standards.

The critical path to approaching the "Max" Targets is a continuous process of identifying customers' remaining obstacles to adopting additional energy efficiency, along with market and other systemic barriers, and incrementally adjusting and enhancing program designs to apply solutions that continue to drive savings while recognizing the reality of near-term bill and rate impacts as a constraint on budgets. At the behest of stakeholders, the Company developed an illustrative "Base Case" of both savings and budgets in years 2 and 3 of the Three-Year Plan that are reflective of savings levels that are achievable in the context of a robust economic recovery in 2022 and 2023.

Should this recovery not occur, be delayed, or proceed better than expected, the Company would anticipate incorporating the latest information on customer impacts and updated expectations of economic recovery (in addition to the standard process of incorporating incremental market research, program performance, and other policy and regulatory developments) in establishing binding budgets and savings goals in subsequent 2022 and 2023 Annual Plan energy efficiency plans that would deviate from the illustrative savings goal and budget ranges included in this Three-Year Plan filing.

In a departure from past practice, the Company has included a range of illustrative savings goals and budgets for years 2022 and 2023 of the Three-Year Plan - not just the "Base Case", but also a "High Scenario". The base of these ranges (i.e. the "Base Case") represent savings goals and budgets that the Company believes, conditional upon the economic recovery expectations outlined above, could be attained in those years. The higher end of these ranges (i.e. the "High Scenario"), which are consistent with the electric and gas savings goals presented in the "Mid Scenario" of the Market Potential Study, adjusted for known evaluation, measurement and verification impacts that differ from assumptions used in that study, do not represent savings goals that the Company believes it at 10 currently has a clear path to achieving in years 2 and 3 of the Three-Year Plan. The inclusion of these higher values is consistent with the use of the "Future Innovation Adder" included in the 2018-2020 Three-Year Plan (Doc. No. 4684) where the Company, at the time, recognized aspirational savings that were in addition to what it believed was achievable based on the current information it possessed. The Company recognizes both the value of higher savings as well as a stakeholder desire to see those savings come to fruition, and the inclusion of the "High Scenario" is intended to signal to all stakeholders the Company's commitment to pursuing and evaluating paths to this higher level of achievement, even if these pathways are not currently clear.

Consistent with past practice, the ranges of budgets and goals included in this Plan are illustrative and the Company will revisit both in each subsequent Annual Plan.

## 10.1 EERMC Three-Year Savings Targets

On May 8, 2020 the RI PUC approved Targets for Electric and Natural Gas Energy Efficiency and active electric demand response for the period 2021 through 2023.<sup>40</sup> The Targets are based upon the modeled maximum achievable potential or “Max Scenario” and represent what is theoretically achievable before the application of the prudence and reliability requirements of the Least Cost Procurement Standards, and based upon the application of a now outdated set of evaluation, measurement and verification assumptions to translate customer adoption of measures to a level of claimable savings that the Company may take credit for and incorporate into benefit cost models and other planning tools. These Targets are aspirational, providing high guideposts to inspire ambitious energy savings goals.

Table 38. Electric Energy Savings Targets

	2021	2022	2023
Electric Targets (Lifetime MWh)	1,949,782	2,037,314	2,059,265

Table 39. Natural Gas Energy Savings Targets

	2021	2022	2023
Natural Gas Targets (Lifetime MMBtu)	9,598,108	9,948,779	9,958,127

Table 40. Combined Heat and Power Energy Savings Targets and Peak Reduction Targets

	2021	2022	2023
CHP Electric Energy Savings (Lifetime MWh)	723,337	723,337	723,337
CHP Peak Demand Reduction (Annual MW)	11.1	11.1	11.1

Table 41. Passive and Active Electric Peak Savings Targets

	2021	2022	2023
Passive Peak Demand Reduction (Annual MW)	30.8	33.2	33.5
Active Peak Demand Reduction (Annual MW)	33.9	52.7	74.5
Total Peak Demand Reductions (Annual MW)	64.7	85.9	108.0

### 10.1.1 How the Savings Targets Were Developed

In support of developing ambitious energy efficiency procurement energy savings goals, the Standards call upon the Energy Efficiency Resource Management Council (EERMC) and the Rhode Island Office of Energy Resources (OER) to prepare and submit a Three-Year Least-Cost Procurement Report and Targets. The purpose of the Report and Targets are to provide guidance for Least Cost Procurement proposed by the distribution company over the following three years. The PUC then conducts a public review of the Report and issues an order adopting specific three-year Targets for energy efficiency and

<sup>40</sup> RI PUC Docket 5023. <http://www.ripuc.ri.gov/eventsactions/docket/5023page.html>

conservation procurement. The Three-Year Least-Cost Procurement Report and Targets submitted by the EERMC and adopted by the PUC were based on the recently completed Market Potential Study's modeled maximum achievable potential.

The last comprehensive potential study was completed approximately ten years ago. Without a recent potential study, target setting in previous recent three-year planning processes relied on a top down estimation of savings, which started with an estimation of the percent of energy sales that might be achieved through energy efficiency procurement based on recent local program history, overlaid with achievements in other jurisdictions and some broader market assumptions. In contrast, using a potential study built on detailed estimates of individual program and energy efficiency measure potential in the market can provide a more data driven estimate of achievable savings. This can result in both a more refined starting point for setting top down or portfolio-wide energy savings targets, as well as identify efficiency measures with high savings potential as a starting point for building program measure mixes and designs in annual plans.

The EERMC commissioned Dunskey Energy Consulting to determine the technical, economic, and achievable levels of energy efficiency, active electric demand response, and CHP savings in the market for the period 2021 through 2026. The EERMC, OER, and DPUC managed the Market Potential Study, with input from National Grid. The study analyzed opportunities to secure savings from electric, natural gas, and delivered fuels energy efficiency measures, active demand response, heating electrification, combined heat and power (CHP), and solar photovoltaic behind-the-meter installations. The study identified all technically achievable potential, economic potential, and provided three modeled scenarios of program achievable potential; a "Low Scenario", "Mid Scenario", and "Max Scenario".

The study scenarios were modeled by starting with a "Low Scenario," designed to reflect a "business as usual" case i.e. continuing current Company offerings,<sup>41</sup> including program design, measures, and delivery methods, customer rebate and incentive levels, and program budgets. The "Mid Scenario" assumes enhancements to the programs to reduce customer barriers to adoption of energy efficiency and increases incentives to further improve customer economics. The maximum achievable scenario model assumes the same barrier reductions as the "Mid Scenario" and increases customer incentives to fully eliminate the customer's share of the incremental cost of the efficiency measures.

The Dunskey team used the incentive level as the primary mechanism of tuning the model to develop the three scenarios. This analytic choice, to tune savings potential primarily by increasing the incentive level, was made to simplify the modeling and was not intended to provide a reliable estimate of the true cost or budget needed to achieve measure adoption. It neither reflects an accurate estimate of the direct financial incentives necessary to drive participation nor does it provide a reliable proxy for the actual cost implications of program design and delivery activities that serve to overcome financial and non-financial customer barriers other market barriers to achieving cost efficient savings. This point will be

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<sup>41</sup> National Grid's Rhode Island Energy Efficiency programs received a perfect 20/20 score from the American Council for an Energy Efficient Economy (ACEEE) in its 2019 State Energy Efficiency Scorecard.

referenced in the discussion of how the savings goals were developed, as it helps to explain the variance between the Targets and savings goals.

## 10.2 National Grid’s Three-Year Savings Goals

Table 42, Table 43, and Table 44 show the electric and gas portfolio savings goals with associated benefits, costs, and benefit-cost results in comparison to the Targets as proposed by the EERMC and approved by the PUC.

Table 42. 2021-2023 Docket 5023 Electric Energy Targets and Three-Year Plan Proposed Electric Energy Goals<sup>42</sup>

Ref	Electric Energy	2021	2022		2023	
			Base Case	High Scenario	Base Case	High Scenario
a	Docket 5023 Electric Energy Targets (Lifetime MWh)	1,949,782	2,037,314	2,037,314	2,059,265	2,059,265
b	Docket 5023 Electric Energy CHP Targets (Lifetime MWh) <sup>43</sup>	723,337	723,337	723,337	723,337	723,337
<b>c</b>	<b>Docket 5023 Electric Energy Total (Lifetime MWh) (a + b)</b>	<b>2,673,119</b>	<b>2,760,651</b>	<b>2,760,651</b>	<b>2,782,602</b>	<b>2,782,602</b>
d	3YP Electric Energy Goal (Lifetime MWh)	1,277,943	1,287,194	1,350,211	1,371,597	1,535,656
e	3YP CHP Energy Goal (Lifetime MWh)	28,619	284,101	284,101	428,929	428,929
<b>f</b>	<b>3YP Electric Goals Total (Lifetime MWh)</b>	<b>1,306,562</b>	<b>1,571,295</b>	<b>1,634,312</b>	<b>1,800,526</b>	<b>1,964,585</b>
g	Difference (f – c)	-1,366,557	-1,189,356	-1,126,339	-982,076	-818,017
h	Docket 5023 Electric Energy Targets (Annual MWh)	182,299	187,378	187,378	171,353	171,353
i	Docket 5023 Electric Energy CHP Targets (Annual MWh)	45,209	45,209	45,209	45,209	45,209
<b>j</b>	<b>Docket 5023 Electric Energy Total (Annual MWh) (h + i)</b>	<b>227,508</b>	<b>232,587</b>	<b>232,587</b>	<b>216,562</b>	<b>216,562</b>
k	3YP Electric Energy Goal (Annual MWh)	138,047	129,667	134,808	137,279	150,751
l	3YP CHP Energy Goal (Annual MWh)	1,431	14,205	14,205	21,446	21,446
<b>m</b>	<b>3YP Electric Goals Total (Annual MWh) (k + l)</b>	<b>139,478</b>	<b>143,872</b>	<b>149,013</b>	<b>158,726</b>	<b>172,198</b>

<sup>42</sup> The RI PUC approved Targets in lifetime savings units. The equivalent annual savings units from the Market Potential Study “Max Scenario” that is the source of the Targets are shown for comparability with prior Plans that used annual units.

<sup>43</sup> The approved targets also included 11.1 MW of annual peak demand reduction from CHP for each year of 2021 - 2023. Not shown in this table.

Ref	Electric Energy	2021	2022		2023	
n	Difference (m – j)	-88,030	-88,715	-83,574	-57,836	-44,364

Table 43. 2021-2023 Docket 5023 Natural Energy Targets and Three-Year Plan Proposed Natural Gas Energy Goals<sup>44</sup>

Ref	Natural Gas Energy	2021	2022		2023	
			Base Case	High Scenario	Base Case	High Scenario
a	Docket 5023 Natural Gas Targets (Lifetime MMBtu)	9,598,108	9,948,779	9,948,779	9,958,127	9,958,127
b	3YP Natural Gas Goals (Lifetime MMBtu)	4,206,444	4,635,880	5,317,230	5,626,011	7,030,038
c	Difference (b – a)	-5,391,664	-5,312,899	-4,631,549	-4,332,116	-2,928,089
d	Docket 5023 Natural Gas Targets (Annual MMBtu)	749,344	770,569	770,569	787,805	787,805
e	3YP Natural Gas Goals (Annual MMBtu)	425,359	448,390	501,616	525,178	634,717
f	Difference (e – d)	-323,985	-322,179	-268,953	-262,627	-153,088

Table 44. 2021-2023 Docket 5023 Peak Demand Reduction Targets and Three-Year Plan Proposed Peak Demand Reduction Goals

Ref	Electric Peak Demand	2021	2022		2023	
			Base Case	High Scenario	Base Case	High Scenario
a	Docket 5023 Energy Efficiency Passive Peak Demand Reduction Target (Annual MW)	30.8	33.2	33.2	33.5	33.5
b	Docket 5023 CHP Peak Demand Reduction Target (Annual MW)	11.1	11.1	11.1	11.1	11.1
c	<b>Docket 5023 Total Energy Efficiency Passive Peak and CHP Demand Reduction Target (Annual MW) (a + b)</b>	<b>41.9</b>	<b>44.3</b>	<b>44.3</b>	<b>44.6</b>	44.6
d	3YP Energy Efficiency Passive Peak Demand Reduction Goal (Annual MW)	22.6	21.9	22.8	22.8	25.1
e	3YP CHP Passive Peak Demand Reduction Goal Total (Annual MW)	0.2	0.0	0.0	0.0	0.0
f	<b>3YP Energy Efficiency Passive Peak Demand Reduction Goal Total (Annual MW) (d + e)</b>	<b>22.7</b>	<b>21.9</b>	<b>22.8</b>	<b>22.8</b>	<b>25.1</b>
g	Difference (f – c)	-19.2	-22.4	-21.5	-21.8	-19.5

<sup>44</sup> The RI PUC approved Targets in lifetime savings units. The equivalent annual savings units from the Market Potential Study “Max Scenario” that is the source of the Targets are shown for comparability with prior Plans that used annual units.

Ref	Electric Peak Demand	2021	2022		2023	
h	Docket 5023 Active Demand Response Peak Demand Reduction (Annual MW)	33.9	52.7	52.7	74.5	74.5
i	Dunsky Max Scenario ISO-NE Equivalent Peak	See Footnotes <sup>45</sup>			103	103
j	3YP Active Peak Demand Reduction Goal (Annual MW)	39.3	46.5	59.7	53.7	76.2
k	Difference (i - j)	See Footnotes			-49.3	-26.8

*10.2.1 How the Proposed Savings Goals Were Developed*

In previous three-year planning cycles, the Company began its assessment of potential by reviewing past performance across the portfolio of programs, including the scale of achieved savings as well as fixed and unit costs associated with programs and individual savings measures. As noted previously, this was all completed without benefit of a recent comprehensive market potential assessment. The Company worked with its program managers, vendors and sales team to estimate the pipeline for the next year, and to the extent feasible, the next three years. This pipeline assessment was then weighted by several factors, including historic accuracy of predictions. In general, the six to eight months estimate of potential sales is relatively strong, while sales estimates further out become a less reliable tool for identifying potential. The Company would then apply several additional factors both to programs and to measures including historic performance, extent of saturation of known opportunities, customer acceptance and market readiness, costs and scalability for newer technologies and delivery approaches, and workforce readiness and availability, all of which modify the achievable potential. The Company would also apply lessons learned from recent evaluations as well as feedback from customers and delivery partners, and incorporate estimates of new potential that may be unlocked from new initiatives or enabling strategies that had been or would be implemented during the prospective plan period.

As noted previously, in this three-year planning cycle, the Company and stakeholders benefitted from the recently completed Market Potential Study in developing the savings goals in this Three-Year Plan. While planning began prior to the finalization of the study in May 2020, the development of the market potential study changed the planning process in fundamental ways. First, it allowed for a more accurate, data driven assessment of the energy efficiency measures which were reaching saturation and which measures offered the highest remaining opportunity. It also quantified the shift in program opportunity from easy to install independent energy savings measures to dependence on comprehensive packages of highly interactive combinations of measures that have high installation costs and customer acceptance barriers and depend on a well-developed workforce with broad skill sets and specialized training. The most critical insight gained from the Market Potential Study was confirmation that continued energy efficiency savings are dependent on a new era of program design where savings result

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<sup>45</sup> The ISO-NE equivalent peak demand reduction targets from Appendix G of the Market Potential Study are shown in this table for year 2023. This study result is comparable to the method by which National Grid tracks and reports peak reductions and is more comparable than the Target value. Appendix G from the MPS does not provide ISO-NE equivalent values for 2021 and 2022.

from *comprehensive* energy solutions. The Market Potential Study helped to highlight where the Company needed to place investments and develop new strategies.

In coordination with the EERMC and its consultants, the National Grid team cross-referenced the range of achievable potential scenarios included in the Market Potential Study from the top down (i.e. looking at the savings goals produced by the Study at the portfolio level and program levels) and from the measure-level (market potential and savings potential).

As discussed in the preceding section 10.1.1 How the Savings Targets Were Developed, the model used did not generate a reliable estimate of the true cost or budget needed to achieve measure adoption - just a simplified, high-level estimate based on the application of blunt assumptions to modeled potential volumes of measures and assumed programmatic fixed costs. The Company therefore cross-referenced the Market Potential Study results with its own historical costs. The Company worked with program managers, vendors and sales teams to gain insight into customer acceptance and market readiness, potential costs and scalability for newer technologies and delivery approaches, and workforce readiness and availability. This allowed the Company to develop, and share with stakeholders, a more nuanced understanding of the programs' ability to ramp and capture potential savings represented in the Market Potential Study.

To arrive at the "Base Case" savings presented herein, the Company then used its benefit cost planning tools to build an interactive bottom-up model to develop savings estimates based on specific program-level and measure-level mixes. Unlike the Market Potential Study model, with this tool the Company can see the interactive effects of savings and budget and can tune the model with budget estimates that more accurately reflect reasonable costs estimates. This model also allows the Company to see how incorporating other desired portfolio goals – including equitable access for all customers, investment in workforce development and R&D in measures and approaches with long-term potential but not the likelihood to deliver significant savings within the planning window - for the next phase of program design impact budget and savings. Given the Company's lack of a current clear path to achieving the "High Scenario" savings, these savings were assumed through an equal allocation of savings across all non-behavioral programs with the exception of CHP that was not scaled, and Demand Response, that was scaled only in commercial offerings. Correspondingly, budget requirements were estimated through scaling budgets above the "Base Case" in equal proportion to the difference between "Base Case" and "High Scenario" savings".

### 10.3 Savings Targets as Compared to Goals

The Three-Year Plan illustrative goals do not match the Targets set based on the "Max" achievable potential as can be seen in Tables 33, 34 and 35 in Sec. 10.2 above. The process that resulted in the Targets provided an aspirational savings guidepost that did not incorporate critical planning considerations essential to assuring programs provide equitable access to all customers, balancing near term savings with building a steady and resilient set of energy efficiency programs and associated workforce that can continue to secure cost effective savings over the full Plan term.



Instead, the Targets were built by scaling a business as usual model based on 2019 program experience in an attempt to quantify the potential for energy efficiency savings, and were not adjusted to account for or attempt to model the impacts of COVID-19 and the resulting economic downturn. The Targets assume a linear increase over planned 2020 savings despite the real reductions in savings achieved in 2020, significant workforce and delivery impacts that require investment to build back to 2020 planned levels, and do not reflect continued uncertainty on how and when the economy will begin to recover. Additionally, the modeling process that produced the Targets was not intended to provide a reliable estimate of the true cost or actual budget needed to achieve measure adoption, and as such, did not apply any budget constraints and did not offer a detailed estimate of the likely costs required to achieve modeled savings.

Hence, the Company applied more detailed cost estimates to savings opportunities and analyzed non-financial barriers to achieving potential (discussed further in Section 10.4). In addition, the Company applied critical reliability considerations during program planning; specifically, incorporating issues related to workforce, market continuity, and program scalability. The Company is investing in building flexibility into program delivery and supporting workforce efforts that will allow us to preserve, rebuild and grow the energy efficiency workforce, in part in response to COVID-19. These investments are critical to ensuring longer term goals and supporting economic recovery, however are unlikely to produce identifiable savings in the first year of the Plan. In general, incorporating these considerations has the effect of reducing year 1 savings in order to make investments that preserve other benefits to customers and ensure the long-term viability of energy efficiency programs.

The Company has a powerful but limited set of levers available to increase program participation and thereby savings. The Company can directly change incentive levels and increase or decrease technical assistance and marketing. National Grid can also, working with partners, directly support broader education, awareness, workforce behavior and development, and installation quality. Most of these levers can be turned upwards to increase savings but will simultaneously increase cost and near-term surcharge requirements. Conversely, they can be turned down, which is likely to reduce near-term costs and surcharges, at the expense of both near-term, and potentially longer-term, savings.

The Company's savings goals also incorporate prudence considerations, ensuring that investments are equitable and consider rate and bill impacts on all customers. In the first year of the Three-Year Plan, the Company has committed to maintain a flat system benefit charge in response to the significant economic challenges faced by our customers in light of the COVID-19 pandemic. This firm budgetary limit is the primary, binding constraint limiting the Company from setting higher 2021 savings goals that would come closer to achieving the Targets based on the "Maximum" scenario. In addition, the Company is balancing the portfolio's achievement of near savings with strategic investments to support small businesses and low- and moderate-income customers who may be most vulnerable to the economic and other impacts of COVID. These investments, due to their higher cost per saving, also have the effect of limiting savings goals in the surcharge constrained 2021 environment.

While the Company has set the range of savings targets for 2022 and 2023 with an optimistic expectation of economic recovery (and, in the case of the "High Scenario" range of savings, currently unidentified pathways to achieving those savings), they too do not reach the "Maximum Achievable"

MPS scenario-based Targets. The primary barrier to raising savings goals to the maximum level is the associated program budgets and resulting customer funding required to achieve more aggressive savings levels in each year of the Plan. However, budget is not the only barrier. The critical path to approaching the "Maximum Achievable Scenario" Targets is a continuous process of identifying customers' remaining obstacles to adopting additional energy efficiency, along with market and other systemic barriers, and incrementally adjusting and enhancing program designs to apply solutions that continue to drive savings while also recognizing that resulting budget requirements are directly related to rate and bill impacts that are a component of the prudence standard that the Company must continually meet in proposing Energy Efficiency plans.

#### 10.4 Evaluating and Addressing Barriers to "Max" Savings Targets

During conversations with stakeholders around the development of this Three-Year Plan, the parties determined a need to document approaches to addressing gaps between the goals outlined in this Plan and the results of the Market Potential Study that informed the Targets as approved by the PUC in Docket 5023. Over the course of several months, the Company undertook an analysis of the top measures identified in the Potential Study and considered the barriers to adoption of these measures at levels that would support the Targets. The Company then presented and discussed these findings with stakeholders at Technical Working Group (TWG) and EERMC meetings. Further analysis was undertaken to group barriers into categories with relative weighting of the impact to achieving targets. For example, in the residential sector, the primary areas of focus were:

- HVAC
- Hot Water
- Behavior
- Envelope
- Plug Load
- Whole Building
- Products
- Lighting
- Custom Measures

These measures were then analyzed across five categories of barriers and ranked based on ability to deliver savings. The five barriers were:

- **Financial (or Monetary):** Customer economics, technical resources, system integration.
- **Workforce:** Auditors, commission agents, experienced controls programmers.
- **Customer Information:** Awareness, priorities, expertise.
- **Code:** Changes to baselines that will impact claimable savings.
- **Other:** Site conditions, dependencies on outside actors, programmatic barrier.

Within each barrier category, the Company has also identified potential barrier mitigation strategies and approaches that could be utilized to address, and reduce the impact of, identified barriers.

Descriptions of typical barriers identified within each barrier category, and the strategies and approaches the Company will continue to evaluate over the course of implementing programs in the next three years, are listed below in Table 45.

Table 45. Identified Programmatic Barriers to Customer Adoption and Potential Mitigation Strategies and Approaches

Barrier	Description	Identified Barrier Mitigation Strategies and Approaches
<b>Financial</b>	<ul style="list-style-type: none"> <li>• Customer Economics</li> <li>• Project Economics</li> <li>• Technical Resources</li> <li>• System Integration</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate alternative finance options for customers</li> <li>• Reconsider presentation of finance options such as “cash flow” benefits of finance</li> <li>• Incentives for behavior change to sustain energy savings</li> <li>• Partner with external funding sources to reduce financing costs borne by customers</li> <li>• Continual evaluation of incentive levels to drive optimum participation while minimizing rate impacts</li> </ul>
<b>Workforce</b>	<ul style="list-style-type: none"> <li>• Aging Workforce and Fewer New Entrants</li> <li>• Available Auditors</li> <li>• Commission Agents/Controls Programmers</li> </ul>	<ul style="list-style-type: none"> <li>• Training and education – Design and Implementation/Maintenance and Operations</li> <li>• Partner with technical school students and local colleges</li> <li>• Survey contractors to learn gaps in necessary training</li> </ul>
<b>Customer</b>	<ul style="list-style-type: none"> <li>• Awareness</li> <li>• Priorities</li> <li>• Expertise</li> </ul>	<ul style="list-style-type: none"> <li>• Create customer awareness of benefits of complex Energy Efficiency solutions through comprehensive marketing</li> <li>• Work with other industries such as realtors and home inspector</li> <li>• Partner with municipalities to educate customers on benefits of Energy Efficiency</li> </ul>
<b>Code or Other Programmatic Barriers</b>	<ul style="list-style-type: none"> <li>• Changes to Baselines Affect Net Savings</li> <li>• Site Conditions</li> <li>• Dependencies on Outside Actors</li> <li>• Programmatic or Technological Barriers</li> </ul>	<ul style="list-style-type: none"> <li>• Creation of Energy Information Platform to provide customer intelligence</li> <li>• Market Sector Approach - to implement curated technologies specific to a market e.g. Telecom, Lodging, Restaurants etc.</li> <li>• Continued investment in investigation and advancement of emerging technologies</li> </ul>

In the majority of scenarios across both C&I and Residential sectors, a key identified barrier to customer adoption was “Financial.” As such, while not all customers will require a 100% incentive to move forward with a project, there are still substantial financial hurdles for many customers. This is where the company will focus opportunity investigation and evaluation efforts, including evaluating alternative finance options for customers.

Another common barrier tended to be customer-related, in that customers were either not aware of savings opportunities and efficiency program offers, or have competing priorities that must be overcome to move forward with adoption. This is where it is important to create a comprehensive marketing approach that cultivates customer awareness of the benefits of energy efficiency. In all cases, the Company will need to continue to work with stakeholders in order to optimize incentive levels that drive desired customer adoption of measures (and the resulting savings and benefits) while balancing the potentially competing goal of maximizing the cost efficiency of our programs.

In the Residential and Income Eligible sectors, the Company considered issues around the aging workforce and the availability of auditors and weatherization contractors to be another large barrier. Hence, in the coming years the Company proposes increased investment in workforce development, and a focus on training and educational opportunities for contractors.

Within the C&I sector, the Company believes there to be more programmatic barriers, including availability of necessary technologies and site conditions, that would fall within the “Other” category.

Across both sectors, “Code” remained the least common barrier, though it remains an important consideration, as expectations of future code changes should necessarily influence decisions around investing in programmatic design changes in pursuit of potential current claimable savings opportunities that might be more cost effectively achieved through alternative (i.e. codes and standards based) mechanisms.

The Company and stakeholders agree that further analysis to not only identify the impact of these barriers, but develop solutions to mitigate that impact, will be needed over the course of the Three-Year Plan. The Company commits to collect and analyze the information needed to further understand the impact and relative scale of the specific barriers noted above, and those barriers that may not yet be obvious, or currently identified. This process is already underway and will continue through the next three years.

The pre-weatherization case study that follows in the next section illustrates an approach the Company will continue to refine over the next Three-Year Plan to further evaluate, understand, and develop approaches for mitigation of barriers to higher savings thresholds through the planning process that will inform the 2022 and 2023 Annual Energy Efficiency Plans.

#### 10.4.1 Case Study: Pre-Weatherization Barriers within EnergyWise

EnergyWise is the flagship in-home comprehensive energy efficiency offering for all Rhode Islanders in single family residences (defined as one to four-unit buildings). The program offers comprehensive energy efficiency services using a whole house approach to identify energy saving opportunities in all major energy systems and uses, including heating and water heating systems, appliances, lighting, water saving measures, plug loads, and building envelope leaks.

All market rate customers with either an electric or gas National Grid account can participate. Customers with any heating fuel type, including delivered fuels, are served. Delivered fuel customers can receive services through their electric account. Homeowners, renters, and landlords are all encouraged to participate.

##### 10.4.1.1 Three-Year Savings Weatherization Goals and Targets

Through the planning process that led to the goals included in this Plan, the Company estimated that weatherization through the EnergyWise program can contribute substantial annual and lifetime savings in each year of the Three-Year Plan. These savings estimates are shown in the chart below based on the 2022 and 2023 base savings goal along with the comparable weatherization opportunity (single family insulation) identified by the Market Potential Study “Max Scenario” that informed the Targets.

Table 46. Three-Year Weatherization Goals from “Base Case” – Lifetime Energy Savings

<b>Electric Weatherization Savings</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Three-Year Plan	4,879 MWh	5,289 MWh	6,455 MWh
Market Potential Study (“Max Scenario”)	13,229 MWh	13,295 MWh	13,361 MWh
<b>Natural Gas Weatherization Savings</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Three-Year Plan	474,699 MMBTU	487,933 MMBTU	625,301 MMBTU
Market Potential Study (“Max Scenario”)	979,113 MMBTU	984,008 MMBTU	988,928 MMBTU

##### 10.4.1.2 Barriers to Additional Savings Potential from Weatherization

To understand the barriers to additional savings through residential weatherization, the Company analyzed data on adoption of weatherization in recent program history, analyzed changes that were

made due to the COVID-19 pandemic, and assessed the details of the adoption assumed in the Market Potential Study.

Traditionally, the Company has offered incentives for weatherization ranging from 50% of total costs up to 75%. This generally results in a 30-40% adoption rate for weatherization depending on the incentive offered. During the COVID-19 pandemic the program offered a 100% incremental incentive in order to drive adoption of weatherization during a period when that demand would likely have otherwise lagged due to customer economic challenges and/or concerns around allowing vendors into their homes. (This increased incentive was also implemented with the goal of building the weatherization job pipeline and backlogs the Company felt would be necessary to motivate weatherization contractors to be more aggressive in bringing back to work employees who were furloughed or laid off during the period of time when COVID health and safety concerns necessitated the Company's temporary suspension of on-premise energy efficiency service delivery by contracted vendors). The increased incentive has had the desired impact, leading to an increase in adoption of recommended weatherization measures identified during EnergyWise home energy assessments from 40% to 80%. However, 20% of customers are still not adopting<sup>46</sup> weatherization, even when that work is offered at no cost to them. This demonstrates that there are further barriers, outside of purely financial considerations, that prevent customers from moving forward with adoption.

Chief among these, the Company believes, is the prevalence of a variety of pre-weatherization barriers that prevent customer adoption of weatherization measures. These include the presence of hazards such as vermiculite, asbestos, mold, and knob-and-tube wiring. Remediation of these barriers can be challenging, time consuming, and expensive. Moreover, the inconvenience of the weatherization process itself, due to household disruption beyond these pre-weatherization hazards, also presents a barrier to customer adoption. The Company is undertaking a process to prioritize barrier significance in terms of magnitude and addressability in order to focus on areas where our programs can have the largest and most cost-efficient impact in reducing barriers to weatherization adoption.

#### *10.4.1.3 Mitigating Pre-Weatherization Barriers in the 2021 Annual Plan*

Approximately 45%<sup>47</sup> of all home energy assessments have some type of pre-weatherization barrier that prevents the customer from moving forward with the weatherization project. The energy efficiency programs currently provide a \$250 incentive to either remediate health & safety barriers or to certify the barrier has been addressed. Barriers that can be resolved with the incentive primarily involve upgrades or maintenance to the heating system. If the customer does not have a contractor with whom they are comfortable working, it can take additional time to obtain multiple quotes for a remediation project. To simplify the process, the Program will facilitate connections to HVAC and electrical

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<sup>46</sup> While this data point cites information collected during the COVID-19 pandemic, there are other circumstances where 100% incentives still do not drive customer adoption, as was the case with Heat Pumps in the Income Eligible Multifamily program that were offered at 100% incentive but the maintenance required, along with the physical appearance of the systems on the outside of the property, resulted in the project not moving forward.

<sup>47</sup> This is a conservative number based on three-year average from 2016-2018 data. 2020 completed EnergyWise evaluation shows 64% of homes in 2019 had a pre-weatherization barrier. This could be an increasing barrier as programs continue to go deeper and more non-barriered homes have been served.

contractors that resolve the most common types of pre-weatherization barriers, removing one additional task for the customer.

For barriers that exceed the \$250 incentive, the Company and interested stakeholders are looking for external resources that provide funding or financing<sup>48</sup> for these barriers as well as opportunities to coordinate those offerings into the customer journey. The alleviation of pre-weatherization barriers was also a recommendation from the recently completed EnergyWise evaluation and thus will be key focus for the Company not only in the Annual Plan, but over the course of the 2021-23 Three-Year Plan.

#### *10.4.1.4 Areas of Exploration to Further Mitigate Pre-Weatherization Barriers During the Term of the Three-Year Plan*

While the pre-weatherization barriers are highly prevalent and wide ranging, there are some additional areas that can support this quantification. Current information presented above is a subset of data based on market-rate, single family customers. The Company will also be working to quantify the single family income eligible program information where pre-weatherization barriers are likely to closely resemble, if not exceed, the data of market rate housing. The Company will also be observing results of pre-weatherization pilots that are beginning in NY and CT.

Discussions at the end of 2020 have begun to identify and align with organizations such as Green and Healthy Homes (GHHI) that align, braid, and coordinate funding to overcome some of the pre-weatherization barriers. Continued discussions will focus on what additional funding may exist for RI customers to address health and safety concerns within their homes. It is important to note that while the energy efficiency programs will coordinate to the best of the program's abilities to simplify the overall pre-weatherization remediation process, it currently appears that funding requirements that rely solely on energy efficiency funding for these measures will significantly exceed currently available resources. Knob and tube wiring, the most prevalent pre-weatherization barrier, costs upwards of \$7,500 to remediate if it exists throughout the home. This expense easily exceeds the average customer cost of close to \$1,000 for weatherization. Additional research on customer preferences on customer discretionary income will inform the programs' abilities to overcome this barrier. When the cost for remediation is \$10,000, households will frequently be weighing that cost against other major household improvements such as bathroom upgrades, new roof, etc., and even non-household expenditures such as vacations.

The most immediately available support the Company can provide for pre-weatherization will be to provide customers with contact information for remediation services and where possible work with other organizations to coordinate customer timelines so that less disruption is required from the customer. The Company has successfully worked with GHHI in the past on a lead remediation in the income eligible programs. It will also be valuable for customers to understand remediation costs so that budgeting for these upgrades are possible.

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<sup>48</sup> The Company started allowing up to \$10,000 of pre-weatherization barriers to be financed on the HEAT loan starting in 2019. Only specific barriers can be financed. There has been limited uptake to report on at this time.

## 10.5 Continued Evaluation of Savings Goals in Annual Plans

Over the next three years, the Company will continue to evaluate energy efficiency opportunities as markets develop, and will account for these developments in the binding savings goals and associated budgets embedded in the 2022 and 2023 Annual Plans. As each Annual Plan is developed, the savings goals and budgets contained therein may deviate from the illustrative goals and budgets established in this Three-Year Plan. In each subsequent Annual Plan, the Company will ask the PUC to approve the goals, budgets, and funding mechanism pursuant to Section 3.4 (C) of the LCP Standards and R.I. Gen. Laws §§ 39-1-27.7(c)(4).

The recent past saw the transformation of the lighting market and reduced opportunities for the programs to claim savings from efficient lighting. Alternatively, over the course of the last three-year plan, gas savings opportunities were identified and ensuing annual plans were adjusted to increase goals accordingly.

The EERMC's Targets Filing Memorandum acknowledge this potential for change:

“Further, to support consideration of the distinction between Targets and the goals associated with Three-Year EE Procurement Plans and Annual EE Plans, we acknowledge that while the 2021-2023 electric and natural gas savings targets have been developed using the best information and data available at this time, additional relevant information is likely to be learned as time passes. Consequently, the annual savings targets, including considerations such as their associated budgets as estimated during the planning process, should be reviewed each year during the development of the Annual Plans. Following this review, the plan goals should either be determined to remain identical to the Targets, or revised in light of new information... The parties participating in the Annual Plan development should agree that revisions to the annual energy savings targets should be based only on clearly documented changes in cost-effective resource availability, or unforeseeable and/or unavoidable constraints to their full pursuit and achievement”.<sup>49</sup>

The Company, in collaboration with the EERMC and stakeholders, will seek opportunities to continue driving efficiency savings in its Annual Plans, including revisiting the results of the Market Potential Study to inform annual planning.

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<sup>49</sup> EERMC Targets Filing Memorandum in RI PUC Docket 5023.  
[http://www.ripuc.ri.gov/eventsactions/docket/5023-EERMC-Targets-Yrs2021-2032Memo%20+%20Slides 2020 03 23.pdf](http://www.ripuc.ri.gov/eventsactions/docket/5023-EERMC-Targets-Yrs2021-2032Memo%20+%20Slides%2020%2003%2023.pdf)

## 11 Funding Plan

The following funding sources may be used in each year. The amounts from each source will be detailed in Annual Plans. The electric funding plan is funded by the first three sources.

1. One line on the customers' bill currently labeled "Energy Efficiency Programs" comprised of the existing energy efficiency program charge of \$0.01121 per kWh<sup>50</sup>, plus a fully reconciling funding mechanism charge in accordance with RI Gen. Laws § 39-1-27.7. This total of the two factors is represented by the "EE Charge per kWh" row 17 in Three-Year Plan Attachment 1. Energy Efficiency Funding Plan.
2. Revenue resulting from the participation of energy efficiency resources in ISO-New England's forward capacity market (FCM).
3. Projected large C&I commitments.
4. Proceeds from the auction of Regional Greenhouse Gas Initiative allowances pursuant to RI Gen. Laws § 23-82.6.
5. Funds from any state, federal, or international climate or cap and trade legislation or regulation including, but not limited to, revenue or allowances allocated to expand energy efficiency programs.
6. For the 2020 Year End Fund Balance, a credit in the electric energy efficiency fund in the amount of \$472,181.83 pursuant to the PUC Open Meeting on September 1, 2020 in relation to Docket No. 4755 Navy CHP Settlement Agreement.
7. Other sources as may be identified by the EERMC and the Company.

The gas funding plan is funded by the following sources:

1. One line on the customers' bill labeled "Energy Efficiency Programs" comprised of the existing average energy efficiency program charge of \$0.601 per Dth, plus a fully reconciling funding mechanism charge in accordance with RI Gen. Laws § 39-1-27.7. This total of the two factors is represented by the "EE Program Charge per Dth", rows 15a and 15b, in Three-Year Plan Attachment 1. Energy Efficiency Funding Plan.

There are many uncertainties associated with the exact amount of additional funding needed, such as company sales, customer co-payments, commitments made for future years, the settlement price for future FCM auctions, identification of additional outside sources of funding, the impacts of COVID-19 on collections, and the Company's success in minimizing costs in order to maximize customer benefit. In

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<sup>50</sup> The "existing" energy efficiency charge refers to the 2019 EE charge because Attachment 1 includes the 2020 Annual Plan as the initial year prior to 2021-2023 Three-Year Plan. The Attachment therefore utilizes the 2019 EE charge as the "existing" energy efficiency charge on line 2.

<sup>51</sup> An additional \$0.00030/kwh for the Renewable Energy Fund charge is combined with the EE and SRP charge that appears on customers' bills.



each subsequent Annual Plan, the Company will incorporate new information on each of these elements.

Due to these uncertainties, the Company illustrates the amount of funding it expects to need in each year of the Three-Year Plan (including both the “Base Case” and “High Scenario” in 2022 and 2023, and asks for provisional approval of these amounts in order to guide the development of those future Annual Plans. Three-Year EE Plans that include a combined filing of the first year of Annual EE Plans pursuant to Section 3.3.B.v of the Least Cost Procurement Standards, shall be filed on or before October 15, 2020 and triennially thereafter. In the following two years Annual EE Plans will be filed on or before October 1.

Although Three-Year Plan Attachment 1. Energy Efficiency Funding Plan does not show sector-specific funding levels, the Company will continue its practice of having the residential and commercial and industrial sectors subsidize income-eligible sector energy efficiency programs in order to provide equity in the availability of program funds and opportunities to benefit from energy efficiency, which is identified core component in the Standards and a priority of stakeholders.

The Company intends to continue to work with various market actors (vendors, distributors, designers, and builders) to obtain the best pricing for services to achieve program savings goals while controlling costs. The Annual Plans, including the attached filing of the 2021 Annual Plan, will reflect progress made in leveraging other sources of funding, if applicable.

## 12 Performance Incentive Plan

### 12.1 Background and Process

This section details the recent history and structure of Energy Efficiency Performance Incentive Mechanisms (PIMs) in Rhode Island, as well as the process that National Grid, OER, DPUC, and the EERMC engaged in during April-September 2020 to develop and propose a new performance incentive for the 2021-2023 Three-Year Energy Efficiency Plan that would take effect with the 2021 Annual Energy Efficiency Plan.

#### 12.1.1 History of PIM

The Company has had the opportunity to earn a performance incentive based on outcomes achieved in the delivery of its energy efficiency programs since at least 2003 for electric programs and 2008 for natural gas programs, as indicated in historical tables E-11 and G-11 of its most recent 2020 Annual Energy Efficiency Plan.<sup>52</sup>

In recent history, approved PIMs have included the following characteristics:

*Table 47. Characteristics of Approved Performance Incentive Mechanisms*

<p><b>Earning Opportunity and Allocation</b></p>	<p>The Company’s performance “design level” (i.e. the Company’s anticipated earnings in the event that achieved outcomes exactly match committed and approved savings goals and spending levels in each Annual Plan) incentive earning opportunity pool has been established at 5% of approved eligible spending budget since 2013.</p> <p>Each year, this total pool has been further divided, first by portfolio (electric vs. gas) and then by sector (market-rate residential, income eligible, commercial and industrial).</p> <p>See Figure 4 for the recent history of these absolute ‘design’ level performance incentive earning opportunities.</p>
<p><b>Performance Evaluation Basis</b></p>	<p>Company performance within the electric portfolio has historically been determined on the basis of achievement of annual electric energy savings (MWh) and passive demand reductions (kW) due to energy efficiency measures, relative to planned levels.</p> <p>Within the gas portfolio, performance has been evaluated on the basis of achievement of annual natural gas energy savings (MMBtu).</p>

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<sup>52</sup> See for example, table E-11 and G-11 in the 2020 Annual Energy Efficiency Plan, Docket 4979: [http://www.ripuc.ri.gov/eventsactions/docket/4979-NGrid-Compliance-RevElecTables\(12-20-19\).pdf](http://www.ripuc.ri.gov/eventsactions/docket/4979-NGrid-Compliance-RevElecTables(12-20-19).pdf) [http://www.ripuc.ri.gov/eventsactions/docket/4979-NGrid-2020%20EPP%20Revisions%20-%20Tables%20and%20Testimony%20\(12-6-2019\).pdf](http://www.ripuc.ri.gov/eventsactions/docket/4979-NGrid-2020%20EPP%20Revisions%20-%20Tables%20and%20Testimony%20(12-6-2019).pdf)

	<p>To promote and account for cost efficiencies in the delivery of savings, adjustments have been made to planned goals in specific circumstances where actual spending has been greater or less than planned savings. The general impact of these mechanisms has been to increase Company performance incentive earnings when cost efficiencies have been realized, while penalizing the Company when the actual unit cost to achieve planned savings has been higher than planned.</p>
<p><b>Earnings Thresholds and Caps</b></p>	<p>In recent history, within each sector, the Company has begun earning performance incentives (at 25% of design level), upon achieving 75% of planned savings (adjusted for approved spending adjustment mechanisms). Earnings have grown linearly, to the point where the Company would earn 100% of planned performance incentive levels upon achievement of 100% of spend-adjusted planned savings goals. Above achievement of 100% of spend-adjusted planned savings, the Company maintained the opportunity to scale earnings on a linear basis, up to the opportunity to earn a maximum of 125% of planned performance incentives at achievement of 125% or more of spend-adjusted planned savings.</p> <p>See Figure 5 for a graphical representation of the recent historical relationship between spend-adjusted realized savings relative to plan and Company earnings opportunity relative to ‘design level’ performance incentive pool.</p> <p>The purpose of the earnings thresholds and caps was to account for the inherent uncertainty associated with exogenous factors that could impact the Company’s ability to deliver planned savings, to encourage the Company to commit to more aggressive goals than the Company would likely support in an environment where earnings only began at 100% achievement of planned savings, and to protect customers from uncapped performance incentive mechanisms payments to the Company in the event of significant over-performance.</p>

Figure 4. Historical Approved Performance Incentive Earning Opportunity, 2012-2020

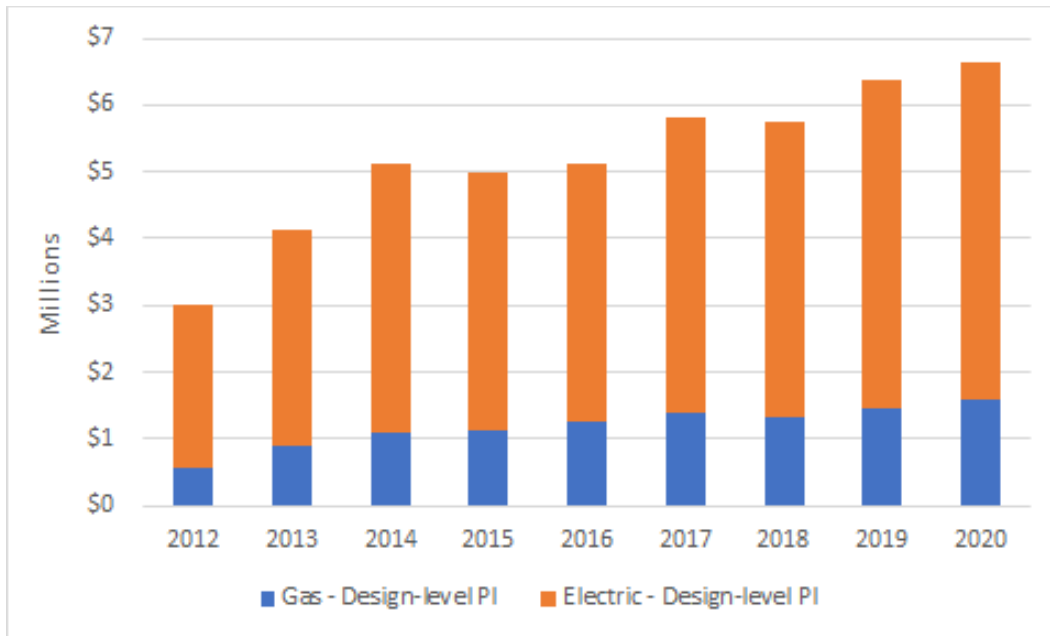
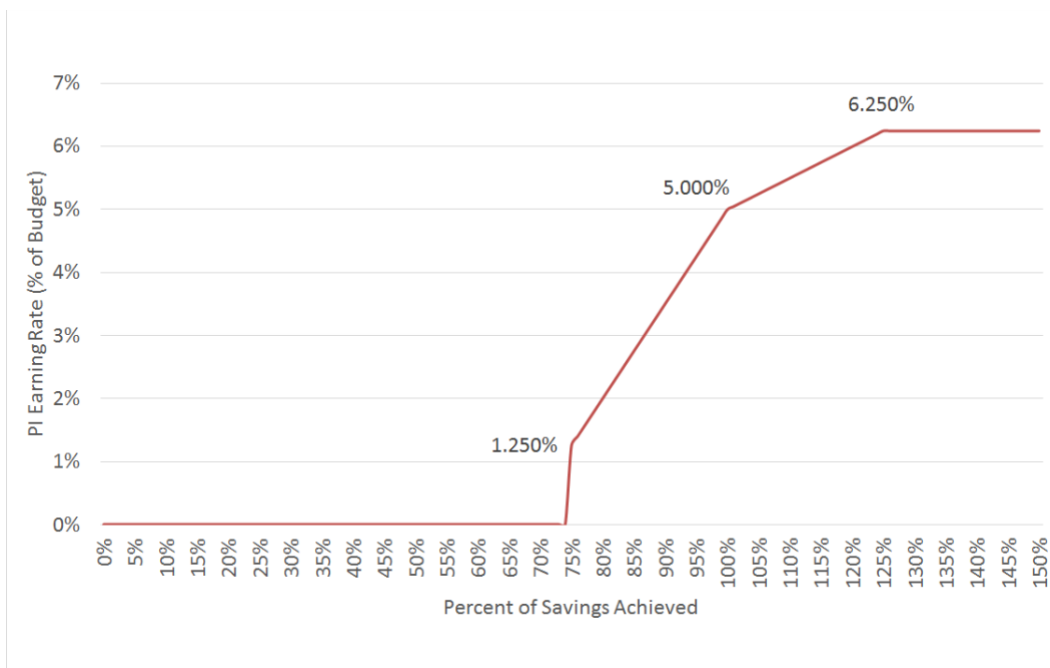


Figure 5. Historical relationship between Ratio of Actual Savings to Planned Savings and Earned Performance Incentive



### 12.1.2 Modifications to Performance Incentive Mechanism in 2020

In the 2020 Annual Plan, several adjustments to the historical performance incentive mechanism were approved, largely related to the spending adjustment factors that rewarded cost efficiency and penalized higher than planned spending in the achievement of realized savings in specific circumstances.

Additionally, in the 2020 Annual Plan, the Company committed to working with stakeholders, including the Office of Energy Resources and the Division of Public Utilities and Carriers, to revisit the Energy Efficiency Performance Incentive Mechanism in the 2021-23 Three-Year Plan, including a go-forward decoupling of the historical formulaic 5% link between planned implementation budgets and the design level performance incentive pool.

*12.1.3 Process for 2021 – 2023 Three-Year Plan and 2021 Annual Plan*

The 2021-2023 Three-Year and the 2021 Annual Energy Efficiency plans have benefited from the release of both revised PIM Principles in Docket 494353, as well as final Least Cost Procurement Standards adopted by the PUC in Docket 5015.54.

In parallel with the development and release of these guidance and Standards documents, the Company also engaged closely with stakeholders in 2020 to evaluate the existing performance mechanism and develop a proposed new mechanism.

This process began with an identification of stakeholder perspectives on the positive and negative aspects of the current performance incentive mechanism structure. A summary of these perspectives is shown below in Table 48

*Table 48. Summary of Stakeholder Perspectives on Existing Performance Incentive Mechanisms*

Benefits of Current PIM Structure	Drawbacks of Current PIM Structure
Relatively simple to implement and track performance. Communication around earning opportunity is direct and simple for both internal National Grid staff, external parties, and the general public.	Company earning opportunity explicitly tied to Program Budgets – creates perceived incentive to grow the program budget irrespective of achieved benefits, penalizes Company for pursuit of cost efficiency during planning process
Has supported nation-leading EE programs for many years (i.e. has historically driven desired outcomes)	Aligned with achievement of energy and demand savings that drive societal benefits, but no direct connection to those societal benefits
Relatively straightforward, clear identification of priorities – provides two core variables for Company to steer on. Directly tied to energy and demand savings from EE programs	Not directly or clearly tied with other state policy goals – e.g. local workforce development
Savings are a quantifiable, objective, straightforward measurement of Company achievement, and largely reward outcomes that are under Company’s control	Asymmetry in slope of over/under-performance payments acts as a disincentive for the Company to agree to aggressive / stretch goals

<sup>53</sup> RI PUC Docket 4943: <http://www.ripuc.ri.gov/eventsactions/docket/4943page.html>

<sup>54</sup> RI PUC Docket 5015: <http://www.ripuc.ri.gov/eventsactions/docket/5015page.html>

Independent sector level performance evaluation discourages Company from de-emphasizing any one sector in pursuit of savings in other sectors	Sector level performance evaluation deviates from some elements of PUC PIM principles, may discourage company pursuit of maximum benefits in some circumstances
Spend vs. budget adjustment mechanisms promote cost efficiency, provide a proxy benefit sharing model	Division between energy savings and passive demand payments increases Company risk, as a practical matter may not always drive desired behaviors
Provides Company with path to stability, growth in achievable earnings potential when desired outcomes are achieved	Disconnect between demand response / PST-based incentive mechanism and the energy efficiency PIM mechanism

Through this process, stakeholders also developed a set of objectives and desired outcomes from the PIM redesign process with the recognition that not all of these objectives would be achievable through any redesign (i.e. some are somewhat mutually exclusive, or at least work at cross purposes). Many of the objectives below are shared across multiple stakeholders while some are specific to individual entities:

*Table 49. Summary of Stakeholder Perspectives on Desired PIM Structure Redesign*

Identified Stakeholder Objectives for PIM Structure Redesign
<ul style="list-style-type: none"> <li>• Alignment and consistency with guidance provided in Dockets No. 4943 (PIMs Guidance Docket) and 5015 (LCP Standards Docket)</li> <li>• Decoupling of explicit/formulaic linkage between earning opportunities and program budgets</li> <li>• Ensure that Energy Efficiency program investments are valued by the Company – parity or alignment with alternative business earnings</li> <li>• Ensure that state policy is integrated/reflected in prioritized program outcomes</li> <li>• Alignment of positive customer outcomes – cost savings, ratepayer benefits, societal benefits - with the Company’s incentive earnings</li> <li>• A mechanism that encourages the Company to pursue and achieve maximum possible savings, while optimizing cost-efficiency and being cognizant of other constraints</li> <li>• Parity between earning upside and downside in order to properly incent stretch goals</li> <li>• Optimization of and alignment with achievement of societal benefits</li> <li>• Support the creation of sustainable Energy Efficiency markets and market transformations where appropriate</li> <li>• Clarity and simplicity in the establishment, evaluation, measurement and internal and external communication around goals and targets, and connected to data that the Company currently tracks, analyzes and/or reports on</li> <li>• Reward outcomes as opposed to being overly prescriptive in incenting / rewarding paths to desired outcomes</li> </ul>

- Growth and stability in achievable earnings potential

## 12.2 New PIM Proposal

Following from the above stakeholder process and resulting analysis, the Company proposes the following PIM structure. While the details of each component of the mechanism are described in more detail below, the core elements of the proposed mechanism are as follows:

- Individual annual total incentive pools will be established each year on a negotiated basis for the Electric and Gas portfolios.
- These total annual portfolio-level incentive pools will be allocated each year, also on a negotiated basis, across four sub-segments: market rate residential programs, income-eligible programs, commercial and industrial programs, and a cross-cutting “equity metric.”
- Achievement or earnings within each non “equity metric” pool will be based on Company achievement of net benefits within that sector, relative to planned achievement of sector-specific net benefits. The specific measure of performance within the “equity metric” pool will be negotiated each year, based on availability of measurable data and on desired outcomes related to equity.
- Achievement of earnings within each sub-segment will remain independent, and subject to earning thresholds and caps. The default earning threshold for each sub-segment will be set at 75%, and the default earning cap will set at 125%, though each cap and threshold may be independently evaluated and adjusted for each sub-segment within each Annual Plan as conditions warrant.
- The proposed mechanism specifically excludes any performance incentive opportunity related to achievement of outcomes related to Company efforts to advance Codes and Standards, though (as addressed in Section 3.2.4 of the 2021 Annual Plan) the Company and stakeholders anticipate continuing to evaluate potential options here with a goal of proposing an incremental mechanism specific to this area in the 2022 Annual Plan.

### 12.2.1 Net Benefits Framework

The core of the new performance incentive mechanism for energy efficiency will be based on a net benefits framework, where the Company’s earning opportunity will be defined as a percentage of the total benefits generated by energy efficiency programs less the cost to achieve those benefits. Specific components of this proposal are outlined in subsections below. The net benefits framework will only apply to energy efficiency programs and therefore will remove the planned and achieved benefits and costs associated with the active demand response (Connected Solutions) programs, as a separate Peak Reduction PIM continues to exist for those programs.

#### 12.2.1.1 Total Benefits

The total pool of benefits achieved in each sub-segment will be defined by the benefits that are quantified and monetized in the RI Test as applied to the energy efficiency portfolio and programs, with

the exception of the macroeconomic benefits defined here and in the RI Test as the additional state gross domestic product generated by the programs.<sup>55</sup>

Macroeconomic benefits will be excluded from the pool of total benefits used for purposes of calculation of the performance incentive mechanism due to the implications of their inclusion, and specifically to the potentially perverse impact that the inclusion of such benefits in the performance incentive mechanism could have on inciting Company pursuit of and achievement of cost efficiencies in the delivery of energy efficiency programs.

The macroeconomic benefits included in the RI Test are calculated by multiplying programmatic spending by a multiplier for each program.<sup>56</sup> For example, the macroeconomic multiplier for the electric Residential HVAC program is 1.42. For each \$1 of program spending within the electric Residential HVAC program, \$1.42 of incremental macroeconomic benefits are estimated to be created. Were these macroeconomic benefits to be included in the total pool of benefits credited to the Company's programs for purposes of calculating the performance incentive, the Company would earn a greater performance incentive for spending more to achieve a specified savings outcome (and earn less for spending less to achieve that same spending outcome). The purpose of a net benefits framework is to properly incent the Company to maximize benefits while maintaining cost controls to do so; including RI Test macroeconomic benefits in this calculation would run counter to this goal.

While the macroeconomic benefits are appropriate to include in the RI Test for screening programs and portfolios of energy efficiency investments per the Docket 4600 guidance, the Company and stakeholders ultimately determined that it would be most consistent with PIM principles and desired outcomes to omit macroeconomic benefits from the calculation of benefits for performance incentive earning opportunity.

### *12.2.2 Costs to be Netted from Total Benefits*

In order to calculate the pool of net benefits, the Company will subtract the cost to achieve from the pool of benefits as defined in the preceding section. The pool of costs subtracted from total benefits is defined as the "eligible spending budget". The eligible spending budget will be set in a manner consistent with past practice in setting the costs that are directly tied to the programmatic activities that generate savings and benefits, and will contain the costs to implement the programs in the following categories:

- Program Planning & Administration
- Marketing
- Cost of services and product rebates/incentives provided to customers
- Sales, Technical Assistance & Training

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<sup>55</sup> The RI Test as applied in the energy efficiency context is a benefit cost test developed to apply the Benefit-Cost Framework developed in the Guidance Document in RI PUC Docket 4600A ([http://www.ripuc.ri.gov/eventsactions/docket/4600A-PUC-GuidanceDocument-Notice\\_8-3-17.pdf](http://www.ripuc.ri.gov/eventsactions/docket/4600A-PUC-GuidanceDocument-Notice_8-3-17.pdf)). The RI Test is intended to properly assess efficiency as a resource, align the screening of efficiency programs and portfolios with state policy goals, and

<sup>56</sup> Attachment 4 of the 2021 Annual Energy Efficiency Plan provides detail on the macroeconomic multipliers, how they were developed, and how they are applied.



- Evaluation & Market Research

Costs that will be omitted from the calculation of eligible spending budget are:

- Participating customer costs
- Commitments
- Regulatory costs for OER and EERMC
- Pilot costs
- Assessment costs
- Performance Incentive

### *12.2.3 Sector Earning Thresholds and Caps*

As in prior years, the Company's earning opportunity will be established by independently determined achievement within specified sub-segments (market rate residential, income eligible, and commercial and industrial sectors) in both the electric and gas portfolio. The maintenance of this sector based approach strikes an appropriate balance between providing the Company with necessary flexibility to maximize achievement of benefits in light of evolving market conditions over the course of the year, while also ensuring appropriate transparency and accountability for delivery of benefits to customers segments.

For all sectors within both the gas and electric portfolios, each Annual Plan will default to the Company not earning any performance incentive until 75% of planned net benefits have been achieved. Upon achievement of 75% of planned net benefits, the Company will be eligible to earn 75% of the target performance incentive for that sector. The Company's sector specific earning opportunity will grow linearly, in line with the proportion of realized net benefits to achieved net benefits. As with the current performance incentive mechanism, Company earnings will be capped at 125% of the target incentive pool, based on achieving or exceeding 125% of planned PIM net benefits exclusive of economic benefits. Between each sector's threshold and cap, the earning opportunity will be linear, such that for each incremental unit of net benefit achieved, the incremental earning is the same throughout the range.

While sector specific thresholds and caps will default to these levels within each Annual Plan, each of these elements will be independently evaluated and may be adjusted for each sector within each Annual Plan, as conditions warrant.

### *12.2.4 Equity Metric*

During discussions with stakeholders, several parties communicated a desire for a partial allocation of the performance incentive earning opportunity to be linked to the achievement of desired program outcomes related to customer equity.

In the absence of more robust historical baseline data around the composition and attributes of program participants, the parties have agreed that the level of energy efficiency participation delivered to rental units can likely serve as a near-term proxy for measuring participation by moderate-income residential customers, customers for whom English is not a primary language, and other customer demographic categories whom stakeholders have identified as priority segments for equity purposes. The Company has introduced more robust renter tracking capabilities in 2020, with the expectation of creating a set of baseline data of sufficient breadth and quality through mid-2021 to become the basis of a "rental unit" equity metric to be incorporated into the 2022 performance incentive mechanism to be

proposed in the 2022 Annual Plan. The specific allocation of the share of the overall performance incentive pool to this metric will be proposed in the 2022 Annual Plan.

#### *12.2.5 Performance Incentive Payout Rates*

Actual performance incentive earnings will be calculated based on applying a specified 'payout rate' to each dollar of claimed net benefits attributable to the Company's energy efficiency programs, as specified in Section 12.2.1. These sector specific payout rates will be determined annually, on the basis of sector specific planned benefits and implementation costs and the allocation of the overall performance incentive pool to each sector.

# CONCLUSION

## 13 Conclusion and Requested Rulings

In accordance with the LCP Standards adopted by the PUC in Docket 5015, the Company requests that the PUC approve the following:

- Initial three year energy savings goals and strategies for Energy Efficiency and Conservation Procurement programs and portfolio; provided that such goals may be updated annually.
- Initial three year budget plan for Energy Efficiency and Conservation Procurement programs and portfolio; provided that specific budgets will be proposed and approval sought through the annual plans.
- The structure of the performance incentive mechanism proposed herein, with specific goals, earning rates, and provided that the specific earning opportunity is determined in subsequent binding annual plans.

## ATTACHMENTS

### Three-Year Plan Attachment 1. Energy Efficiency Funding Plans

Note that shareholder incentive is not included in the funding plans in this draft. Shareholder incentive cost will be included in the Final Plan and the subsequent funding plans.

Figure 6. 2021 Electric Funding Plan - Base Case

2021-2023 Energy Efficiency Plan Electric Funding Plan Base Case						
PART A: TOTAL FUNDING AND GOALS		2020	2021	2022	2023	Three Year Total
1)	Projected kWh Sales:	7,113,299,305	6,606,545,391	6,774,853,822	6,960,791,359	
2)	2019 Effective EE Charge	\$ 0.01121	\$ 0.01121	\$ 0.01121	\$ 0.01121	
3)	Projected DSM Revenues from DSM Charge = (1) x (2)	\$ 79,740,085	\$ 74,059,374	\$ 75,946,111	\$ 78,030,471	\$ 228,035,956
4)	<u>Other Sources of DSM Funding</u>					
4a)	Projected Commitments from prior year	\$ -	\$ -	\$ -	\$ -	\$ -
4b)	Projected Entering Fund Balance and Interest:	\$ 1,699,941	\$ 19,961,695	\$ -	\$ -	\$ 19,961,695
4c)	Projected Capacity FCM Payments from ISO-NE:	\$ 17,481,764	\$ 16,017,995	\$ 14,547,606	\$ 10,082,947	\$ 40,648,549
4)	Subtotal Other Sources of DSM Funding	\$ 19,181,704	\$ 35,979,691	\$ 14,547,606	\$ 10,082,947	\$ 60,610,244
5)	Projected Funding Available from Traditional Sources = (3) + (4)	\$ 98,921,790	\$ 110,039,064	\$ 90,493,718	\$ 88,113,418	\$ 288,646,200
6)	Implementation Budget	\$ 104,242,086	\$ 115,114,909	\$ 127,991,046	\$ 140,193,625	\$ 383,299,580
7)	<u>Other Expenses</u>					
7a)	Estimated Commitments to Future Years	\$ -	\$ -	\$ -	\$ -	\$ -
7b)	Target Incentive	\$ 5,054,448	\$ 5,500,000	\$ 5,500,000	\$ 5,500,000	\$ 16,500,000
7c)	EERMC Expenses	\$ 893,686	\$ 845,559	\$ 1,188,445	\$ 1,355,447	\$ 3,389,450
7d)	OER Expenses	\$ 893,686	\$ 845,559	\$ 1,188,445	\$ 1,355,447	\$ 3,389,450
7)	Subtotal Additions to Program Expenses	\$ 6,841,821	\$ 7,191,117	\$ 7,876,890	\$ 8,210,894	\$ 23,278,901
8)	Other Budget Requests	\$ -	\$ -	\$ -	\$ -	\$ -
9)	Total Funding Required = (6) + (7) + (8)	\$ 111,083,907	\$ 122,306,026	\$ 135,867,936	\$ 148,404,519	\$ 406,578,481
<b>PART B: FULLY RECONCILING FUNDING</b>						
10)	Projected Funding Available = (5)	\$ 98,921,790	\$ 110,039,064	\$ 90,493,718	\$ 88,113,418	\$ 288,646,200
11)	Fully Reconciling funding needed from additional source = (8) - (9)	\$ 12,162,118	\$ 12,266,962	\$ 45,374,218	\$ 60,291,101	\$ 117,932,281
12)	Fully Reconciling funding charge per kWh = (11) / (1)	\$ 0.00170	\$ 0.00185	\$ 0.00669	\$ 0.00866	
13)	Currently Effective EE Charge = (2)	\$ 0.01121	\$ 0.01121	\$ 0.01121	\$ 0.01121	
14)	Proposed Adjustment to Reflect Fully Reconciling Funding Mechanism = (12) + (13)	\$ 0.01291	\$ 0.01306	\$ 0.01790	\$ 0.01987	
15)	Proposed SRP Opex Factor per kWh, excluding uncollectible recovery:	\$ 0.00015	\$ -	\$ -	\$ -	
16)	Currently Effective Uncollectible Rate	1.30%	1.30%	1.30%	1.30%	
17)	Proposed Energy Efficiency Program charge per kWh, including uncollectible recovery = (14)+(15) / (1-(16))	\$ 0.01323	\$ 0.01323	\$ 0.01813	\$ 0.02013	
<b>PART C: Plan TARGETS AND COST/LIFETIME kWh</b>						
18)	Plan Goal, Annual Net MWh	178,423	139,478	143,872	158,726	442,076
19)	Plan Goal, Net Lifetime MWh	1,527,817	1,306,562	1,571,295	1,800,526	4,678,382
20a)	Plan Goal, Annual Net Peak kW Savings (passive)	29,793	22,723	21,866	22,776	67,364
20b)	Plan Goal, Annual Net Peak kW Savings (active)	50,672	39,339	46,452	53,656	139,447
<b>RI Test</b>						
21a)	Total benefits	\$ 598,696,281	\$ 606,490,655	\$ 653,356,839	\$ 726,732,762	\$ 1,986,580,256
22a)	Net benefits = (21a) - (9)	\$ 487,612,373	\$ 484,184,629	\$ 517,488,903	\$ 578,328,243	\$ 1,580,001,775
23)	Customer Costs	\$ 17,398,102	\$ 18,435,780	\$ 26,524,977	\$ 27,736,953	\$ 72,697,710
24a)	Cost/lifetime kWh = ((9) + (23) - (7b)) / (19)*1000	\$ 0.081	\$ 0.104	\$ 0.100	\$ 0.095	\$ 0.099
25a)	Benefit Cost Ratio = (21a) / ((9) + (23))	4.66	4.31	4.02	4.13	4.14
26a)	Utility Spending per lifetime kWh = ((6)+(7b)) / (19)) / 1000	\$ 0.072	\$ 0.092	\$ 0.085	\$ 0.081	\$ 0.085
<b>TRC Test</b>						
21b)	Total benefits	\$ 318,877,305	\$ 274,105,039	\$ 293,152,375	\$ 328,112,171	\$ 895,369,585
22b)	Net benefits = (21b) - (9)	\$ 207,793,398	\$ 151,799,013	\$ 157,284,440	\$ 179,707,652	\$ 488,791,104
23)	Customer Costs	\$ 17,398,102	\$ 18,435,780	\$ 26,524,977	\$ 27,736,953	\$ 72,697,710
24b)	Cost/lifetime kWh = ((9) + (23) - (7b)) / (19)*1000	\$ 0.081	\$ 0.104	\$ 0.100	\$ 0.095	\$ 0.099
25b)	Benefit Cost Ratio = (21b) / ((9) + (23))	2.48	1.95	1.81	1.86	1.87
26b)	Utility Spending per lifetime kWh = ((6)+(7b)) / (19)) / 1000	\$ 0.072	\$ 0.092	\$ 0.085	\$ 0.081	\$ 0.085
Line	Notes:					
	1 Sales from Company sales forecast (Fall 2020) and includes Streetlights.					
	2 2019 EE Charge includes uncollectible recovery and System Reliability factor. See Line 13, Table E-1, December 23, 2019 Compliance Filing in Docket 4979 (2020 EE Plan). <a href="http://www.ripuc.r.i.gov/eventsactions/docket/4979-NGrid-Compliance-RevElecTables(12-20-19).pdf">http://www.ripuc.r.i.gov/eventsactions/docket/4979-NGrid-Compliance-RevElecTables(12-20-19).pdf</a> . An additional \$0.00030/kwh for the Renewable Energy Fund charge is combined with the EE and SRP charge that appears on customers' bills.					
	4a There are no commitments planned at this time.					
	4b Projected Entering Fund Balance source is the projected 2019 Year-End Fund Balance as included in the 2020 Annual Plan. Year 2021 Fund Balance source is the projected 2020 Year-End Balance as included in the 2021 Annual Plan. 2022 and 2023 assume no Year-End Fund Balance.					
	4c FCM Payments based on internal estimates.					
	6 Program expenses include implementation and evaluation expenses and RIIB funding. They do not include OER, EERMC, or target performance incentives.					
	7b 2020 Target incentive is equal to 5% of eligible spending budget, which excludes OER, EERMC, Commercial ConnectedSolutions, Residential ConnectedSolutions, Assessments, and Pilots. Refer to 2020 EE Plan Tables E-2, E-3, and E-9. 2021 performance incentive is based on the proposed value for the 2021 Annual Plan, Tables E-2, E-3, and E-9. The Company anticipates that future performance incentive values will be established in the context of setting binding budgets and energy savings goals for the 2022 and 2023 Annual Plans.					
	7c EERMC Expenses equal to 2% of total collections from customers' Energy Efficiency Program Charge, reduced by 1%.					
	7d OER Expenses equal to 2% of total collections from customers' Energy Efficiency Program Charge, reduced by 1%.					
	21-26 21-26a reflects benefit/cost using the RI Test and 21-26b reflects benefit/cost using the TRC Test. Benefits and Costs are inclusive of savings from the ConnectedSolutions active demand response program.					

Figure 7. 2021 Electric Funding Plan - High Scenario

2021-2023 Energy Efficiency Plan Electric Funding Plan High Scenario						
<b>PART A: TOTAL FUNDING AND GOALS</b>						
	2020	2021	2022	2023	Three Year Total	
1) Projected kWh Sales:	7,113,299,305	6,606,545,391	6,774,853,822	6,960,791,359		
2) 2019 Effective EE Charge	\$ 0.01121	\$ 0.01121	\$ 0.01121	\$ 0.01121		
3) <b>Projected DSM Revenues from DSM Charge = (1) x (2)</b>	<b>\$ 79,740,085</b>	<b>\$ 74,059,374</b>	<b>\$ 75,946,111</b>	<b>\$ 78,030,471</b>	<b>\$</b>	<b>228,035,956</b>
<b>Other Sources of DSM Funding</b>						
4a) Projected Commitments from prior year	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
4b) Projected Entering Fund Balance and Interest:	\$ 1,699,941	\$ 19,961,695	\$ -	\$ -	\$ -	\$ 19,961,695
4c) Projected Capacity FCM Payments from ISO-NE:	\$ 17,481,764	\$ 16,017,995	\$ 14,547,606	\$ 10,082,947	\$	\$ 40,648,549
4) <b>Subtotal Other Sources of DSM Funding</b>	<b>\$ 19,181,704</b>	<b>\$ 35,979,691</b>	<b>\$ 14,547,606</b>	<b>\$ 10,082,947</b>	<b>\$</b>	<b>60,610,244</b>
5) <b>Projected Funding Available from Traditional Sources = (3) + (4)</b>	<b>\$ 98,921,790</b>	<b>\$ 110,039,064</b>	<b>\$ 90,493,718</b>	<b>\$ 88,113,418</b>	<b>\$</b>	<b>288,646,200</b>
6) <b>Implementation Budget</b>	<b>\$ 104,242,086</b>	<b>\$ 115,114,909.09</b>	<b>\$ 135,193,341</b>	<b>\$ 158,306,651</b>	<b>\$</b>	<b>408,614,901</b>
<b>Other Expenses</b>						
7a) Estimated Commitments to Future Years	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
7b) Target Incentive	\$ 5,054,448	\$ 5,500,000	\$ 5,500,000	\$ 5,500,000	\$	\$ 16,500,000
7c) EERMC Expenses	\$ 893,686	\$ 845,559	\$ 1,247,867	\$ 1,520,812	\$	\$ 3,614,238
7d) OER Expenses	\$ 893,686	\$ 845,559	\$ 1,247,867	\$ 1,520,812	\$	\$ 3,614,238
7) <b>Subtotal Additions to Program Expenses</b>	<b>\$ 6,841,821</b>	<b>\$ 7,191,117</b>	<b>\$ 7,995,734</b>	<b>\$ 8,541,624</b>	<b>\$</b>	<b>23,728,475</b>
8) Other Budget Requests	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
9) <b>Total Funding Required = (6) + (7) + (8)</b>	<b>\$ 111,083,907</b>	<b>\$ 122,306,026</b>	<b>\$ 143,189,075</b>	<b>\$ 166,848,275</b>	<b>\$</b>	<b>432,343,376</b>
<b>PART B: FULLY RECONCILING FUNDING</b>						
10) Projected Funding Available = (5)	\$ 98,921,790	\$ 110,039,064	\$ 90,493,718	\$ 88,113,418	\$	288,646,200
Fully Reconciling funding needed from additional source = (8) - (9)	\$ 12,162,118	\$ 12,266,962	\$ 52,695,357	\$ 78,734,857	\$	143,697,176
11) Fully Reconciling funding charge per kWh = (11) / (1)	\$ 0.00170	\$ 0.00185	\$ 0.00777	\$ 0.01131		
12) Currently Effective EE Charge = (2)	\$ 0.01121	\$ 0.01121	\$ 0.01121	\$ 0.01121		
<b>Proposed Adjustment to Reflect Fully Reconciling Funding Mechanism = (12) + (13)</b>						
14) Proposed SRP Opex Factor per kWh, excluding uncollectible recovery:	\$ 0.00015	\$ -	\$ -	\$ -		
15) Currently Effective Uncollectible Rate	1.30%	1.30%	1.30%	1.30%		
16) <b>Proposed Energy Efficiency Program charge per kWh, including uncollectible recovery = (14)+(15) / (1-(16))</b>	<b>\$ 0.01323</b>	<b>\$ 0.01323</b>	<b>\$ 0.01922</b>	<b>\$ 0.02281</b>	<b>\$</b>	
<b>PART C: Plan TARGETS AND COST/LIFETIME kWh</b>						
18) Plan Goal, Annual Net MWh	178,423	139,478	149,013	172,198		460,689
19) Plan Goal, Net Lifetime MWh	1,527,817	1,306,562	1,634,312	1,964,585		4,905,459
20a) Plan Goal, Annual Net Peak kW Savings (passive)	29,793	22,723	22,774	25,104		70,601
20b) Plan Goal, Annual Net Peak kW Savings (active)	50,672	39,339	59,682	76,181		175,202
<b>RI Test</b>						
21a) Total benefits	\$ 598,696,281	\$ 606,490,655	\$ 696,592,377	\$ 830,726,438	\$	2,133,809,471
22a) Net benefits = (21a) - (9)	\$ 487,612,373	\$ 484,184,629	\$ 553,403,303	\$ 663,878,163	\$	1,701,466,095
23) Customer Costs	\$ 17,398,102	\$ 18,435,780	\$ 27,724,189	\$ 30,810,899	\$	76,970,869
24a) Cost/lifetime kWh = ((9) + (23) - (7b)) / (19)*1000	\$ 0.081	\$ 0.104	\$ 0.101	\$ 0.098	\$	0.100
25a) Benefit Cost Ratio = (21a) / ((9) + (23))	4.66	4.31	4.08	4.20		4.19
26a) Utility Spending per lifetime kWh = ((6)+(7b)) / (19)) / 1000	\$ 0.072	\$ 0.092	\$ 0.086	\$ 0.083	\$	0.087
<b>TRC Test</b>						
21b) Total benefits	\$ 318,877,305	\$ 274,105,039	\$ 314,653,840	\$ 376,616,521	\$	965,375,400
22b) Net benefits = (21b) - (9)	\$ 207,793,398	\$ 151,799,013	\$ 171,464,765	\$ 209,768,246	\$	533,032,024
23) Customer Costs	\$ 17,398,102	\$ 18,435,780	\$ 27,724,189	\$ 30,810,899	\$	76,970,869
24b) Cost/lifetime kWh = ((9) + (23) - (7b)) / (19)*1000	\$ 0.081	\$ 0.104	\$ 0.101	\$ 0.098	\$	0.100
25b) Benefit Cost Ratio = (21b) / ((9) + (23))	2.48	1.95	1.84	1.91		1.90
26b) Utility Spending per lifetime kWh = ((6)+(7b)) / (19)) / 1000	\$ 0.072	\$ 0.092	\$ 0.086	\$ 0.083	\$	0.087
Line	<b>Notes:</b>					
	1 Sales from Company sales forecast (Fall 2020) and includes Streetlights.					
	2 2019 EE Charge includes uncollectible recovery and System Reliability factor. See Line 13, Table E-1, December 23, 2019 Compliance Filing in Docket 4979 (2020 EE Plan). <a href="http://www.ripsc.com/eventsactions/docket/4979-NGrid-Compliance-RevElecTables(12-20-19).pdf">http://www.ripsc.com/eventsactions/docket/4979-NGrid-Compliance-RevElecTables(12-20-19).pdf</a> . An additional \$0.00030/kwh for the Renewable Energy Fund charge is combined with the EE and SRP charge that appears on customers' bills.					
	4a There are no commitments planned at this time.					
	4b Projected Entering Fund Balance source is the projected 2019 Year-End Fund Balance as included in the 2020 Annual Plan. Year 2021 Fund Balance source is the projected 2020 Year-End Balance as included in the 2021 Annual Plan. 2022 and 2023 assume no Year-End Fund Balance.					
	4c FCM Payments based on internal estimates.					
	6 Program expenses include implementation and evaluation expenses and RIIB funding. They do not include OER, EERMC, or target performance incentives.					
	7b 2020 Target incentive is equal to 5% of eligible spending budget, which excludes OER, EERMC, Commercial ConnectedSolutions, Residential ConnectedSolutions, Assessments, and Pilots. Refer to 2020 EE Plan Tables E-2, E-3, and E-9. 2021 performance incentive is based on the proposed value for the 2021 Annual Plan, Tables E-2, E-3, and E-9. The Company anticipates that future performance incentive values will be established in the context of setting binding budgets and energy savings goals for the 2022 and 2023 Annual Plans.					
	7c EERMC Expenses equal to 2% of total collections from customers' Energy Efficiency Program Charge, reduced by 1%.					
	7d OER Expenses equal to 2% of total collections from customers' Energy Efficiency Program Charge, reduced by 1%.					
	21-26 21-26a reflects benefit/cost using the RI Test and 21-26b reflects benefit/cost using the TRC Test. Benefits and Costs are inclusive of savings from the ConnectedSolutions active demand response program.					

Figure 8. 2021 Natural Gas 2021 Funding Plan - Base Case

2021-2023 Energy Efficiency Plan Gas Funding Plan Base Case						
<b>PART A: TOTAL FUNDING AND GOALS</b>						
	2020	2021	2022	2023	Three Year Total	
1)	Projected Dth Volume:	42,171,352	38,608,003	39,981,521	41,201,369	
2)	2019 Effective EE Charge	\$ 0.601	\$ 0.601	\$ 0.601	\$ 0.601	
3)	<b>Projected DSM Revenues from DSM Charge = (1) x (2)</b>	\$ 25,347,328	\$ 23,205,557	\$ 24,031,118	\$ 24,764,314	\$ 72,000,990
4)	<u>Other Sources of DSM Funding</u>					
4a)	Projected Commitments from prior year	\$ -	\$ -	\$ -	\$ -	\$ -
4b)	Projected Entering Fund Balance and Interest:	\$ (1,143,360)	\$ 5,817,487	\$ -	\$ -	\$ 5,817,487
4c)	Low Income Weatherization in Base Rates	\$ 200,000	\$ -	\$ -	\$ -	\$ -
4)	<b>Subtotal Other Sources of DSM Funding</b>	\$ (943,360)	\$ 5,817,487	\$ -	\$ -	\$ 5,817,487
5)	<b>Projected Funding Available from Traditional Sources = (3) + (4)</b>	\$ 24,403,969	\$ 29,023,044	\$ 24,031,118	\$ 24,764,314	\$ 77,818,476
6)	<b>Implementation Budget</b>	\$ 32,048,029	\$ 36,274,165	\$ 38,339,083	\$ 45,169,851	\$ 119,783,099
7)	<u>Other Expenses</u>					
7a)	Estimated Commitments to Future Years	\$ -	\$ -	\$ -	\$ -	\$ -
7b)	Target Incentive	\$ 1,578,601	\$ 1,700,000	\$ 1,700,000	\$ 1,700,000	\$ 5,100,000
7c)	EERMC Expenses	\$ 361,206	\$ 321,226	\$ 400,047	\$ 468,377	\$ 1,189,651
7d)	OER Expenses	\$ 361,206	\$ 321,226	\$ 400,047	\$ 468,377	\$ 1,189,651
7)	<b>Subtotal Additions to Program Expenses</b>	\$ 2,301,013	\$ 2,342,453	\$ 2,500,094	\$ 2,636,754	\$ 7,479,301
8)	<b>Total Funding Required = (6) + (7)</b>	\$ 34,349,042	\$ 38,616,618	\$ 40,839,177	\$ 47,806,605	\$ 127,262,400
<b>PART B: POTENTIAL INCREMENTAL FUNDING NEEDED</b>						
9)	Projected Funding Available = (5)	\$ 24,403,969	\$ 29,023,044	\$ 24,031,118	\$ 24,764,314	\$ 77,818,476
10)	Fully Reconciling funding needed from additional source = (8) - (9)	\$ 9,945,073	\$ 9,593,574	\$ 16,808,059	\$ 23,042,291	\$ 49,443,924
11)	Fully Reconciling funding charge per Dth = (10) / (1)	\$ 0.235	\$ 0.248	\$ 0.420	\$ 0.559	
12)	Currently Effective Average EE Charge = (2)	\$ 0.601	\$ 0.601	\$ 0.601	\$ 0.601	
13)	Proposed Adjustment to Reflect Fully Reconciling Funding Mechanism = (11) + (12)	\$ 0.836	\$ 0.849	\$ 1.021	\$ 1.160	
14)	Currently Effective Uncollectible Rate	1.91%	1.91%	1.91%	1.91%	
15)	<b>Proposed Average Energy Efficiency Program charge per Dth including uncollectible recovery = (13) / (1-14)</b>	\$ 0.852	\$ 0.865	\$ 1.040	\$ 1.182	
15a)	Proposed Residential Energy Efficiency Program charge per Dth including uncollectible recovery	\$ 1.011	\$ 1.011	\$ 1.234	\$ 1.403	
15b)	Proposed Commercial & Industrial Energy Efficiency Program charge per Dth including uncollectible recovery	\$ 0.704	\$ 0.704	\$ 0.859	\$ 0.977	
<b>PART C: PLAN TARGETS AND COST/LIFETIME Dth</b>						
16)	Plan Goal, Annual Dth	446,621	425,359	448,390	525,178	1,398,927
17)	Plan Goal, Lifetime Dth	4,816,261	4,206,444	4,635,880	5,626,011	14,468,336
<u>RI Test</u>						
18a)	Total benefits	\$ 143,440,133	\$ 144,975,124	\$ 157,697,125	\$ 187,070,491	\$ 489,742,739
19a)	Net benefits = (18a) - (8)	\$ 109,091,091	\$ 106,358,506	\$ 116,857,948	\$ 139,263,886	\$ 362,480,339
20)	Customer Costs	\$ 9,225,261	\$ 9,744,826	\$ 11,154,288	\$ 13,691,480	\$ 34,590,594
21a)	Cost/lifetime Dth = ((8) + (20)-(7b)) / (17)	\$ 8.72	\$ 11.09	\$ 10.85	\$ 10.63	\$ 10.83
22a)	Benefit-Cost Ratio = (18a) / (8) + (20)	3.29	3.00	3.03	3.04	3.03
23a)	Utility Spending per lifetime Dth = ((6)+(7b)) / (17)	\$ 6.98	\$ 9.03	\$ 8.64	\$ 8.33	\$ 8.63
<u>TRC Test</u>						
18b)	Total benefits	\$ 79,694,604	\$ 77,918,379	\$ 86,144,553	\$ 102,413,143	\$ 266,476,075
19b)	Net benefits = (18b) - (8)	\$ 45,345,562	\$ 39,301,761	\$ 45,305,377	\$ 54,606,537	\$ 139,213,675
20)	Customer Costs	\$ 9,225,261	\$ 9,744,826	\$ 11,154,288	\$ 13,691,480	\$ 34,590,594
21b)	Cost/lifetime Dth = ((8) + (20)-(7b)) / (17)	\$ 8.72	\$ 11.09	\$ 10.85	\$ 10.63	\$ 10.83
22b)	Benefit-Cost Ratio = (18b) / (8) + (20)	1.83	1.61	1.66	1.67	1.65
23b)	Utility Spending per lifetime Dth = ((6)+(7b)) / (17)	\$ 6.98	\$ 9.03	\$ 8.64	\$ 8.33	\$ 8.63
Line	Notes:					
1	From the Company's Q2 2020 Gas Forecast. Includes projections for firm and non-firm customers, excludes exempt DG customers. For exempt DG customers, 2021 exemption volume assumed for 2022 - 2023.					
2	The Currently Effective Average Charge is illustrated as one charge, shared among residential and commercial customers. The charge is separated into separate charges by customer segment on lines 15a and 15b.					
4a	There are no commitments planned at this time.					
4b	Projected Entering Fund Balance source is the projected 2019 Year-End Fund Balance as included in the 2020 Annual Plan, See Line 2, Table G-1, December 2, 2019 Compliance Filing in Docket 4979 (2020 EE Plan) <a href="http://www.ripuc.ri.gov/eventsactions/docket/4979-NGrid-2020 EEP-E-1 &amp; G-1 Tables (12-2-19).pdf">http://www.ripuc.ri.gov/eventsactions/docket/4979-NGrid-2020 EEP-E-1 &amp; G-1 Tables (12-2-19).pdf</a> . Year 2021 Fund Balance source is the projected 2020 Year-End Balance as included in the 2021 Annual Plan. 2022 and 2023 assume no Year-End Fund Balance.					
7b	2020 Target incentive is equal to 5% of eligible spending budget, which excludes OER, EERMC, Assessments, and Pilots. Refer to 2020 EE Plan Tables G-2, G-3, and G-9. 2021 performance incentive is based on the proposed value for the 2021 Annual Plan, Tables G-2, G-3, and G-9. The Company anticipates that future performance incentive values will be established in the context of setting binding budgets and energy savings goals for the 2022 and 2023 Annual Plans.					
7c	EERMC Expenses equal to 2% of total collections from customers' Energy Efficiency Program Charge, reduced by 1%.					
7d	OER Expenses equal to 2% of total collections from customers' Energy Efficiency Program Charge, reduced by 1%.					
15a & 15b	3YP is projected at a portfolio level therefore the split between residential and C&I charges is based of 2021 Annual Plan and will be updated in subsequent Annual Plans.					
21-26	21-26a reflects benefit/cost using the RI Test and 21-26b reflects benefit/cost using the TRC Test					

Figure 9. 2021 Natural Gas Funding Plan - High Scenario

2021-2023 Energy Efficiency Plan Gas Funding Plan High Scenario						
<b>PART A: TOTAL FUNDING AND GOALS</b>						
	2020	2021	2022	2023	Three Year Total	
1)	Projected Dth Volume:	42,171,352	38,608,003	39,981,521	41,201,369	
2)	2019 Effective EE Charge	\$ 0.601	\$ 0.601	\$ 0.601	\$ 0.601	
3)	<b>Projected DSM Revenues from DSM Charge = (1) x (2)</b>	\$ 25,347,328	\$ 23,205,557	\$ 24,031,118	\$ 24,764,314	\$ 72,000,990
<b>Other Sources of DSM Funding</b>						
4a)	Projected Commitments from prior year	\$ -	\$ -	\$ -	\$ -	\$ -
4b)	Projected Entering Fund Balance and Interest:	\$ (1,143,360)	\$ 5,817,487	\$ -	\$ -	\$ 5,817,487
4c)	Low Income Weatherization in Base Rates	\$ 200,000	\$ -	\$ -	\$ -	\$ -
4)	<b>Subtotal Other Sources of DSM Funding</b>	\$ (943,360)	\$ 5,817,487	\$ -	\$ -	\$ 5,817,487
5)	<b>Projected Funding Available from Traditional Sources = (3) + (4)</b>	\$ 24,403,969	\$ 29,023,044	\$ 24,031,118	\$ 24,764,314	\$ 77,818,476
6)	<b>Implementation Budget</b>	\$ 32,048,029	\$ 36,274,165	\$ 44,023,751	\$ 56,521,052	\$ 136,818,968
<b>Other Expenses</b>						
7a)	Estimated Commitments to Future Years	\$ -	\$ -	\$ -	\$ -	\$ -
7b)	Target Incentive	\$ 1,578,601	\$ 1,700,000	\$ 1,700,000	\$ 1,700,000	\$ 5,100,000
7c)	EERMC Expenses	\$ 361,206	\$ 321,226	\$ 460,054	\$ 587,242	\$ 1,368,522
7d)	OER Expenses	\$ 361,206	\$ 321,226	\$ 460,054	\$ 587,242	\$ 1,368,522
7)	<b>Subtotal Additions to Program Expenses</b>	\$ 2,301,013	\$ 2,342,453	\$ 2,620,108	\$ 2,874,484	\$ 7,837,045
8)	<b>Total Funding Required = (6) + (7)</b>	\$ 34,349,042	\$ 38,616,618	\$ 46,643,860	\$ 59,395,535	\$ 144,656,013
<b>PART B: POTENTIAL INCREMENTAL FUNDING NEEDED</b>						
9)	Projected Funding Available = (5)	\$ 24,403,969	\$ 29,023,044	\$ 24,031,118	\$ 24,764,314	\$ 77,818,476
10)	Fully Reconciling funding needed from additional source = (8) - (9)	\$ 9,945,073	\$ 9,593,574	\$ 22,612,742	\$ 34,631,221	\$ 66,837,536
11)	Fully Reconciling funding charge per Dth = (10) / (1)	\$ 0.235	\$ 0.248	\$ 0.565	\$ 0.840	
12)	Currently Effective Average EE Charge = (2)	\$ 0.601	\$ 0.601	\$ 0.601	\$ 0.601	
Proposed Adjustment to Reflect Fully Reconciling Funding Mechanism = (11) + (12)						
13)		\$ 0.836	\$ 0.849	\$ 1.166	\$ 1.441	
14)	Currently Effective Uncollectible Rate	1.91%	1.91%	1.91%	1.91%	
<b>Proposed Average Energy Efficiency Program charge per Dth including uncollectible recovery = (13) / (1-14)</b>						
15)		\$ 0.852	\$ 0.865	\$ 1.188	\$ 1.469	
Proposed Residential Energy Efficiency Program charge per Dth including uncollectible recovery						
15a)		\$ 1.011	\$ 1.011	\$ 1.410	\$ 1.743	
Proposed Commercial & Industrial Energy Efficiency Program charge per Dth including uncollectible recovery						
15b)		\$ 0.704	\$ 0.704	\$ 0.982	\$ 1.214	
<b>PART C: PLAN TARGETS AND COST/LIFETIME Dth</b>						
16)	Plan Goal, Annual Dth	446,621	425,359	501,616	634,717	1,561,692
17)	Plan Goal, Lifetime Dth	4,816,261	4,206,444	5,317,230	7,030,038	16,553,713
<b>RI Test</b>						
18a)	Total benefits	\$ 143,440,133	\$ 144,975,124	\$ 181,080,604	\$ 234,086,409	\$ 560,142,137
19a)	Net benefits = (18a) - (8)	\$ 109,091,091	\$ 106,358,506	\$ 134,436,745	\$ 174,690,874	\$ 415,486,124
20)	Customer Costs	\$ 9,225,261	\$ 9,744,826	\$ 12,827,431	\$ 17,166,100	\$ 39,738,357
21a)	Cost/lifetime Dth = ((8) + (20)-(7b)) / (17)	\$ 8.72	\$ 11.09	\$ 10.86	\$ 10.65	\$ 10.83
22a)	Benefit-Cost Ratio = (18a) / (8) + (20)	3.29	3.00	3.04	3.06	3.04
23a)	Utility Spending per lifetime Dth = ((6)+(7b)) / (17)	\$ 6.98	\$ 9.03	\$ 8.60	\$ 8.28	\$ 8.57
<b>TRC Test</b>						
18b)	Total benefits	\$ 79,694,604	\$ 77,918,379	\$ 98,932,107	\$ 128,176,461	\$ 305,026,947
19b)	Net benefits = (18) - (8)	\$ 45,345,562	\$ 39,301,761	\$ 52,288,247	\$ 68,780,926	\$ 160,370,934
20)	Customer Costs	\$ 9,225,261	\$ 9,744,826	\$ 12,827,431	\$ 17,166,100	\$ 39,738,357
21b)	Cost/lifetime Dth = ((8) + (20)-(7b)) / (17)	\$ 8.72	\$ 11.09	\$ 10.86	\$ 10.65	\$ 10.83
22b)	Benefit-Cost Ratio = (18b) / (8) + (20)	1.83	1.61	1.66	1.67	1.65
23b)	Utility Spending per lifetime Dth = ((6)+(7b)) / (17)	\$ 6.98	\$ 9.03	\$ 8.60	\$ 8.28	\$ 8.57
Line	Notes:					
	1 From the Company's Q2 2020 Gas Forecast. Includes projections for firm and non-firm customers, excludes exempt DG customers. For exempt DG customers, 2021 exemption volume assumed for 2022 - 2023.					
	2 The Currently Effective Average Charge is illustrated as one charge, shared among residential and commercial customers. The charge is separated into separate charges by customer segment on lines 15a and 15b.					
	4a There are no commitments planned at this time.					
	4b Projected Entering Fund Balance source is the projected 2019 Year-End Fund Balance as included in the 2020 Annual Plan, See Line 2, Table G-1, December 2, 2019 Compliance Filing in Docket 4979 (2020 EE Plan) <a href="http://www.riperc.gov/eventsactions/docket/4979-NGrid-2020-EEPP-E-1&amp;G-1-Tables(12-2-19).pdf">http://www.riperc.gov/eventsactions/docket/4979-NGrid-2020-EEPP-E-1&amp;G-1-Tables(12-2-19).pdf</a> . Year 2021 Fund Balance source is the projected 2020 Year-End Balance as included in the 2021 Annual Plan. 2022 and 2023 assume no Year-End Fund Balance.					
	7b 2020 Target incentive is equal to 5% of eligible spending budget, which excludes OER, EERMC, Assessments, and Pilots. Refer to 2020 EE Plan Tables G-2, G-3, and G-9. 2021 performance incentive is based on the proposed value for the 2021 Annual Plan, Tables G-2, G-3, and G-9. The Company anticipates that future performance incentive values will be established in the context of setting binding budgets and energy savings goals for the 2022 and 2023 Annual Plans.					
	7c EERMC Expenses equal to 2% of total collections from customers' Energy Efficiency Program Charge, reduced by 1%.					
	7d OER Expenses equal to 2% of total collections from customers' Energy Efficiency Program Charge, reduced by 1%.					
	15a & 15b 3YP is projected at a portfolio level therefore the split between residential and C&I charges is based of 2021 Annual Plan and will be updated in subsequent Annual Plans.					
	21-26 21-26a reflects benefit/cost using the RI Test and 21-26b reflects benefit/cost using the TRC Test					



## Three-Year Plan Attachment 2. Program Level Benefit Cost Summary

Note that shareholder incentive is not included in the calculations of benefit cost ratios for this draft. Shareholder incentive cost will be included in the Final Plan and the subsequent benefit cost ratio calculations.

Figure 10. 2021 Electric Programs Benefit Cost Summary

### THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID

#### 2021 RHODE ISLAND BENEFIT COST TEST

Summary of Benefit, Expenses, Evaluation Costs (\$000)

	Rhode Island Benefit/ Cost (2)	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive (3)
<b>Large Commercial &amp; Industrial</b>					
Commercial New Construction	6.24	\$58,649.1	\$8,500.17	\$893.1	
Commercial Retrofit	7.52	\$329,117.0	\$31,930.24	\$11,821.8	
Direct Install	3.35	\$36,190.8	\$8,883.56	\$1,922.8	
Commercial ConnectedSolutions	9.85	\$29,465.0	\$2,990.11	\$0.0	
Community Based Initiatives - C&I			\$74.53		
Commercial Pilots			\$0.00		
C&I Financing			\$5,000.00		
Commercial Workforce Development			\$468.69		
<b>C&amp;I SUBTOTAL</b>	<b>6.05</b>	<b>\$453,421.9</b>	<b>\$57,847.3</b>	<b>\$14,637.7</b>	<b>\$2,475.0</b>
<b>Low Income</b>					
Low Income Single Family	2.65	\$36,501.8	\$13,759.32	\$0.0	
Low Income Multi Family	1.76	\$8,502.4	\$4,830.80	\$0.0	
Income Eligible Workforce Development			\$114.19		
<b>Low Income Residential SUBTOTAL</b>	<b>2.27</b>	<b>\$45,004.2</b>	<b>\$18,704.3</b>	<b>\$0.0</b>	<b>\$1,100.0</b>
<b>Residential Programs</b>					
Residential New Construction	2.69	\$6,445.3	\$1,544.34	\$855.7	
EnergyStar HVAC	2.77	\$13,306.5	\$3,487.80	\$1,311.6	
EnergyWise	1.89	\$33,615.8	\$17,033.34	\$790.4	
EnergyWise Multi Family	2.44	\$8,756.5	\$3,056.84	\$532.0	
Behavior Feedback	3.23	\$8,530.8	\$2,641.68	\$0.0	
EnergyStar Lighting	3.29	\$14,018.2	\$5,274.75	-\$1,012.9	
EnergyStar Appliances	2.84	\$11,372.7	\$2,681.24	\$1,321.2	
Residential ConnectedSolutions	6.13	\$12,018.6	\$1,959.72	\$0.0	
Energy Efficiency Education			\$40.00		
Community Based Initiatives - Residential			\$226.16		
Residential Pilots			\$0.00		
Comprehensive Marketing - Residential			\$332.71		
Residential Workforce Development			\$284.72		
<b>Non-low income Residential SUBTOTAL</b>	<b>2.44</b>	<b>\$108,064.5</b>	<b>\$38,563.3</b>	<b>\$3,798.1</b>	<b>\$1,925.0</b>
OER			\$845.56		
EERMC			\$845.56		
<b>TOTAL</b>	<b>4.31</b>	<b>\$606,490.7</b>	<b>\$116,806.0</b>	<b>\$18,435.8</b>	<b>\$5,500.0</b>

Figure 11. 2022 Electric Programs Benefit Cost Summary – Base Case

**THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID**

**2022 RHODE ISLAND BENEFIT COST TEST**

Summary of Benefit, Expenses, Evaluation Costs (\$000)

	Rhode Island Benefit/ Cost (2)	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive (3)
<b>Large Commercial &amp; Industrial</b>					
Commercial New Construction	6.02	\$65,945.8	\$9,845.9	\$1,111.4	
Commercial Retrofit	5.93	\$360,199.2	\$44,260.5	\$16,430.7	
Direct Install	3.48	\$36,058.5	\$8,548.6	\$1,811.5	
Commercial ConnectedSolutions	9.90	\$34,981.4	\$3,534.4	\$0.0	
Community Based Initiatives - C&I			\$85.0		
Commercial Pilots			\$0.0		
C&I Financing			\$5,000.0		
Commercial Workforce Development			\$544.6		
<b>C&amp;I SUBTOTAL</b>	<b>5.31</b>	<b>\$497,185.0</b>	<b>\$71,819.0</b>	<b>\$19,353.6</b>	<b>\$2,475.0</b>
<b>Low Income</b>					
Low Income Single Family	2.67	\$40,243.8	\$15,099.5	\$0.0	
Low Income Multi Family	1.83	\$7,715.5	\$4,214.1	\$0.0	
Income Eligible Workforce Development			\$156.2		
<b>Low Income Residential SUBTOTAL</b>	<b>2.33</b>	<b>\$47,959.4</b>	<b>\$19,469.7</b>	<b>\$0.0</b>	<b>\$1,100.0</b>
<b>Residential Programs</b>					
Residential New Construction	2.87	\$6,408.7	\$1,419.5	\$812.8	
EnergyStar HVAC	2.84	\$17,605.1	\$4,638.3	\$1,560.3	
EnergyWise	1.92	\$35,700.9	\$18,008.7	\$585.4	
EnergyWise Multi Family	2.39	\$9,368.7	\$3,581.3	\$332.0	
Behavior Feedback	1.62	\$8,360.3	\$2,624.0	\$2,540.7	
EnergyStar Lighting	N/A	\$0.0	\$0.0	\$0.0	
EnergyStar Appliances	2.88	\$12,053.8	\$2,851.9	\$1,340.1	
Residential ConnectedSolutions	7.40	\$18,715.0	\$2,527.4	\$0.0	
Energy Efficiency Education			\$40.0		
Community Based Initiatives - Residential			\$257.5		
Residential Pilots			\$0.0		
Comprehensive Marketing - Residential			\$507.7		
Residential Workforce Development			\$246.1		
<b>Non-low income Residential SUBTOTAL</b>	<b>2.36</b>	<b>\$108,212.5</b>	<b>\$36,702.4</b>	<b>\$7,171.4</b>	<b>\$1,925.0</b>
OER			\$1,188.4		
EERMC			\$1,188.4		
<b>TOTAL</b>	<b>4.02</b>	<b>\$653,356.8</b>	<b>\$130,367.9</b>	<b>\$26,525.0</b>	<b>\$5,500.0</b>

Figure 12. 2022 Electric Programs Benefit Cost Summary – High Scenario

**THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID**

**2022 RHODE ISLAND BENEFIT COST TEST**

Summary of Benefit, Expenses, Evaluation Costs (\$000)

	Rhode Island Benefit/ Cost (2)	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive (3)
<b>Large Commercial &amp; Industrial</b>					
Commercial New Construction	6.02	\$69,243.1	\$10,338.2	\$1,167.0	
Commercial Retrofit	5.96	\$379,636.2	\$46,473.5	\$17,252.2	
Direct Install	3.48	\$37,861.5	\$8,976.1	\$1,902.1	
Commercial ConnectedSolutions	9.90	\$47,224.9	\$4,771.4	\$0.0	
Community Based Initiatives - C&I			\$89.2		
Commercial Pilots			\$0.0		
C&I Financing			\$5,250.0		
Commercial Workforce Development			\$571.9		
<b>C&amp;I SUBTOTAL</b>	<b>5.38</b>	<b>\$533,965.7</b>	<b>\$76,470.2</b>	<b>\$20,321.2</b>	<b>\$2,475.0</b>
<b>Low Income</b>					
Low Income Single Family	2.67	\$42,256.0	\$15,854.4	\$0.0	
Low Income Multi Family	1.83	\$8,101.3	\$4,424.8	\$0.0	
Income Eligible Workforce Development			\$164.0		
<b>Low Income Residential SUBTOTAL</b>	<b>2.34</b>	<b>\$50,357.3</b>	<b>\$20,443.2</b>	<b>\$0.0</b>	<b>\$1,100.0</b>
<b>Residential Programs</b>					
Residential New Construction	2.87	\$6,729.1	\$1,490.5	\$853.4	
EnergyStar HVAC	2.84	\$18,485.4	\$4,870.3	\$1,638.3	
EnergyWise	1.92	\$37,486.0	\$18,909.1	\$614.7	
EnergyWise Multi Family	2.39	\$9,837.1	\$3,760.4	\$348.6	
Behavior Feedback	1.62	\$8,360.3	\$2,624.0	\$2,540.7	
EnergyStar Lighting	N/A	\$0.0	\$0.0	\$0.0	
EnergyStar Appliances	2.88	\$12,656.5	\$2,994.5	\$1,407.2	
Residential ConnectedSolutions	7.40	\$18,715.0	\$2,527.4	\$0.0	
Energy Efficiency Education			\$42.0		
Community Based Initiatives - Residential			\$270.3		
Residential Pilots			\$0.0		
Comprehensive Marketing - Residential			\$533.1		
Residential Workforce Development			\$258.4		
<b>Non-low income Residential SUBTOTAL</b>	<b>2.36</b>	<b>\$112,269.4</b>	<b>\$38,279.9</b>	<b>\$7,402.9</b>	<b>\$1,925.0</b>
OER			\$1,247.9		
EERMC			\$1,247.9		
<b>TOTAL</b>	<b>4.08</b>	<b>\$696,592.4</b>	<b>\$137,689.1</b>	<b>\$27,724.2</b>	<b>\$5,500.0</b>

Figure 13. 2023 Electric Programs Benefit Cost Summary – Base Case

**THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID**

**2023 RHODE ISLAND BENEFIT COST TEST**

Summary of Benefit, Expenses, Evaluation Costs (\$000)

	Rhode Island Benefit/ Cost (2)	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive (3)
<b>Large Commercial &amp; Industrial</b>					
Commercial New Construction	5.90	\$58,831.6	\$8,962.7	\$1,004.6	
Commercial Retrofit	6.23	\$404,700.2	\$47,649.2	\$17,355.9	
Direct Install	3.49	\$39,102.9	\$9,225.9	\$1,969.8	
Commercial ConnectedSolutions	9.83	\$40,431.6	\$4,111.5	\$0.0	
Community Based Initiatives - C&I			\$93.5		
Commercial Pilots			\$0.0		
C&I Financing			\$5,000.0		
Commercial Workforce Development			\$581.0		
<b>C&amp;I SUBTOTAL</b>	<b>5.52</b>	<b>\$543,066.4</b>	<b>\$75,623.8</b>	<b>\$20,330.3</b>	<b>\$2,475.0</b>
<b>Low Income</b>					
Low Income Single Family	2.68	\$44,619.3	\$16,622.3	\$0.0	
Low Income Multi Family	1.76	\$8,009.3	\$4,557.5	\$0.0	
Income Eligible Workforce Development			\$172.8		
<b>Low Income Residential SUBTOTAL</b>	<b>2.34</b>	<b>\$52,628.6</b>	<b>\$21,352.5</b>	<b>\$0.0</b>	<b>\$1,100.0</b>
<b>Residential Programs</b>					
Residential New Construction	2.93	\$6,919.4	\$1,502.7	\$860.2	
EnergyStar HVAC	3.04	\$21,610.2	\$6,038.1	\$1,064.5	
EnergyWise	1.91	\$43,071.3	\$21,716.3	\$778.3	
EnergyWise Multi Family	2.35	\$9,056.7	\$3,523.5	\$332.0	
Behavior Feedback	1.62	\$8,349.1	\$2,624.0	\$2,540.7	
EnergyStar Lighting	N/A	\$0.0	\$0.0	\$0.0	
EnergyStar Appliances	2.93	\$15,971.5	\$3,613.4	\$1,830.9	
Residential ConnectedSolutions	8.50	\$26,059.7	\$3,064.8	\$0.0	
Energy Efficiency Education			\$40.0		
Community Based Initiatives - Residential			\$283.0		
Residential Pilots			\$0.0		
Comprehensive Marketing - Residential			\$507.7		
Residential Workforce Development			\$303.8		
<b>Non-low income Residential SUBTOTAL</b>	<b>2.49</b>	<b>\$131,037.8</b>	<b>\$43,217.3</b>	<b>\$7,406.7</b>	<b>\$1,925.0</b>
OER			\$1,355.4		
EERMC			\$1,355.4		
<b>TOTAL</b>	<b>4.13</b>	<b>\$726,732.8</b>	<b>\$142,904.5</b>	<b>\$27,737.0</b>	<b>\$5,500.0</b>

Figure 14. 2023 Electric Programs Benefit Cost Summary – High Scenario

**THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID**

**2023 RHODE ISLAND BENEFIT COST TEST**

Summary of Benefit, Expenses, Evaluation Costs (\$000)

	Rhode Island Benefit/ Cost (2)	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive (3)
<b>Large Commercial &amp; Industrial</b>					
Commercial New Construction	5.90	\$66,009.1	\$10,056.2	\$1,127.1	
Commercial Retrofit	6.26	\$456,852.9	\$53,462.4	\$19,473.4	
Direct Install	3.49	\$43,873.5	\$10,351.5	\$2,210.1	
Commercial ConnectedSolutions	9.83	\$62,115.1	\$6,316.5	\$0.0	
Community Based Initiatives - C&I			\$104.9		
Commercial Pilots			\$0.0		
C&I Financing			\$5,610.0		
Commercial Workforce Development			\$651.9		
<b>C&amp;I SUBTOTAL</b>	<b>5.62</b>	<b>\$628,850.6</b>	<b>\$86,553.3</b>	<b>\$22,810.6</b>	<b>\$2,475.0</b>
<b>Low Income</b>					
Low Income Single Family	2.68	\$50,062.9	\$18,650.2	\$0.0	
Low Income Multi Family	1.76	\$8,986.4	\$5,113.5	\$0.0	
Income Eligible Workforce Development			\$193.9		
<b>Low Income Residential SUBTOTAL</b>	<b>2.36</b>	<b>\$59,049.3</b>	<b>\$23,957.6</b>	<b>\$0.0</b>	<b>\$1,100.0</b>
<b>Residential Programs</b>					
Residential New Construction	2.93	\$7,763.6	\$1,686.1	\$965.2	
EnergyStar HVAC	3.04	\$24,246.7	\$6,774.8	\$1,194.4	
EnergyWise	1.91	\$48,326.0	\$24,365.7	\$873.3	
EnergyWise Multi Family	2.35	\$10,161.6	\$3,953.3	\$372.5	
Behavior Feedback	1.62	\$8,349.1	\$2,624.0	\$2,540.7	
EnergyStar Lighting	N/A	\$0.0	\$0.0	\$0.0	
EnergyStar Appliances	2.93	\$17,920.0	\$4,054.2	\$2,054.3	
Residential ConnectedSolutions	8.50	\$26,059.7	\$3,064.8	\$0.0	
Energy Efficiency Education			\$44.9		
Community Based Initiatives - Residential			\$317.5		
Residential Pilots			\$0.0		
Comprehensive Marketing - Residential			\$569.6		
Residential Workforce Development			\$340.8		
<b>Non-low income Residential SUBTOTAL</b>	<b>2.47</b>	<b>\$142,826.6</b>	<b>\$47,795.8</b>	<b>\$8,000.3</b>	<b>\$1,925.0</b>
OER			\$1,520.8		
EERMC			\$1,520.8		
<b>TOTAL</b>	<b>4.20</b>	<b>\$830,726.4</b>	<b>\$161,348.3</b>	<b>\$30,810.9</b>	<b>\$5,500.0</b>

Figure 15. 2021 Natural Gas Programs Benefit Cost Summary

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID

2021 RHODE ISLAND BENEFIT COST TEST

Summary of Benefit, Expenses, Evaluation Costs (\$000)

	Rhode Island Benefit/ Cost	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive
<b>Large Commercial &amp; Industrial</b>					
Large Commercial New Construction	4.86	\$12,599.7	\$2,759.2	-\$166.4	
Large Commercial Retrofit	5.27	\$45,068.7	\$5,169.1	\$3,387.0	
Small Business Direct Install	3.83	\$1,539.9	\$332.7	\$69.4	
Commercial & Industrial Multifamily	4.75	\$4,922.8	\$953.2	\$84.0	
Comprehensive Marketing - Commercial and Industrial			\$0.0		
Commercial Pilots			\$215.8		
Community Based Initiatives - C&I			\$24.8		
Finance Costs			\$0.0		
Commercial Workforce Development			\$164.5		
<b>Commercial &amp; Industrial Subtotal</b>	<b>4.66</b>	<b>\$64,131.1</b>	<b>\$9,619.3</b>	<b>\$3,374.0</b>	<b>\$765.0</b>
<b>Income Eligible Programs</b>					
Single Family - Income Eligible Services	2.94	\$19,830.4	\$6,738.8	\$0.0	
Income Eligible Multifamily	4.21	\$13,690.7	\$3,254.1	\$0.0	
Income Eligible Workforce Development			\$49.6		
<b>Income Eligible Residential Subtotal</b>	<b>3.23</b>	<b>\$33,521.1</b>	<b>\$10,042.5</b>	<b>\$0.0</b>	<b>\$340.0</b>
<b>Residential Programs</b>					
Energy Star® HVAC	1.66	\$13,615.7	\$3,673.0	\$4,539.3	
EnergyWise	2.01	\$21,873.6	\$10,063.2	\$816.5	
EnergyWise Multifamily	4.70	\$8,630.2	\$1,491.6	\$344.0	
Home Energy Reports	4.05	\$1,825.1	\$450.9	\$0.0	
Residential New Construction	1.02	\$1,378.3	\$674.8	\$670.9	
Comprehensive Marketing - Residential			\$64.8		
Residential Pilots			\$0.0		
Community Based Initiatives - Residential			\$75.8		
Residential Workforce Development			\$118.3		
<b>Non-Income Eligible Residential Subtotal</b>	<b>2.01</b>	<b>\$47,322.9</b>	<b>\$16,612.4</b>	<b>\$6,370.8</b>	<b>\$595.0</b>
<b>EERMC</b>			\$321.2		
<b>OER</b>			\$321.2		
<b>Grand Total</b>	<b>3.00</b>	<b>\$144,975.1</b>	<b>\$36,916.6</b>	<b>\$9,744.8</b>	<b>\$1,700.0</b>

Figure 16. 2022 Natural Gas Programs Benefit Cost Summary – Base Case

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID

2022 RHODE ISLAND BENEFIT COST TEST

Summary of Benefit, Expenses, Evaluation Costs (\$000)

	Rhode Island Benefit/ Cost	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive
<b>Large Commercial &amp; Industrial</b>					
Large Commercial New Construction	5.52	\$15,640.5	\$3,015.9	-\$184.0	
Large Commercial Retrofit	5.52	\$47,717.7	\$5,263.0	\$3,383.9	
Small Business Direct Install	3.33	\$2,548.0	\$629.4	\$136.5	
Commercial & Industrial Multifamily	4.56	\$5,066.7	\$1,026.8	\$84.0	
Comprehensive Marketing - Commercial and Industrial			\$0.0		
Commercial Pilots			\$219.0		
Community Based Initiatives - C&I			\$28.3		
Finance Costs			\$0.0		
Commercial Workforce Development			\$55.6		
<b>Commercial &amp; Industrial Subtotal</b>	<b>4.92</b>	<b>\$70,972.9</b>	<b>\$10,238.0</b>	<b>\$3,420.4</b>	<b>\$765.0</b>
<b>Income Eligible Programs</b>					
Single Family - Income Eligible Services	2.95	\$21,786.3	\$7,378.1	\$0.0	
Income Eligible Multifamily	4.24	\$13,653.9	\$3,223.6	\$0.0	
Income Eligible Workforce Development			\$84.4		
<b>Income Eligible Residential Subtotal</b>	<b>3.21</b>	<b>\$35,440.3</b>	<b>\$10,686.1</b>	<b>\$0.0</b>	<b>\$340.0</b>
<b>Residential Programs</b>					
Energy Star® HVAC	1.66	\$17,385.5	\$4,568.0	\$5,924.8	
EnergyWise	2.03	\$22,169.7	\$10,005.8	\$903.1	
EnergyWise Multifamily	4.71	\$8,629.1	\$1,487.0	\$344.0	
Home Energy Reports	4.10	\$1,807.3	\$441.3	\$0.0	
Residential New Construction	1.10	\$1,292.4	\$609.6	\$562.0	
Comprehensive Marketing - Residential			\$79.8		
Residential Pilots			\$0.0		
Community Based Initiatives - Residential			\$86.3		
Residential Workforce Development			\$137.3		
<b>Non-Income Eligible Residential Subtotal</b>	<b>1.99</b>	<b>\$51,284.0</b>	<b>\$17,414.9</b>	<b>\$7,733.9</b>	<b>\$595.0</b>
<b>EERMC</b>			\$400.0		
<b>OER</b>			\$400.0		
<b>Grand Total</b>	<b>3.03</b>	<b>\$157,697.1</b>	<b>\$39,139.2</b>	<b>\$11,154.3</b>	<b>\$1,700.0</b>

Figure 17. 2022 Natural Gas Programs Benefit Cost Summary – High Scenario

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID

2022 RHODE ISLAND BENEFIT COST TEST

Summary of Benefit, Expenses, Evaluation Costs (\$000)

	Rhode Island Benefit/ Cost	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive
<b>Large Commercial &amp; Industrial</b>					
Large Commercial New Construction	5.52	\$17,986.6	\$3,468.2	-\$211.6	
Large Commercial Retrofit	5.52	\$54,875.3	\$6,052.5	\$3,891.5	
Small Business Direct Install	3.33	\$2,930.2	\$723.9	\$156.9	
Commercial & Industrial Multifamily	4.56	\$5,826.7	\$1,180.8	\$96.6	
Comprehensive Marketing - Commercial and Industrial			\$0.0		
Commercial Pilots			\$251.9		
Community Based Initiatives - C&I			\$32.6		
Finance Costs			\$0.0		
Commercial Workforce Development			\$63.9		
<b>Commercial &amp; Industrial Subtotal</b>	<b>4.95</b>	<b>\$81,618.8</b>	<b>\$11,773.7</b>	<b>\$3,933.5</b>	<b>\$765.0</b>
<b>Income Eligible Programs</b>					
Single Family - Income Eligible Services	2.95	\$25,054.3	\$8,484.8	\$0.0	
Income Eligible Multifamily	4.24	\$15,702.0	\$3,707.1	\$0.0	
Income Eligible Workforce Development			\$97.1		
<b>Income Eligible Residential Subtotal</b>	<b>3.23</b>	<b>\$40,756.3</b>	<b>\$12,289.0</b>	<b>\$0.0</b>	<b>\$340.0</b>
<b>Residential Programs</b>					
Energy Star® HVAC	1.66	\$19,993.4	\$5,253.2	\$6,813.6	
EnergyWise	2.03	\$25,495.1	\$11,506.6	\$1,038.5	
EnergyWise Multifamily	4.71	\$9,923.4	\$1,710.0	\$395.6	
Home Energy Reports	4.10	\$1,807.3	\$441.3	\$0.0	
Residential New Construction	1.10	\$1,486.3	\$701.0	\$646.3	
Comprehensive Marketing - Residential			\$91.7		
Residential Pilots			\$0.0		
Community Based Initiatives - Residential			\$99.2		
Residential Workforce Development			\$157.9		
<b>Non-Income Eligible Residential Subtotal</b>	<b>1.99</b>	<b>\$58,705.5</b>	<b>\$19,961.0</b>	<b>\$8,894.0</b>	<b>\$595.0</b>
<b>EERMC</b>			\$460.1		
<b>OER</b>			\$460.1		
<b>Grand Total</b>	<b>3.04</b>	<b>\$181,080.6</b>	<b>\$44,943.9</b>	<b>\$12,827.4</b>	<b>\$1,700.0</b>



Figure 18. 2023 Natural Gas Programs Benefit Cost Summary – Base Case

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID

2023 RHODE ISLAND BENEFIT COST TEST

Summary of Benefit, Expenses, Evaluation Costs (\$000)

	Rhode Island Benefit/ Cost	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive
<b>Large Commercial &amp; Industrial</b>					
Large Commercial New Construction	5.62	\$17,025.6	\$3,237.6	-\$205.7	
Large Commercial Retrofit	5.73	\$61,704.8	\$6,281.9	\$4,495.1	
Small Business Direct Install	3.23	\$3,789.2	\$957.3	\$217.2	
Commercial & Industrial Multifamily	4.60	\$5,051.0	\$1,015.2	\$84.0	
Comprehensive Marketing - Commercial and Industrial			\$0.0		
Commercial Pilots			\$222.3		
Community Based Initiatives - C&I			\$31.2		
Finance Costs			\$0.0		
Commercial Workforce Development			\$70.1		
<b>Commercial &amp; Industrial Subtotal</b>	<b>5.10</b>	<b>\$87,570.6</b>	<b>\$11,815.6</b>	<b>\$4,590.6</b>	<b>\$765.0</b>
<b>Income Eligible Programs</b>					
Single Family - Income Eligible Services	2.97	\$23,938.6	\$8,069.4	\$0.0	
Income Eligible Multifamily	4.25	\$13,651.0	\$3,213.7	\$0.0	
Income Eligible Workforce Development			\$90.2		
<b>Income Eligible Residential Subtotal</b>	<b>3.21</b>	<b>\$37,589.6</b>	<b>\$11,373.3</b>	<b>\$0.0</b>	<b>\$340.0</b>
<b>Residential Programs</b>					
Energy Star® HVAC	1.68	\$21,218.1	\$5,695.9	\$6,937.3	
EnergyWise	1.98	\$29,030.1	\$13,398.1	\$1,239.3	
EnergyWise Multifamily	4.72	\$8,629.1	\$1,482.3	\$344.0	
Home Energy Reports	4.10	\$1,807.8	\$441.3	\$0.0	
Residential New Construction	1.03	\$1,225.3	\$611.8	\$580.3	
Comprehensive Marketing - Residential			\$79.8		
Residential Pilots			\$0.0		
Community Based Initiatives - Residential			\$94.8		
Residential Workforce Development			\$176.9		
<b>Non-Income Eligible Residential Subtotal</b>	<b>1.95</b>	<b>\$61,910.3</b>	<b>\$21,980.9</b>	<b>\$9,100.9</b>	<b>\$595.0</b>
<b>EERMC</b>			\$468.4		
<b>OER</b>			\$468.4		
<b>Grand Total</b>	<b>3.04</b>	<b>\$187,070.5</b>	<b>\$46,106.6</b>	<b>\$13,691.5</b>	<b>\$1,700.0</b>

Figure 19. 2023 Natural Gas Programs Benefit Cost Summary – High Scenario

THE NARRAGANSETT ELECTRIC COMPANY d/b/a NATIONAL GRID

**2023 RHODE ISLAND BENEFIT COST TEST**  
Summary of Benefit, Expenses, Evaluation Costs (\$000)

	Rhode Island Benefit/ Cost	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive
<b>Large Commercial &amp; Industrial</b>					
Large Commercial New Construction	5.62	\$21,346.4	\$4,059.3	-\$257.9	
Large Commercial Retrofit	5.73	\$77,364.2	\$7,876.1	\$5,635.8	
Small Business Direct Install	3.23	\$4,750.8	\$1,200.3	\$272.3	
Commercial & Industrial Multifamily	4.60	\$6,332.8	\$1,272.9	\$105.3	
Comprehensive Marketing - Commercial and Industrial			\$0.0		
Commercial Pilots			\$278.7		
Community Based Initiatives - C&I			\$39.1		
Finance Costs			\$0.0		
Commercial Workforce Development			\$87.9		
<b>Commercial &amp; Industrial Subtotal</b>	<b>5.15</b>	<b>\$109,794.2</b>	<b>\$14,814.2</b>	<b>\$5,755.6</b>	<b>\$765.0</b>
<b>Income Eligible Programs</b>					
Single Family - Income Eligible Services	2.97	\$30,013.7	\$10,117.3	\$0.0	
Income Eligible Multifamily	4.25	\$17,115.4	\$4,029.2	\$0.0	
Income Eligible Workforce Development			\$113.1		
<b>Income Eligible Residential Subtotal</b>	<b>3.23</b>	<b>\$47,129.1</b>	<b>\$14,259.6</b>	<b>\$0.0</b>	<b>\$340.0</b>
<b>Residential Programs</b>					
Energy Star® HVAC	1.68	\$26,602.8	\$7,141.4	\$8,697.8	
EnergyWise	1.98	\$36,397.3	\$16,798.3	\$1,553.8	
EnergyWise Multifamily	4.72	\$10,818.9	\$1,858.5	\$431.3	
Home Energy Reports	4.10	\$1,807.8	\$441.3	\$0.0	
Residential New Construction	1.03	\$1,536.2	\$767.1	\$727.6	
Comprehensive Marketing - Residential			\$100.0		
Residential Pilots			\$0.0		
Community Based Initiatives - Residential			\$118.8		
Residential Workforce Development			\$221.8		
<b>Non-Income Eligible Residential Subtotal</b>	<b>1.96</b>	<b>\$77,163.1</b>	<b>\$27,447.2</b>	<b>\$11,410.5</b>	<b>\$595.0</b>
<b>EERMC</b>			\$587.2		
<b>OER</b>			\$587.2		
<b>Grand Total</b>	<b>3.06</b>	<b>\$234,086.4</b>	<b>\$57,695.5</b>	<b>\$17,166.1</b>	<b>\$1,700.0</b>

## Three-Year Plan Attachment 3. Definitions

This attachment provides a reference to commonly used terms in the Three-Year and Annual Energy Efficiency Plans.

### **Assessment**

An assessment will be deployed for solutions that address a particular gap or program need, but have significant uncertainty around the effectiveness or potential of the solution to realize savings. Because of the uncertainty, assessments will not include field demonstrations or customer installations. Instead, assessments will focus on information gathering to equip Company staff to make a more informed decision of whether and how to proceed with the idea. It is possible that an assessment could recommend further demonstration of the idea or determine the solution should exit the review process. Savings associated with assessments may not contribute to shareholder incentives. Assessments may be evaluated with an independent evaluation, vendor evaluation, or internal review.

### **Customer Contribution/Customer Cost**

The financial cost of a measure and/or service that is not covered by the customer incentive.

### **Customer Incentive**

Financial support and/or services (e.g., rebates, on-bill repayment) provided to participants in attempt to motivate the installation of measures and/or changes in behavior to achieve energy savings.

### **On-Bill Repayment (OBR)**

A financial mechanism that allows customers to pay back the customer contribution/customer cost of a measure and/or service on their energy bill.

### **Demand Response**

*Active Demand Response:* The reduction or shifting of energy use by customers during peak periods or events when the load on the electric grid or gas distribution system is high.

*Passive Demand Response:* Energy efficiency measures that permanently shift or reduce electricity use at all times, contributing to a reduction of peak load.

### **Demonstration**

A demonstration will test the feasibility of a new product or offering for inclusion in existing programs. It is generally expected that demonstrations will be less time and resource intensive than pilots, since generally there is greater certainty around a narrow, incremental idea added to a program rather than a totally new set of offerings. Savings associated with demonstration projects may contribute to shareholder incentives. Demonstrations may be evaluated with either an independent or a vendor evaluation.

### **Evaluation**

*Independent Evaluation:* An independent evaluation uses a third-party evaluation vendor selected via a competitive Request for Proposals process for the specified evaluation or selected in the recent past for

evaluation services of efficiency programs. An independent evaluation can be both a process and an impact evaluation.

*Vendor Evaluation:* A vendor evaluation is conducted by a vendor installing a technology, measure, strategy, or solution. A vendor evaluation can also be conducted by a Technical Assistance vendor who conducts a savings analysis for the installed technology, measure, or an energy saving strategy. A vendor evaluation can only be an impact evaluation.

## **Goals**

Goals refer to National Grid's three-year energy efficiency savings goals.

## **Market Potential Study**

A Market Potential Study is a detailed assessment of the energy efficiency potential in given market. In this Plan, the term is used in reference to the 2020 Rhode Island Energy Efficiency Market Potential Study.

## **Non-Energy Impacts**

Non-energy impacts (NEIs) are those other than the energy and demand savings generated by efficiency programs. Non-energy impacts accrue to program participants (e.g. increased comfort and health, improved property values), society at large (e.g. greenhouse gas reductions, improved air quality), and the utility system (e.g. Reduced arrearages).

## **Non-Participant**

A customer that does not directly participate in an efficiency program.

## **Participant**

A customer that reduces or otherwise modifies their energy end use patterns due to involvement in an efficiency program. Participation is measured differently in different programs. For several programs, a participant is defined as a customer account (electric or gas). In contrast, the Residential Consumer Products program measures participation by the number of rebates processed.

## **Pilots**

A pilot is a small scale, targeted program that is limited in scope, time, and spending and is designed to test the feasibility of a future program or rate design. It is incumbent upon the proponent of a pilot to define these limits in a proposal for PUC review. Ideally, a pilot can provide net benefits and achieve goals, but the primary design and value of a pilot is to test rather than to achieve. Pilots are designed to explore technologies and approaches to energy management not included in the core energy efficiency programs (Residential, Commercial and Industrial, and Multifamily) and that could potentially become a new, standalone program.

Pilots enable the Company to test technologies, new energy management strategies, customer adoption, workforce adoption, and cost effectiveness of emerging and new technologies. While pilots are designed to test standalone programs, pilot results may conclude that a standalone program is not recommended or that certain aspects of the pilot should be offered within existing programs. It is likely

that pilots will require a long-term commitment and broader set of stakeholder input, given the scope of adding a new core program to the Company portfolio. Savings associated with Pilots will not contribute to shareholder incentives. Pilots may be evaluated with either an independent or a vendor evaluation.

### **Portfolio**

A collection of programs. The electric portfolio contains programs that primarily focus on delivering electricity savings and the natural gas portfolio contains programs that primarily focus on delivering natural gas savings. A portfolio is required to be cost-effective.

### **Program**

A collection of defined services and/or measures carried out by National Grid and/or its vendors and subcontractors that: target a specific market segment, customer class, or defined end use; are designed to influence customer behavior to achieve changes in energy usage, equipment preferences, investment, and maintenance practices; and are guided by a specific savings goal and have a benefit-cost ratio. Programs are typically made up of the following categories that contribute to the overall program savings goals and benefit-cost ratios.

#### **Sub-Program**

Within the Commercial and Industrial Sector, a sub-program is a further grouping of measures within a program. An example is the upstream lighting sub-program within the Commercial and Industrial Sector.

#### **Measure**

A piece of equipment or customer action that reduces or otherwise modifies energy end use patterns. This is the most granular level of categorization. For example, an LED light bulb.

*Comprehensive Measures:* When a customer employs multiple pieces of equipment or actions that reduce or otherwise modify energy use at the same time, more fully taking advantage of energy savings opportunities at one time rather than completing piecemeal projects.

#### **Measure Group**

A group of measures with similar characteristics within a program. For example, the measure group LED in the Residential lighting program includes several types of LED light bulbs and the Compressed Air measure group within the Large Commercial New Construction program contains all the compressed air measures within that program.

#### **Services**

A range of activities to support customer awareness, education, and adoption of energy saving and energy modification opportunities including free technical assistance, training, analysis, and reports.

#### **Initiative**

A “go to market” strategy within a program that promotes a subset of measures or services within that program and/or targets a certain segment of customers. For example, the Grocery Initiative within the Large Commercial and Industrial Retrofit Program.

[Assessment defined above.](#)

[Demonstration defined above.](#)

### **Performance Incentive**

A financial incentive that the Company has an opportunity to earn based on performance in fulfilling the savings goals of the approved Annual Plan. The Performance Incentive is authorized and established through Annual Energy Efficiency Plans by R.I. Gen. Laws § 39-1-27.7(e) and § 39-1-27.7.1.

### **Rebate**

A financial incentive paid to a participant in order to obtain a specific action, typically the installation of equipment. A rebate can also be paid to manufacturers and suppliers of measures to lower the price at the point of sale to the customer.

### **Savings**

*Annual Savings:* Energy savings accrued annually from the installed measure(s).

*Lifetime Savings:* Energy savings accrued over the functional lifetime of the installed measure(s).

### **Sector**

A grouping of participants by customer rate class. Programs are organized by these groupings. There are three sectors: Residential, Income-Eligible, and Commercial and Industrial.

### **Targets**

Targets refer to the three-year energy efficiency savings targets approved by the PUC.

### **Technical Assistance (TA) Study**

A technical assistance study assesses a measure or group of measures for savings and costs and is performed by a third-party technical assistance vendor. A TA study quantifies electric and gas savings, along with delivered fuel and non-energy impacts. TA studies include some or all of the following activities: facility benchmarking and/or walkthrough, equipment metering or analysis of building energy management system data, determination of measure baseline, engineering analysis of the operation of the baseline, and proposed measures and building energy simulations. The TA vendor performs a benefit-cost screening to assess the estimated payback for the customer along with the impact of costs and savings. A TA study report is presented to the customer which outlines the methodology followed to determine estimated project savings, cost, and project payback, along with the results of the study.

### **Technical Assessment**

A technical assessment is engineering research conducted to determine the savings of a new technology or measure that may not be widely adopted in the market.