STATE OF RHODE ISLAND PUBLIC UTILITIES COMMISSION

In Re: The Narragansett Electric Company	**|**	
d/b/a Rhode Island Energy	**|**	**Docket No. XXXX**
Annual Energy Efficiency Plan for 2023	**|**	
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ANNUAL ENERGY EFFICIENCY PLAN FOR 2023

September 30, 2022

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INTRODUCTION

1 Introduction

The Narragansett Electric Company d/b/a Rhode Island Energy (Rhode Island Energy or the Company) submits this 2023 Annual Energy Efficiency and Conservation Procurement Plan (Plan or Annual Plan) as the third annual plan submitted within the fifth triennial plan (2021-2023 Three Year Energy Efficiency and Conservation Procurement Plan) in fulfillment of The Comprehensive Energy Conservation, Efficiency and Affordability Act of 2006.[1]

Energy efficiency is the most cost-effective way to meet customers' energy needs and is foundational to meeting Rhode Island's greenhouse gas emissions reduction mandates set forth in the 2021 Act on Climate legislation. 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 can reduce the need for additional generation, distribution, and transmission infrastructure, benefiting all customers, regardless of direct participation in the Company's efficiency programs. The purpose of the Annual Plan is to propose the programs the Company will deliver to help Rhode Island energy consumers meet their energy needs through cost effective, reliable, prudent, and environmentally responsible energy efficiency and demand response, and to identify their costs, benefits, and energy savings.

The Annual Plan identifies the energy savings goals for 2023 and describes the detailed strategies, programming, and investments the Company is undertaking to achieve these goals, in pursuit of the overarching goals, savings, and benefits outlined in the 2021 -2023 Three-Year Energy Efficiency Plan. In proposing this Plan, the Company is mindful of the prevailing economic conditions, including the recovery of the Rhode Island economy due to the impacts of the COVID-19 pandemic. The Company is also aware of the significant economic benefits that energy efficiency programming can offer towards recovery. The planned programs and budgets attempt to maintain flexibility to ensure continued delivery of energy efficiency services and maintain and build clean energy jobs for the 2023 program year.

This Plan is submitted in accordance with the Least Cost Procurement Law, R.I. Gen. Laws § 39-1-27.7, the basis for which is the Comprehensive Energy Conservation, Efficiency, and Affordability Act of 2006, R.I. Gen. Laws § 39-2-1.2, and the Least Cost Procurement Standards, as approved and adopted pursuant to Order No. 23890 in Docket No. 5015[2] (referred to herein as the "LCP Standards"). This Plan

[1] The RI Legislature recently passed an update to the 2006 Least Cost Procurement Legislation, specifically impacting the company's transfer of funds to support the Efficient Buildings Fund administered by the Rhode Island Infrastructure Bank. Refer to R.I. Pub. Laws Ch. 224 (2021), http://webserver.rilin.state.ri.us/PublicLaws/law21/law21224.htm

[2] RI PUC Docket 5015, Least Cost Procurement Standards http://www.ripuc.ri.gov/eventsactions/docket/5015_LCP_Standards_05_28_2020_8.21.2020%20Clean%20Copy%20FINAL.pdf

has been developed by Rhode Island Energy with feedback provided by the Energy Efficiency Technical Working Group (EE TWG) [3] and the Energy Efficiency and Resource Management Council (EERMC) and the Energy Efficiency Equity Working Group (EWG).

The 2023 Plan satisfies the statutory requirements for Least Cost Procurement and the Least Cost Procurement Standards and is consistent with the approved Three-Year Energy Efficiency Procurement Plan (Three-Year Plan) for 2021-2023. 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.

The Annual Plan is cost-effective, with a cost that is lower than the cost of energy supply for both electricity and natural gas portfolios, satisfying the requirements prescribed in R.I. Gen. Laws § 39-1-27.7 (a)(2) and the Standards. The Plan also satisfies PUC Order No. 22851 by demonstrating how it advances the Docket 4600 principles and goals for the electric system detailed in Section 13.[4]

1.1 Plan Summary

1.1.1 Savings

The primary goal of the Plan is to create energy and economic cost savings for Rhode Island consumers through energy efficiency. The electric portion of the Plan will save 734,645 lifetime MWh over the lifetime of the installed energy efficiency measures, 107,221 net annual MWhs, 16,437 net annual kW from passive energy efficiency, and 45,678 net annual kW from active demand response. The natural gas portion of the plan will save 3,179,772 lifetime MMBtu over the lifetime of installed natural gas measures and 280,344 annual MMBtu. For all fuels (electric, gas, oil, propane), combined the plan will save 6,422,781 net lifetime MMBtu and 667,997 net annual MMBtu. Energy savings are measured and verified by third-party evaluation firms.

1.1.2 Benefits

This Plan will create significant benefits for Rhode Island's residential, commercial, industrial, and income eligible energy customers. In total, the Plan is expected to create $309.5M in total benefits over the life of the installed electric, demand response, and natural gas energy efficiency measures.[5] Of these

[3] Since 1991, a collaborative group has been meeting regularly to analyze and inform the Company's electric and gas energy efficiency programs. The name of this group was modified in 2019 to the Energy Efficiency Technical Working Group (EE TWG) to better reflect the roles of the stakeholders. Presently, members of the EE TWG include: The Company, the Division of Public Utilities and Carriers (Division or DPUC) and the Division's consultant, Synapse Energy Economics (Synapse), the City of Providence, Green Energy Consumers Alliance, the Office of Energy Resources, and Acadia Center. In addition, the George Wiley Center, the Center for Justice, the Rhode Island Infrastructure Bank (RIIB), and several EERMC members and representatives from the EERMC's Consulting Team participate in the EE TWG. Since 1991, membership in the EE TWG has varied because some organizations have withdrawn, and others have joined.

[4] PUC Report and Order No. 22851 accepting the Stakeholder Report. Written Order issued July 31, 2017.

[5] Total benefits does not include quantified economic benefits.

total benefits, $223.1M come from electric efficiency, passive demand reductions, and active demand response. $86.4M in benefits derive from natural gas efficiency.

Table 1 includes a high-level summary of the Electric-funded and Natural Gas-funded portions of the Plan. Table 2 represents a more detailed table of the programs included under the "Active Demand Response (kW)" column shown in Table 1.

Each $1 spent on the electric energy efficiency portfolio will create $1.96 in monetized benefits over the lifetime of the investment, and every $1 spent on the natural gas portfolio will create $2.23 in monetized benefits over the lifetime of the investments. A detailed summary of the benefits and costs included in the Rhode Island Test are included in Attachment 4 Rhode Island (RI) Benefit Cost Test.

1.1.3 Economic Impacts

The Company expects that investments made in energy efficiency under this Plan will add $304.2M to Rhode Island's Gross State Product (GSP), the equivalent of 2,826 job years. [6] 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 Rhode Island Energy's 2021 energy efficiency programs found that 59% of companies that deliver services on behalf of the Company's energy efficiency programs are either headquartered or have a presence in Rhode Island.[7] Investments in energy efficiency contribute to Rhode Island's economy overall and benefit business owners and their employees who deliver these programs and services.

As described in Attachment 4, following what was done in the 2022 Annual Plan, the primary calculation of benefits conservatively excludes Economic Development because of concerns over double counting of benefits with other categories. The monetized RI Test benefits for the electric energy efficiency and demand response portfolio are calculated to be $223.1M. The monetized RI Test benefits for the gas portfolio are calculated to be $86.4M.

1.1.4 Environmental Benefits

The electric, gas, and delivered fuel energy efficiency measures proposed in this Plan will avoid over 78,217 short tons of carbon in 2023,[8] which contributes 1.2% toward Rhode Island's Act on Climate greenhouse gas emission reduction requirements of 45% below 1990 levels by 2030 and 0.56% of

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[6] Macroeconomic multipliers for the economic growth and job creation benefits of investing in cost-effective energy efficiency from "Economic Multipliers Update" filed in Docket 5189 on January 6, 2022. This is a correction to the multipliers in "Review of RI Test and Proposed Methodology" prepared for National Grid by the Brattle Group, January 31, 2019. These macroeconomic multipliers reflect the total impact to the Rhode Island economy and do not remove benefits counted elsewhere in the RI Test, so are shown as a separate economic impact analysis estimate.

[7] Guidehouse, "Rhode Island 2021 Energy Efficiency Workforce Analysis Report," June 1, 2022 (filed as part of National Grid's 2021 Year-End Report).

[8] While all energy savings seen in the plan are net, these emissions are calculated based on gross energy savings from EE measures. The marginal carbon emission rates are from "Avoided Energy Supply Components in New England: 2021 Report" Appendix G.

progress toward Rhode Island's Act on Climate greenhouse gas emission requirements of net-zero by 2050.[9] The Company believes that robust, ambitious energy efficiency programs should be a foundational element of any approach to achieving greenhouse gas emission reduction targets and supports the various efforts underway to holistically evaluate the least cost pathways to realizing economy wide emissions and leveraging the results of those efforts to inform future plans.

1.1.5 Funding

This Plan includes an investment of $110.7M in the cost-effective electric energy efficiency portfolio in 2023. If approved, this will be funded by $10.1 million in proceeds from the ISO New England (ISO-NE) Forward Capacity Market (FCM), revenues from the existing energy efficiency program charge of $0.01222 per kWh, and revenues from a fully reconciling mechanism of $0.00186 per kWh pursuant to R.I. Gen. Laws § 39-1-27.7(c)(5) to fully fund the cost-effective electric energy efficiency programs for 2023.[10]

This Plan also includes an investment of $37.8M in the cost-effective natural gas energy efficiency portfolio in 2023. If approved, this investment will be funded by revenues from the existing energy efficiency program charge of $1.354 per dekatherm for residential customers and $0.886 per dekatherm for non-residential customers plus revenues from a fully reconciling mechanism of $0.280 per dekatherm for residential customers and $0.194 per dekatherm for non-residential customers pursuant to R.I. Gen. Laws § 39-1-27.7(c)(5) to fully fund the cost-effective natural gas energy efficiency programs for 2023.[11]

The cost of procuring 734,645 net lifetime MWh electric energy efficiency savings through the Plan is $45.0M less than if that electric load was met by purchasing additional electric supply. The cost of procuring 3,179,772 MMBtu lifetime natural gas energy efficiency savings through the Plan is $5.3M less than if that natural gas load was met by purchasing additional natural gas supply.[12]

[9] http://webserver.rilin.state.ri.us/Statutes/TITLE42/42-6.2/42-6.2-2.HTM
[10] See Attachment 5 Electric EE Program Tables, Table E-1 for list of funding sources and calculation of the charge.
[11] See Attachment 6 Gas EE Program Tables, Table G-1 for list of funding sources and calculation of the charge.
[12] For more information on how this was calculated, see Section 7.5 of the Main Text, "Cost of Annual Plan Compared to the Cost of Energy Supply"

Table 1. 2023 Energy Efficiency Program Plan Summary

Electric Programs by Sector [3]	Energy Efficiency Budget ($000)[1]	Customer Contribution ($000)	Annual Savings (MWh)	Lifetime Savings (MWh)	¢/lifetime kWh	Summer Annual Demand Savings (kW) [5]	Active Demand Response (kW)	Total Benefits ($000) [7]	RI Test B/C Ratio [7]	Participants [6]
Non-Income Eligible Residential	$33,891	$10,002	44,293	186,123	¢23.2	6,324	7,878	$70,501	2.08	331,108
Income Eligible Residential [3]	$16,788	$0	4,036	45,788	¢36.7	473	0	$26,589	1.58	5,897
Commercial and Industrial	$57,592	$28,149	58,888	502,673	¢16.5	9,640	37,800	$125,990	2.19	2,741
Regulatory [2]	$5,832									
Subtotal	**$114,105**	**$38,151**	**107,217**	**734,645**	**¢20.3**	**16,437**	**45,678**	**$223,080**	**1.96**	**339,746**

Gas Programs by Sector	Energy Efficiency Budget ($000)[1]	Customer Contribution ($000)	Annual Savings (MMBtu)	Lifetime Savings (MMBtu)	$/lifetime MMBtu	Total Benefits ($000)	RI Test B/C Ratio	Participants
Non-Income Eligible Residential	$17,210	$5,268	134,602	1,255,993	$17.90	$30,894	1.37	139,117
Income Eligible Residential	$9,139	$0	20,883	365,699	$24.99	$20,910	2.29	3,539
Commercial and Industrial	$10,285	$3,451	124,859	1,588,079	$8.17	$34,572	2.52	755
Regulatory [2]	$2,118							
Subtotal	**$38,751**	**$8,719**	**280,344**	**3,179,772**	**$14.61**	**$86,376**	**1.82**	**143,411**
TOTAL Plan	**$152,856**	**$46,870**				**$309,456**	**2.02**	**483,157**

(1) The Energy Efficiency Budget comes from E-2 and G-2 tables.

(2) Regulatory Includes contributions to the Office of Energy Resources. EERMC and RIIB have been excluded.

(3) In addition to Income Eligible Residential programs, Income Eligible customers can participate in all Non-Income Eligible Residential programs.

(4) Electric Programs are funded by the Electric Energy Efficiency Charge but also include Delivered Fuels energy savings.

(5) The Summer Annual Demand Response (kW) measures passive demand savings.

(6) The unit measure for participation varies by program. See Attachment 5, Table E-7 and Attachment 6, G-7 for participation goals by program.

(7) "Total Benefits" and the "RI Test B/C Ratio" continue to exclude economic benefits from the RI Test as in the 2022 Plan.

Table 2. 2023 Active Demand Response Program Plan Summary

Programs	Implementation Spending ($000)	Customer Contribution ($000)	Active Demand Response (kW)	$/kW [2]	Total Benefits ($000)	RI Test B/C Ratio	Participation
Residential	$1,985	$-	7,878	$252	$3,501	1.76	6,900
Commercial	$7,503	$-	37,800	$198	$13,678	1.82	216
Total	**$9,489**	$-	**45,678**	**$208**	**$17,180**	1.81	**7,116**

(1) All Residential electric customers (including Income Eligible customers) are eligible to participate in the Residential ConnectedSolutions program if they have the necessary equipment – a smart thermostat and central air conditioning, or a behind the meter battery.

(2) (Implementation Spending *1000) / Active Demand Response (kW)

(3) "Total Benefits" and the "RI Test B/C Ratio" no longer include economic benefits previously included in the RI Test in the 2020 and 2021 plans.

1.2 The Planning Process

This plan benefited from the planning process undertaken in the 2020 calendar year that resulted in the 2021 – 2023 Three-Year Plan. This Annual Plan reflects a refinement of the planning that was undertaken for the third year of the Three-Year Plan, including incorporating the latest Evaluation, Measurement, and Verification (EM&V) studies and Avoided Cost study. The Three-Year Plan was informed by the areas of opportunity identified in the Rhode Island Energy Efficiency Market Potential Study (Market Potential Study) commissioned by the EERMC and completed by Dunsky Energy Consulting in May 2020. This Annual Plan has also been guided by the LCP Standards in RI PUC Docket 5015. The Standards include an extensive set of "principles of program design" referenced in Section 2.1.1.

The Company has engaged the TWG and the EERMC and its consulting team throughout the planning process to leverage their expertise and seek their feedback. The Company is grateful for the substantive critiques and innovative ideas that have come through this process of continued engagement. In particular, the discussions of equity have helped shape and elevate the Company's explicit equity commitments, establishing equity as an overarching strategic objective of this Annual Plan and adding multiple specific, measurable actions across the portfolio of efficiency programs.

1.3 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 Goals, Budget, and Funding Plan. The **Strategies and Approaches to Planning** section provides a discussion of the Company's approach to implementing the principles of program design outlined in the LCP Standards and provides summary program descriptions, along with the major enhancements and innovations planned for 2023. This section also includes a discussion of program participation, pilots and demonstrations and assessments, evaluation, measurement and verification, and coordination with other energy programs. The **Consistency with Standards** section explains how the Plan complies with the requirements for Cost Effectiveness, Reliability, Prudency (including a detailed discussion of equity and rate and bill impacts), Environmentally Responsible, and comparison to alternative cost of supply requirements, as set forth in the LCP Standards. **The Goals, Budget, and Funding Plan** detail these elements and discusses the performance incentive plan and performance metrics.

The eleven Attachments to this Annual Plan provide additional detail on specific Plan elements. **Attachment 1 Residential & IES Programs** and **Attachment 2 C&I Programs** provide detail on program eligibility criteria, offerings, implementation and delivery, customer feedback, 2023 changes with accompanying rationale, and proposed evaluations for each program. **Attachment 3 Evaluation, Measurement, and Verification Plan** reviews evaluation studies completed in 2022, details studies planned for 2023, and provides a recap of historical studies. **Attachment 4 RI Benefit Cost Test** presents the framework for assessing cost-effectiveness of this Annual Plan. **Attachments 5 and 6** contain funding, budgets, goals, and cost-effectiveness tables for the electric and gas energy efficiency programs, respectively. **Attachment 7 Rate and Bill Impacts** provides a detailed analysis of the bill impacts resulting from this Plan. **Attachment 8** details, for each sector, 2023 **Pilots, Demonstrations,**

and Assessments. **Attachment 9 Cross-Program Summary** documents how the programs described in this Plan relate to other specific Rhode Island Energy programs. **Attachment 10 Definitions** provides definitions of energy efficiency terms used throughout the annual plan.

STRATEGIES AND APPROACHES TO PLANNING

2 Programs and Priorities

2.1 Strategic Overview of Programs and Priorities

This Annual Plan is built as the third year of the 2021-2023 Three-Year Energy Efficiency Plan. The Three-Year Plan set the Company on a trajectory to ensure that Rhode Island has a robust and resilient energy efficiency infrastructure, particularly as the market for energy efficiency transforms with changes in the lighting market. This Annual Plan will help continue the trajectory of Rhode Island homes and businesses towards greater efficiency, while contributing to recovery from the COVID-19 pandemic and its impacts on customers and economic conditions. The Plan seeks to guarantee that all Rhode Island energy consumers, regardless of their geographic location, income, home ownership status, primary language, business size, or other relevant barriers are empowered to be active in their energy choices, control their energy use, and enjoy the economic, environmental, and cost savings benefits of energy efficiency.

The Plan supports continued innovation and evolution, building enabling tools to accelerate the transition of Rhode Island homes and businesses to increasing levels of efficiency in future years. It balances the pursuit of energy and financial savings from current technologies and programs with the need to also identify new technologies, finance channels, workforce development enhancements, and programs to continue delivering savings to Rhode Island customers for years to come. The Plan achieves savings by implementing the following key strategic priorities set out in the Three-Year Plan:

- Achieve cost optimization and efficiency.
- Drive adoption of comprehensive measures.
- Plan and deliver programs equitably, with the input and guidance of the Rhode Island Equity Working Group (EWG).
- Expand and deepen customer relationships to expand program participation.
- Expand and evolve Active Demand Response.

Section 2.1.1 explains how the principles of program design included in the LCP Standards have been applied to this Annual Plan, highlighting examples and providing direction on where deeper discussion may be found within the Plan. Sections 2.2, 2.3, and 2.4 provide high-level summaries of program designs and changes for 2023 to Residential, Income Eligible Services, and Commercial and Industrial Programs. Section 2.5 offers detail on the cross-cutting programs for 2023, including the Community-Based Initiative and codes and standards. Section 2.6 focuses on participation and outreach, planned participation, and the important enabler of workforce development, and equity. Lastly, Section 2.7 describes the Company's approach to equity in design and delivery of the 2023 programs.

2.1.1 Principles of Program Design

This Annual Plan has been guided by the LCP Standards as updated in RI PUC Docket 5015, which provide an extensive set of principles of program design. The bullets below summarize the principles and, if appropriate, in what Sections of this Plan they are addressed.

- Integration with other programs and policies - Section 5, Coordination with Other Energy Policies and Programs, provides details on the Plan's connection to specific state policies. Program descriptions in Attachments 1 and 2 also describe the dissemination of information on energy programs beyond those run directly by the Company.
- Innovation – Innovative strategies are outlined in Attachment 8, Pilots, Demonstrations and Assessments.
- Comprehensiveness – Examples of strategies to achieve deep comprehensive savings packages that emphasize whole building and whole system solutions are found in the Commercial and Industrial market sector approach and the Residential and Income Eligible whole building delivery program descriptions, in Attachments 2 and 1, respectively.
- Equity - Using an equity lens involves consideration of how to modify systemic and institutional structures that have made it easier for some customers to access the energy efficiency programs than others. Section 2.7 describes the Company's approach to equity in 2023.
- Build on Prior Plans – The experience and lessons of prior planning and regulatory approval processes informs the current program design, especially as 2023 is the third year of the 2021-23 Least Cost Procurement Plan.
- Build on Prior Programs – Programs are continuously evolving, building from one plan year to the next. Each program description in Attachments 1 and 2 has a section addressing program design changes for 2023.
- Planned Based on Potential Assessments - This Annual Plan in informed by the 2020 Market Potential Study, and the areas of opportunity identified within it – as well as the cost implications of achieving higher levels of potential – have been considered in the program planning process.
- Unlocks Capital and Effectively Uses Funding Sources - This Plan consistently looks beyond direct financial incentives and traditional financing strategies to design capital and program access strategies that respond to specific customer barriers, such as grants for overcoming pre-weatherization barriers, expanded HEAT loan, or third-party financing.
- Integration of Gas and Electric Energy Efficiency Programs – All programs are integrated across fuels where possible to optimize and benefit from synergies between the two energy systems
- Strategies to Achieve Targets – As noted above, the five overarching strategies highlighted in the Three Year Plan permeate this Annual Plan.
- Investments on Behalf of All Customers – All customers contribute to energy efficiency program funding and, in return, programs are designed so that all customers have the opportunity to participate. This element of equity is discussed further in Section 2.7.
- Efficacy - The Company has incorporated opportunities to balance the portfolio of energy savings measures and program approaches to drive higher cost efficiencies (i.e. the amount of

energy savings per dollar invested) and minimize the impact on customer bills. Efficacy also incorporates Workforce Development, which is described further in Section 2.6.1.

- Parity Among Sectors – The Plan examines the amount collected from the different sectors by the SBC, as compared to the program budgets by sectors, to ensure that sectors are generally receiving the benefits paid for.
- Cost-Effectiveness – Programs are cost-effective as required and shown in Attachments 5 and 6. The application of cost-effectiveness as a design principle at a program level involves a balancing of comprehensive, costly projects with long-term measures, with programming that requires less intensive customer support, such as upstream programming and Strategic Energy Management Planning with very large customers.

Further details on the Company's application of the Standards is found in Section 7. At the same time, the Plan is shaped by recent PUC guidance in Dockets 5076 and 5189 related to the performance incentive mechanism (PIM). The PIM focuses program administrator attention on the creation of lifetime benefits, efficiency in spending, and maximization of benefits flowing to customers.

As with any Plan, this Plan was developed using the best information available at the time. Should circumstances change as the year develops, the Company will take action in its capacity as Program Administrator to adapt as needed and inform stakeholders of the inability to execute a proposed strategy or commitment or the need to revise them.

2.2 Residential Programs

In 2023, the Company will continue all residential programs offered in 2022.

Table 3. Overview of 2023 Residential Energy Efficiency Programs

Program Name	Program Description
Energy*Wise* Single Family (Funded by Electric and Gas)	Energy*Wise* is a direct-to-customer in-home program that educates residents on how their home can become more energy efficient. The program offers single-family customers (buildings with 1-4 dwelling units) home energy assessments, weatherization services, and information regarding their energy usage. The program addresses base load electric use and heating, cooling, and water heating energy loads in all residential buildings. Participants receive energy efficiency recommendations and technical assistance, as well as financial incentives to replace inefficient items such as lighting fixtures, appliances, thermostats, and insulation. Upgrades to efficient lighting, advanced power strips, and water saving devices are made if opportunities exist during the initial visit. At the completion of the assessment, the customer receives an Energy Action Plan that indicates additional energy savings opportunities delivered through Rhode Island Energy's various programs. The program will continue to deliver finance opportunities to customers, such as the Heat Loan.

Program Name	Program Description
Multifamily (Funded by Electric and Gas)	This program offers comprehensive energy services for market-rate multifamily customers (buildings with 5+ dwelling units), including energy assessments, incentives for heating and domestic hot water systems, cooling equipment, lighting, and appliances. All types of multifamily properties are eligible. A primary point-of-contact is designated to manage, and coordinate services offered through the Company's existing portfolio. This program is offered in conjunction with the C&I Multifamily gas program where a site may have a commercial meter or office space but should be virtually indistinguishable to the customer as the Company's single point of contact will handle all program overlap and offer a seamless customer experience.
Residential New Construction and Building Energy Code Support (Funded by Electric and Gas)	The Residential New Construction (RNC) program 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.
Home Energy Reports (Funded by Electric and Gas)	The Home Energy Reports (HER) program encourages energy efficiency behavior through personalized print and email reports and a seamlessly integrated website. Each of the communication channels displays energy consumption patterns and contains a normative comparison to similarly sized and similarly heated homes, as well as to an energy reduction goal for each customer. The Company will continue to deliver Home Energy Reports that offer enhanced feedback tools to inspire customers to take actions that reduce their energy consumption and increase their participation in other energy efficiency programs.
Residential Consumer Products (Funded by Electric Only)	This program promotes the purchase of high efficiency household appliances, including kitchen appliances and electronics carrying the ENERGY STAR® label. This program trains retail sales staff about products. The program also offers refrigerator recycling.
Residential High-Efficiency Heating, Cooling, and Hot Water (ENERGY STAR® HVAC) (Funded by Electric and Gas)	This program promotes the installation of high efficiency central air conditioners for electric customers and new energy efficient natural gas related equipment including boilers, furnaces, windows, water heating equipment, thermostats, and boiler reset controls. Incentives for energy efficient air source heat pumps for space and water heating equipment are available for customers with electric resistance heating/hot water. Incentives are also available for air source heat pumps used as accessory heating and cooling devices in homes with a primary heating system that is natural gas, oil, or propane. The program provides training of contractors to increase accurate installation practices, testing of the

Program Name	Program Description
	high efficiency systems, tiered rebates for new ENERGY STAR® systems, and incentives for checking new and existing systems.
Residential ConnectedSolutions (Active Demand Response) (Funded by Electric)	ConnectedSolutions is Rhode Island Energy's demand response program that sends control signals to customer owned electric devices to reduce peak energy use and improve power quality on the grid. Consumers with eligible controllable equipment (e.g. Smart thermostats, batteries, and pool pumps) can enroll to participate in Connected Solutions. All electric consumers are eligible to participate in ConnectedSolutions.

2.2.1 Major Residential Program Changes for 2023

In 2023, the Company will continue to offer the programs listed above and will additionally focus on changes that improve equity and access and that leverage findings from the non-participant and participant studies.

In the multifamily program, the Company will increase focus and outreach on landlords and non-participants that have high propensity scores. It will also update multifamily marketing materials based on recommendations from the nonparticipant study, such as an updated brochure and new case studies. Lastly, the Company will continue to support multifamily opportunities within the Community Initiative.

These changes are expected to improve and expand access to the Company's programs and better serve communities in RI who historically have not participated in these programs.

Further detail on these and other changes may be found in Attachment 1.

2.3 Income Eligible Programs

The Company wants customers who meet the income eligibility requirements, have a high proportion of energy burden and/or difficulty paying their electric bills to participate in, and benefit from, the Company's energy efficiency programs. Therefore, the income eligible sector of the customer base is designated as a unique sector, and funding for this sector is subsidized by both non-income-eligible residential customers and commercial and industrial customers.

Table 4. Overview of 2021 Income Eligible Programs

Program Name	Program Description
Income Eligible Single Family	Income Eligible Single (IES) Family Services are delivered by local Community Action Program (CAP) agencies with oversight provided by a Lead Industry Partner. Three levels of home energy assessments are offered: (1) lighting and appliance, (2) heating and weatherization, and (3) comprehensive assessment. Customers who

Program Name	Program Description
(Funded by Electric and Gas)	qualify for the A-60 rate or for the Low-Income Home Energy Assistance Program (LIHEAP) are eligible to receive all services and equipment upgrades at no cost.
Income Eligible Multifamily* (Funded by Electric and Gas)	Comprehensive energy services for multifamily customers (buildings with 5+ dwelling units) that also meet the criteria for "income eligible" as defined in Attachment 1 Residential & IES Programs, Section 3. Multifamily. These services include energy assessments, incentives for heating and domestic hot water systems, Air Source Heat Pumps, cooling equipment, lighting, and appliances. In most cases, there are no costs to the customer for these services as most income eligible upgrades are covered at 100%.

*Income Eligible Multifamily is combined with Multifamily above.

2.3.1 Major Income Eligible Program Changes for 2023

In recent years, some CAP agencies have had difficulty meeting their budget goals due to insufficient staffing, while others have flourished and exceeded their goals. To improve the efficiency of this program, the Lead Industry Partner will facilitate the Interagency Referral program in 2023. This referral program will enable well-performing CAPs to take on more work in underperforming CAP territories to leverage those underutilized budgets. Doing so is expected to improve access to the program, increase participation, and improve equity by ensuring that underserved territories are better able to meet their goals and serve more customers.

2.4 Commercial and Industrial Programs

The Commercial and Industrial (C&I) programs consistently offer highly cost-efficient savings. In planning these programs, the Company continuously evaluates evolving customer needs and market dynamics to develop enhancements that secure deeper, more comprehensive savings while evolving program designs to drive market transformation across all customer classes and multiple end-uses.

The Company is observing a rapid reduction in claimable lighting savings due to a combination of market saturation and evaluation impacts that limit savings due to the rapid market transformation underway. Some initiatives focus on specific market segments, including industrial, grocery, chain restaurant, and telecommunications. Other enhancements make participation easier or more attractive (such as the Equipment and Systems Performance Optimization), provide attractive incentives for specific customer classes (especially Small Business), and other enhancements are designed to reduce barriers to comprehensive measure adoptions (e.g., the Whole Building Streamlined pathway in New Construction introduced in 2021). In addition to these focus areas, the plan describes the Company's ongoing initiatives. Program changes are described in more detail in Attachment 2 C&I Programs.

Table 5. Overview of 2023 Commercial and Industrial Energy Efficiency Programs

Program Name	Program Description
Large Commercial and Industrial New Construction and Building Energy Code Support (Funded by Electric and Gas)	This program encourages energy efficiency in new construction, major renovations, planned replacement of aging equipment, and replacement of failed equipment through financial incentives and technical assistance to developers, manufacturers, vendors, customers, and design professionals. C&I customers with annual electric consumption greater than 1,000,000 kWh per year are eligible. The program supports new construction projects with proactive technical assistance during design with energy modeling and analysis. Incentives are also offered to owner's design teams for their time and effort to meet program requirements. The program promotes and incentivizes the installation of high efficiency equipment in existing facilities during remodeling or equipment failure and replacement. A customer who does not install energy efficient equipment at the time of construction or equipment replacement will likely never make the investment or will do so at a much greater cost later. Operations Verification or quality assurance is also offered to ensure that the equipment and systems operate as intended. The program also promotes compliance with the building energy code and increased use of the Stretch Code to support the State's goals and objectives. In addition, it provides technical assistance in advancing the development and adoption of minimum efficiency standards for appliances and equipment. Finally, the program supports the State's Zero Energy Building (ZEB) goals through engagement and development of ZEB programs in the future.
Large Commercial and Industrial Retrofit (Funded by Electric and Gas)	This program incentivizes the replacement of existing equipment and systems with energy-efficient alternatives when the customer might otherwise not plan on making efficiency investments. This may include energy efficient equipment such as lighting, motors, and heating, ventilation and air conditioning (HVAC) systems, thermal envelope measures, and custom measures in existing buildings. All commercial, industrial, and institutional customers are eligible to participate. The Company offers technical assistance to customers to help them identify cost-effective efficiency opportunities and pays incentives to assist in defraying part of the material and labor costs associated with the energy efficient measures.

Program Name	Program Description
	The Company also offers education and training, such as the building operator certification (BOC) training, to support the implementation and adoption of energy efficiency.
Small Business Direct Install (Funded by Electric and Gas)	This is a retrofit program that provides turn-key solutions to customers that consume less than 1,000,000 kWh per year. As part of the program, customers receive a free on- site energy assessment and a customized report detailing recommended energy efficient improvements. Rhode Island Energy then completes retrofit installations at the customer's convenience. The program serves small businesses of all types from restaurants to non-profits, to small offices. Rhode Island Energy pays up to 70% of installation and equipment costs and customers can finance the remaining share of the project over as many as 60 months (typically 24) on their electric bill, interest free, using the Small Business Revolving Loan Fund, providing funds are available.
Commercial ConnectedSolutions (Active Demand Response) (Funded by Electric)	The Commercial Connected Solutions or Active Demand Response program is focused on reducing peak electric demand and associated costs for large and small commercial customers. All customers, regardless of size can participate. The program is technology neutral and provides a customer incentive for verifiable shedding of load in response to a signal or communication from the Company.
Commercial and Industrial Multifamily (Funded by Gas)	Comprehensive energy services for market-rate multifamily customers (buildings with five plus dwelling units) include energy assessments and incentives for heating and domestic hot water systems and weatherization. Coordinated services will be offered for all types of multifamily properties. An approach tailored for multifamily properties designates a primary point-of-contact to manage and coordinate services offered through the Company's existing portfolio, including Energy*Wise*, C&I Retrofit, Residential New Construction, Income Eligible, and the ENERGY STAR® HVAC programs.

2.4.1 Major Commercial and Industrial Program Changes for 2023

In 2023, the Company will:

- Scale up the Building Analytics initiative to help customers optimize the performance of HVAC and other systems.
- Improve technical processes by streamlining savings calculators, revisiting burdensome data collection practices, and better leveraging engineer site visits to identify EE opportunities.

- Expand on Small Business equity efforts to target women and minority owned enterprises through bilingual auditors, targeted marketing, collaboration with community organizations, and by making marketing materials available in other languages.
- Conduct targeted training activities to upskill the program delivery workforce on specific focus areas, such as HVAC, building controls, and building envelope.
- Monitor and help mitigate supply chain disruptions and inflation impacts.
- Sunset efforts that have failed to demonstrate the potential to generate significant cost-effective savings, including the Telecommunications Initiative and multiple demonstrations and assessments in order to reduce costs and focus resources on efforts that are successful or have greater future potential.

2.5 Cross-Cutting Programs

2.5.1 Community Solutions Initiative

Building upon the community-based approach, the Company will continue the **Community Solutions Initiative**. This initiative targets geographic communities that encompass multiple customer types, industrial and technology parks, and other organized communities such as industry groupings with common end uses (e.g., indoor agriculture). Community Solutions provides a single point of contact for a given community to access all available Company solutions, including energy efficiency, EVs, demand response, and emerging technologies.

To further develop Community Solutions, the company is identifying a medium-sized city with which to model this approach in 2023. This partnership will leverage the relationships and communication channels of our city partners to reach across sectors and programs (municipal, LCI, SBS, residential, etc.), while providing coordinated tracking and program management. We will collaborate with our partners to set goals and priorities for both city buildings and other community stakeholders (e.g., small businesses) based on the city's preferences. In 2023 the company will assess best practices and lessons learned and identify one to two additional communities with which to partner in future years.

Under this initiative, in 2020, the quasi-public Quonset Development Corporation (QDC) signed a three-year memorandum of understanding with the Company to provide businesses at the Quonset industrial park in North Kingstown with access to enhanced incentives and technical services to identify and implement energy efficiency projects. Participating customers range from small industrial businesses to some of the largest energy users in the state. In 2022, QDC was awarded the Govenor's Lead by Example Award (quasi-state agency category) for this effort. In 2023, the Company will continue to provide energy-related trainings in collaboration with QDC to expand program participation. The existing MOU (spanning 2020 to 2022) will be renewed and expanded to include new outreach collaboration, additional support, and new sites across the state working with QDC through the RI Ready Industrial Site Readiness Program (www.riready.org).

2.5.2 Codes and Standards Support

The Codes & Standards Technical Support Initiative (CSTS) develops and delivers technical guidance to a wide variety of stakeholders to support energy efficiency policies applicable to the state's building sector. CSTS is a highly cost-effective initiative that unlocks sources of typically long-lived energy savings and primarily benefits historical nonparticipants and customer segments considered "hard to reach" (HTR) by raising efficiency baselines market wide. CSTS saves energy by: (1) increasing overall market compliance with current minimum energy efficiency codes and standards, and (2) increasing the level of energy efficiency required by such policies. The Company has successfully demonstrated both approaches with respect to building energy codes.

In 2023, the Company will continue to support RI energy code compliance and advancement. CSTS compliance support activities include training (classroom, webinar, and in-field), a "hotline" for project-specific inquiries, and development and delivery of tools and resources that help fill market gaps. CSTS has a broad reach, but our primary audiences are building code officials, design professionals (architects, engineers), and builders/developers/contractors. CSTS will also continue to support energy code advancement by developing and delivering proposals to strengthen the efficiency of the RI energy code.

2.6 Participation and Outreach

In 2023, the Company will continue to drive participation through two main pathways – targeted programs and broad-based programs. Targeted programs include the Company's retrofit, new construction, product rebate, and small business initiatives. These programs serve to drive deeper savings to targeted customer segments and offer a wide array of energy efficiency measures. The Company also reaches broad participation by promoting products upstream and through Home Energy Reports. These broader based programs provide value by reaching a wide and diverse set of customers, helping to provide more customers with access to energy savings, as well as acting as a gateway to drive participation in other Company energy efficiency programs.

The Company has made steady progress with reaching new participants each year. From 2012-2021 the Company served approximately 69% of its electric customers and 46% of its gas customers from its targeted programs at least once (this analysis has removed duplicate participation across programs and across years from 2012-2021). When Home Energy Reports and C&I upstream lighting participation are added to these counts, a total of 97% of electric customers and 93% of gas customers participated over this period. Home Energy Reports are included here because the program offers significant savings and benefits to customers as well as drives customers to participate in other energy efficiency programs. See the 2021 Year-end Report for further details on participation through 2021.

In 2023, the Company will continue its efforts to reach customers that have never participated in its energy efficiency programs. The residential non-participant study indicated lower awareness of the energy efficiency programs among non-participants. A Comprehensive marketing campaign will be deployed in multiple languages in 2023 that will educate customers on the availability of the programs. The Company will be specifically focused on five communities with lower participation and will conduct additional outreach and engagement in those communities. The Company will continue to deliver

innovative strategies to increase customer participation and reach customer segments that are historically underrepresented. Also, the Company will continue to track participation trends and will again provide a detailed analysis in its 2023 Year-End Report showing additive and cumulative portfolio participation.

Each program described in this Plan seeks to drive customer participation to deliver the benefits of energy efficiency to customers throughout Rhode Island. The Plan is designed to provide equitable access to savings and programs across sectors and market segments. For 2023, the Company will continue to plan and report participation in 'net' terms, which takes into account free-ridership and spillover, which are commonly referred to as net-to-gross factors. This method of accounting for participants aligns participation numbers with energy savings numbers, which are already recorded in net terms. This approach provides a more accurate connection between energy savings and the number of customers who benefit from efficiency programs. Planned participation estimates are included in Attachment 5 Electric EE Program Tables, Table E-7 and Attachment 6 Gas EE Program Tables, Table G-7.

The following table describes the definitions for how Rhode Island Energy projects, tracks, and reports participation in the efficiency programs.

Table 6. Participation Definitions

Fuel	Sector	Program	Participation Unit
Gas	Commercial & Industrial	Large Commercial New Construction	Unique Billing Account
		Large Commercial Retrofit	Unique Billing Account
		Small Business Direct Install	Unique Billing Account
		C&I Multifamily	Housing Units
	Income Eligible Residential	Single Family – Income Eligible Services	Unique Billing Account
		Income Eligible Multifamily	Housing Units
	Residential	ENERGY STAR® HVAC	Unique Billing Account
		Energy*Wise*	Unique Billing Account
		Multifamily	Housing Units
		Home Energy Reports	Unique Billing Account
		Residential New Construction	Housing Units
Electric	Commercial & Industrial	Large Commercial New Construction	Unique Billing Account
		Large Commercial Retrofit	Unique Billing Account + Unique Customer names from Upstream Lighting
		Small Business Direct Install	Unique Billing Account
		Commercial ConnectedSolutions	Unique Billing Account
	Income Eligible Residential	Single Family – Income Eligible Services	Unique Billing Account
		Income Eligible Multifamily	Housing Units

Fuel	Sector	Program	Participation Unit
	Residential	ENERGY STAR® HVAC	Unique Billing Account
		Energy*Wise*	Unique Billing Account
		Multifamily	Housing Units
		Home Energy Reports	Unique Billing Account
		Residential New Construction	Housing Units
		Residential ConnectedSolutions (Direct Load Control)	Unique Billing Account
		ENERGY STAR® Products	Number of Rebates

The Company will estimate the number of unique participants for each program. For some programs such as ENERGY STAR® HVAC, one measure does not necessarily equal one participant. This is because a customer can purchase more than one measure. Therefore, the Company also considers the previous year's unique accounts to savings ratio in order to estimate the planned unique participants in 2023. This method allows for a better estimation of unique participants but can make it more difficult to compare planned numbers across years.

2.6.1 Workforce Development

In 2023, the Company plans to maintain its historical workforce development investments (see Table 8). In 2022, the Company began funding upskilling in specific areas where there is high confidence in delivering ratepayer benefits (see Table 9), and these efforts will continue in 2023. These investments drive customer benefits by improving installation quality and increasing the industry's capacity to install non-lighting measures in the near term while also accelerating industry adoption of the advanced controls and high-efficiency HVAC systems identified in the Market Potential Study as areas for growth.

This Plan includes significant investments to ensure a sufficient supply of highly skilled workers capacity to support customer adoption of high efficiency technologies, including advanced control systems and air source heat pumps. The "efficacy" principle of program design specifically calls for "practical partnerships with existing educational and job training entities." The Company will coordinate with the Department of Labor and Training's Real Jobs Rhode Island program[13], the RI Department of Education's PrepareRI initiative[14], and other entities to help promote existing solutions to reduce or eliminate duplication of effort and expenditures.

Table 8 below shows continued workforce development activities, with 2023 budget levels providing a steady level of service compared to 2022. These efforts will be supplemented by sales and marketing focused training to program vendor/subcontractor sales and technical staff focused on promoting deeper savings measures to customers.

13 https://dlt.ri.gov/realjobsri/

14 https://www.prepare-ri.org/

Table 7 Continued Workforce Development Activities

Sector	WFD activity	Description	Target audience	2023 budget
Res	HVAC Check trainings	HVAC installation best practices training delivered as part of the HVAC program	HVAC technicians	$39,400
Res + IE	Zero Net Energy training	High performance building best practices training delivered as part of the Residential New Construction program	Design professionals builders / contractors	$20,000
IE	Miscellaneous IE training	Training on topics such as WiFi thermostats and ASHPs delivered as part of the Income Eligible Single Family program	Weatherization contractors, auditors	$50,000
C&I	Zero Net Energy training	High performance building best practices training delivered as part of the C&I New Construction and Major Renovations program	Design professionals developers / contractors	$20,000
C&I	BOC training	Building O&M best practices training delivered as part of the C&I Retrofit program	Facility managers, building maintenance staff	$37,000
All sectors	Codes & Standards – code compliance training	A suite of services which includes training sessions (classroom, webinar, and in-field), project-specific "hotline" support, and development and delivery of tools and resources to fill industry gaps.	Code officials, design professionals, builders / developers / contractors	$200,000

Residential workforce development will focus on continued collaboration between the Company and its vendors with entities such as Skills for RI's Future; the University of Rhode Island's Energy Fellows program; and the RI Builders Association and their affiliate Residential Construction Workforce Partnership. Several additional workforce development activities focusing on upskilling the C&I program workforce have been added for 2023 as shown in Table 9. The 2023 plan also includes funds for a vendor to coordinate C&I trainings. The new initiatives address workforce gaps in the following high-priority technology areas:

- Controls (Energy Management Systems (EMS), Building Automation Systems (BAS))
- Ventilation (Demand Controlled Ventilation (DCV), Energy Recovery Ventilators (ERV))
- Variable Frequency Drives (VFDs)
- HVAC
- Retro-commissioning (RCx)
- Lighting controls

Through this approach, the Company will upskill the local workforce to both improve installation quality of these measures and enable the transition to non-lighting measures highlighted by the Market Potential Study. The Company will also engage with other entities in recognition that these efforts fit within a larger workforce development ecosystem. As such, the Company will coordinate with the public and private entities comprising the RI energy efficiency workforce development network to help maximize impact and avoid duplication of efforts. For example, the Company will promote trainings organized by the Residential Construction Workforce Partnership[15], such as the previously mentioned Residential Construction Pre-Apprentice Energy Weatherization Auditor, Installer & Performance Evaluator Training Program that launched in 2021.

Table 8. New Workforce Development Activities for 2023

Sector	WFD activity	Description	Target audience	2023 budget
C&I	Controls Best Practices training (HVAC and Lighting Controls)	ASHRAE Guideline 36 training (Sequence of Operations)	Contractors / engineers	$20,000
		Lighting Design Lab (lighting controls) training	Contractors / engineers, program technical and sales staff	$30,000
C&I	Manufacturer-led trainings	The Company will coordinate and promote participation in existing manufacturer trainings in the following technology areas. • Building / HVAC Controls (e.g. Johnson Controls BAS and HVAC training courses) • DCV and ERV (e.g. Trane Engineers Newsletter Live Series) • VFDs (e.g. Danfoss Drives training) • HVAC (e.g. Mitsubishi heat pump training) • Lighting Controls (e.g. Acuity wired lighting systems course)		$50,000

C&I	Industry certifications	The Company will increase number of local certified individuals by sponsoring certifications in the following technology areas; sub-bullets provide example certifications.
		• Controls
		  ○ ISA Building Automation Systems
		  ○ BOMA Building Automation Systems Certificate
		• HVAC
		  ○ NATE Level 4
		  ○ ASHRAE Certified HVAC Designer
				$125,000

15 https://rcwpjobs.com/

- RCx
  - ASHRAE Building Commissioning Professional

2.7 Equity

The Company is committed to using the rigor of the Participation and Multifamily Census, as well as the Nonparticipant Market Barriers Study**,** to understand how biases may have impacted program and customer outcomes. In 2023 the Company commits to:

- Increasing outreach to underserved communities to encourage participation;
- Targeting outreach for landlords to increase participation among renters;
- Tracking minority and women owned businesses that are providing services to the Energy*Wise* program;
- Continuing to identify and encourage customers eligible for the discount rate to move to the discount rate;[16]
- Encouraging participation in Residential Income Eligible Services (IES) for new customers enrolled on the discount rate via a "welcome package"; and[17]
- Targeting woman and minority-owned businesses through marketing efforts, partnerships with local community organizations, bilingual facility auditors, and making marketing materials available in other languages.
- Utilizing the Company's new codes and standards advancement support service to target nonparticipant markets across all sectors. While the program is in its infancy, this approach overcomes traditional barriers of access by ensuring that efficiency levels are rising for all. See Section 2.5.3 Cross Cutting Programs, Codes and Standards Support for more information.

As part of the Company's 2021 Annual Energy Efficiency Program Plan (2021 Annual EE Plan) and 2021-2023 Energy Efficiency Program Plan (2021-2023 EE Plan), the Company committed to working with the RI Office of Energy Resources (OER) to co-host an Equity Working Group (EWG). The EWG prioritized fourteen recommendations, which the Company has used to develop additional, overarching equity-related enhancements for 2022. Table 7 describes the progress in each of these areas and plans for 2023.

Table 9. EWG Recommendations and 2023 Plan Enhancements

THIS SECTION WILL BE UPDATED IN THE FINAL DRAFT

[16] See Attachment 1 Residential & IES Programs, Section 4 Income Eligible Services.
[17] See Attachment 1 Residential & IES Programs, Section 4 Income Eligible Services.

Rhode Island Energy Efficiency Equity Working Group (EWG) Recommendations for Rhode Island Energy's Annual Energy Efficiency Plan for 2022	
1. Develop multilingual marketing and outreach materials. Use accessible language to target audiences in each publication.	
2022 Progress / 2023 Plans	
2. Hire multilingual staff and partner with trusted leaders who have the same ethnic background and that frequent popular community gathering places such as community centers and faith-based organizations.	
2022 Progress / 2023 Plans	
3. Include in messaging that Rhode Island Energy is not code enforcement so residents can feel more comfortable.	
2022 Progress / 2023 Plans	
4. Develop age-appropriate marketing strategies to connect with various age groups that live in a household such as utilizing social media, apps, and text messaging to reach new audiences and help engage customers with their energy usage.	
2022 Progress / 2023 Plans	
5. Partner with other home visiting programs to expand the reach and impact of Rhode Island Energy's energy efficiency programs.	
2022 Progress / 2023 Plans	
6. Allocate a proportion of Energy Efficiency marketing budgets to municipalities for mailing energy efficiency materials; some municipalities use third parties for mailing.	
2022 Progress / 2023 Plans	

7. Provide incentives to community groups that are serving vulnerable populations.	
2022 Progress / 2023 Plans	
8. Develop a mechanism that allows participation or action to occur immediately after the marketing step.	
2022 Progress / 2023 Plans	
9. Benchmark Energy Efficiency Program participation data for race, geography, socioeconomic status, language, age of home, age of owner, age of renter, heating fuel type, type and age of heating /hot water/cooling systems.	
2022 Progress / 2023 Plans	
10. Track late payments and shut offs.	
2022 Progress / 2023 Plans	
11. Align energy efficiency programs with healthcare and partner to achieve healthcare goals, promote further engagement, and sharing health outcome and impact data.	
2022 Progress / 2023 Plans	
12. Perform a full review of all HR policies and remove outdated policies that restrict hiring such as background checks.	
2022 Progress / 2023 Plans	
13. Reduce barriers to professional development, as well as entry into the energy efficiency workforce.	
2022 Progress / 2023 Plans	

14. Collaborate with local diverse community organizations to train and certify potential workers (Progresso Latino, Hispanic chamber of commerce, Cape Verdean community development).	
2022 Progress / 2023 Plans	

The Company will provide updates on the implementation of these enhancements in Q2 and Q4 of the Company's 2022 Annual Energy Efficiency Quarterly Reports to the Public Utilities Commission. The EWG will continue to meet quarterly during 2022.

3 Pilots, Demonstrations, and Assessments

In accordance with Docket 4600-A PUC Guidance Document,[18] this Plan includes a description of Commercial, Industrial, and Residential pilots, demonstrations and assessments. These are all vehicles that may be used to identify, test, analyze, and deliver new creative and innovative solutions and services that are technically feasible, desirable by customers, and viable for inclusion in the portfolio. The Company will continue to systematically review opportunities to add to the portfolio through a consistent and transparent process. Please refer to Attachment 8 for additional details on evaluations for pilots, demonstrations and assessments.

Consistent with PUC Guidance, the company uses the following definitions for pilots, demonstrations, and assessments.

> **Pilots**: 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. Pilots are designed to test technologies and approaches to energy management not included in the core energy efficiency programs that could potentially become a new, standalone program. Given the scope of adding a new core program to the Company portfolio, it is likely that pilots will require a long-term commitment and broader set of stakeholder input, Savings associated with Pilots will not contribute to shareholder incentives. Pilots may be evaluated with either an independent or a vendor evaluation.
>
> **Demonstrations**: 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.

[18] Docket 4600-A PUC Guidance Document, October 27, 2017. Section V. Pilots.

Assessments: 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.

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.

4 Evaluation Measurement and Verification Plan

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. EM&V also provides insight into market characteristics and guidance on energy efficiency program design to improve the delivery of cost-effective programs.

To verify the impacts of programs on energy savings, the Company hires independent third-party consulting firms to regularly conduct evaluation studies as part of its evaluation, measurement, and verification process. These evaluations incorporate industry standard methods such as engineering analysis, metering analysis, billing analysis, site visits, surveys, and market studies to realize the actual energy savings of a measure. The EERMC and OER provide direct oversight of each evaluation study conducted. Every year, the results of the studies are used to update the benefit-cost calculations during planning. Attachment 3 EM&V Plan lists the evaluations that have occurred since 2010 that are still being used and their influence on program planning. All completed evaluations are submitted electronically to the PUC; final reports of evaluations completed in prior years are available in the dockets for previous years, on the EERMC website[19], or upon request.

Additionally, the EM&V Plan for 2023 is presented in Attachment 3 and includes brief descriptions of each of the proposed studies. The areas proposed for study in 2023 were chosen based on a number of factors: the relative amount of savings in that program or end use, the vintage of the most recent evaluation study, the relative precision of the recent evaluation study, recommendations from previously completed studies, and the available evaluation budget. This list may be added to as the year progresses and different evaluation priorities are identified. In particular, the Company will consider the

[19] https://rieermc.ri.gov/plans-reports/evaluation-studies/

value of using evaluations from other jurisdictions as well as adding Rhode Island-specific impact or process evaluations, as appropriate, that will help inform the Company's efforts towards achieving the goals of least cost procurement.

5 Coordination with Other Energy Policies and Programs

Continuing to provide the best value to Rhode Island customers necessitates that the Company coordinate with other parts of the energy system, rather than pursuing savings programs and strategies in isolation. In 2023 the Company will continue to seek ways to implement the energy efficiency portfolio of programs in coordination with other Company filings and activities, described below. Efforts have also been taken to ensure the 2023 Annual Plan is aligned with relevant state policies and objectives, with specific coordination opportunities detailed below.

5.1 System Reliability Procurement

During the 2023 program year, the Company's energy efficiency programs will continue their longstanding coordination with SRP plans and filings, including the development of the Non-Pipelines Alternative (NPA) program within the SRP pathway. Energy efficiency, among other demand side management solutions, has potential to be a component to meet a variety of situations in which NWAs and NPAs are considered. SRP filings will continue to be made separately from the energy efficiency filings while any charge associated with SRP will be accounted for in the energy efficiency charge. One opportunity for 2023 will be to test location-targeted marketing in heavily loaded feeder areas.

5.2 Advanced Metering Functionality (AMF), Grid Modernization (Grid Mod), Rate Cases, Renewables

On January 21, 2021, the Company filed its proposed Grid Modernization Plan and Updated Advanced Metering Functionality Business Case in RI PUC Docket 5114[20] and 5113[21], respectively. The RI PUC stayed both dockets pending further consideration following the issuance of a final Order in Division Docket No. D-21-09, Petition for Authority to Transfer Ownership of the Narragansett Electric Company to PPL Rhode Island Holdings, LLC, Petition of PPL Corporation, PPL Rhode Island Holdings, LLC, National Grid USA, and the Narragansett Electric Company.[22] Following receipt of Federal, State of Rhode Island and State of Massachusetts regulatory approvals associated with the transaction, PPL Corporation acquired The Narrangansett Electric Company on May 25th, 2022 and rebranded the utility as Rhode Island Energy. The Company will file to withdraw the previously filed AMF business case and Grid Mod

[20] In re: The Narragansett Electric Company d/b/a National Grid – Grid Modernization Plan. RI PUC Docket 5114: http://www.ripuc.ri.gov/eventsactions/docket/5114page.html

[21] In re: The Narragansett Electric Company d/b/a National Grid – Updated Advanced Metering Functionality Business Case. RI PUC Docket 5113: http://www.ripuc.ri.gov/eventsactions/docket/5113page.html

[22] RI PUC Docket 5113, Order 24089: http://www.ripuc.ri.gov/eventsactions/docket/5113-5114-NGrid-Ord24089%20(7-14-2021).pdf:

Plan and is working toward filing an updated AMF business case this fall and Grid Mod plan by the end of the year.

5.3 Act on Climate

The Act on Climate Legislation was signed into law by Governor McKee in April 2021. This legislation accelerates the timeline of legislated GHG reductions in RI and mandates the specified reduction levels. Specifically, 10% below 1990 levels by 2020; 45% below 1990 levels by 2030 (previously 2035); 80% below 1990 levels by 2040 (previously 2050); and net-zero emissions by 2050 (new). Moving forward, the Company's energy efficiency programs will continue to set energy reduction goals that contribute to these statewide GHG emissions reduction targets and will report GHG emissions reductions in quarterly and annual reports. Tables E-6A and G-6A in Attachments 5 and 6 include the projected carbon reductions from the 2023 Plan.

5.3.1 Electrification, Heat Pumps, and Delivered Fuel Policy and Objectives

The Company plans to continue to offer enhanced incentives for customers installing heat pumps using allocated RGGI funds from OER, to the degree that those funds extend into 2023. At this time, the Company does not have visibility to a direct regulatory pathway to the promotion of electrification for delivered fuel customers by way of electric or gas system benefit charge collections.

5.4 Accounting for New Codes and Standards

With an update to the state energy code (to the 2018 International Energy Conservation Code (IECC)) in early 2022, new construction savings opportunities have been reduced relative to prior years due to rising baselines. There is a possibility that the Rhode Island legislature will adopt the IECC 2021 model code in 2023. If that takes effect, this will increase baselines and further reduce program-influenced new construction opportunities.

6 Multi-Year Strategies

In the revised LCP Standards adopted by the PUC in Docket 5015, the PUC directed the Company to identify investment strategies for which implementation and budget requests (or revenue collection) are expected to span multiple years. In addition to the budgets and targets required for the rest of the portfolio, the PUC directed that the Company may separately provide budgets and goals for multi-year strategies. The requirement applies to both the Annual and Three-Year Energy Efficiency Plans.

There is no such multi-year commitment envisioned for 2023.

CONSISTENCY WITH STANDARDS

7 Least Cost Procurement Law and Standards

This Annual Plan is submitted in accordance with the Least Cost Procurement Law, R.I. Gen. Laws § 39-1-27.7, the basis for which is the Comprehensive Energy Conservation, Efficiency, and Affordability Act of 2006, R.I. Gen. Laws § 39-2-1.2, and the Least Cost Procurement Standards as approved and adopted

pursuant to Order No. 23890 in Docket No. 5015. The Standards guide how energy efficiency services are delivered – in a manner that is optimally cost-effective, reliable, prudent, and environmentally responsible. Least-Cost Procurement that is Energy Efficiency and Conservation Procurement shall also be lower than the cost of additional energy supply.

The Company has assessed each of these requirements in developing this Plan. Details on the Company's approach to considering each of these elements are included in this section. In addition, further detail on the cost-effectiveness screening of the proposed investments is in Attachment 4 RI Benefit Cost Test, with detail on rate and bill impacts in Attachment 7.

7.1 Cost Effectiveness

7.1.1 Interpretation of Standard

The RI Test compares the present value of the total lifetime benefits derived from efficiency savings to the total costs of acquiring those savings (i.e., program and customers' costs). According to the Standards, "any program with a quantified benefit-cost ratio greater than 1.0 (i.e., where quantified benefits are greater than quantified costs), should be considered cost-effective. Consistent with the PUC's guidance issued in Docket No. 4600, qualitative benefits and costs may be considered in determining cost-effectiveness. The portfolio must be cost-effective and programs must be cost-effective."[23]

7.1.2 Compliance with Standard

The Company has analyzed the cost-effectiveness for the proposed 2023 portfolio and programs using the RI Test as required by Docket 4600[24] and the LCP Standards.[25] The portfolio and programs proposed for 2023 satisfy these criteria for cost-effectiveness.

As provided for in the Docket 4600 RI Test Framework, benefits include primary fuel energy savings (electricity and natural gas), the value of other resource (fuel and water) benefits, price effects, non-embedded greenhouse gas reduction benefits, economic development benefits, non-embedded NO_x reduction benefits, the value of improved reliability, and non-energy impacts (NEIs). Costs include all projects costs, program planning and administration, sales, technical assistance and training, evaluation, and the performance incentive. To illustrate the detailed components of the RI Test as well as the sources of the values, the Company has provided Attachment 4 RI Benefit Cost Test. The RI Test as applied to the 2023 Annual Plan utilizes the regional avoided cost study, referred to as AESC 2021, completed by Synapse Energy Economics in May 2021 that provided the monetization of most benefit categories in the 2019 – 2021 Annual Plans and the 2021 – 2023 Three-Year Plan. The monetization of

[23] RI PUC Docket 5015, LCP Standards, Section 3.2N

[24] RI PUC Docket 4600, http://www.ripuc.ri.gov/eventsactions/docket/4600page.html

[25] RI PUC Docket 5015, LCP Standards http://www.ripuc.ri.gov/eventsactions/docket/5015_LCP_Standards_05_28_2020_8.21.2020%20Clean%20Copy%20FINAL.pdf

benefits also incorporates the latest EM&V results that affect claimable savings in the programs. Attachment 4 provides additional detail on changes in the avoided costs.

Attachment 5, Table E-5 shows that the proposed portfolio of electric programs, including active demand response, is expected to have a benefit/cost ratio of 1.47 in the presentation of BCR results, which means that approximately $1.47 in monetized lifetime benefits is expected to be created for each $1 spent on the portfolio. Attachment 6, Table G-5 shows that the proposed portfolio of gas programs is expected to have a benefit/cost ratio of 1.82 in the presentation of BCR results, which means that $1.82 in lifetime benefits is expected to be created for each $1 spent on the portfolio. The tables in Attachments 5 and 6 also demonstrate cost-effectiveness at a program level.

7.1.3 Other Economic Impacts

Cost-effectiveness results do not include economic impacts such as employment and gross state product impacts from energy efficiency investments. Per agreement with stakeholders, economic impacts are shown separately from the benefit-cost analysis in Attachment 5, Table E-5 (Economic Benefits) and Attachment 6, Table E-6 (Economic Benefits). With the isolation of economic impacts, all programs and portfolios still achieve benefit-cost ratios of at least 1.00. In addition, the RI Test and the Docket 4600 Framework guidance also indicate that categories of the Framework can be considered qualitatively in the assessment of cost effectiveness. When considering the significant economic activity generated directly by the programs, including supporting 1,011 FTEs associated with the programs and more than 1,000 companies involved, as well as non-quantified benefits, a reasonable assumption is that the macroeconomic benefits of the programs are positive and potentially significant and, were those benefits included in the RI Test screening as quantified benefits, the programs would achieve more favorable benefit-cost ratios.

7.2 Reliability

7.2.1 Interpretation of Standard

The Standards for reliability create an expectation that the Company will be able to deliver the programs described herein and that the savings realized from program delivery are accurate estimated and measured. In addition, as applicable, programs should be scalable and be tailored to meet specific system needs.

7.2.2 Compliance with Standard

The programs developed under this Annual Plan will continue the Company's extensive history of offering best-in-class energy efficiency programs to customers. 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 Annual 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.

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 4, 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 Rhode Island Energy 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 9.2.3, 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 meet the high standards for participation in the ISO-NE FCM.

7.3 Prudency

7.3.1 Interpretation of Standard

The Company has considered, and continues to consider, several key components in the analysis of prudency. These components can be summarized as considerations about the proposed investments on the following:

- Support for the purposes of Least Cost Procurement
- Synergy savings through alternatives that meet multiple needs
- Management of risks to ratepayers and the distribution company
- Effective use of funding sources
- Equitable in the allocation of costs, benefits, and services
- Rate and bill impacts
- Continuity of implementation efforts

7.3.2 Compliance with Standard

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.

Purposes of Least Cost Procurement. This plan secures cost effective energy efficiency resources to support the electric and gas system through the creation of customer benefits in various components enumerated in both the RI Test, comparison with the Cost of Supply, as well as the Performance Incentive Mechanism.

Synergy savings. Program design seeks out synergies in customer participation, through a comprehensive view of savings opportunities whererever possible and tiered incentive offers. 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 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.

Management of risks. Energy efficiency investments are generally low risk investments. Savings have been well researched and documented through evaluation studies and the Company has confidence, based on those studies, that predicted savings will be realized. Continued research through new evaluation studies contribute to continuous program improvement and increasing levels of confidence. Furthermore, many programs include customer education, post-installation inspection, or commissioning to provide a foundation for assumptions about savings persistence. This further reduces risk to ratepayers. Furthermore, when the savings are reliably estimated, it serves to increase confidence and reduce risk related to the energy efficiency resource in distribution planning.

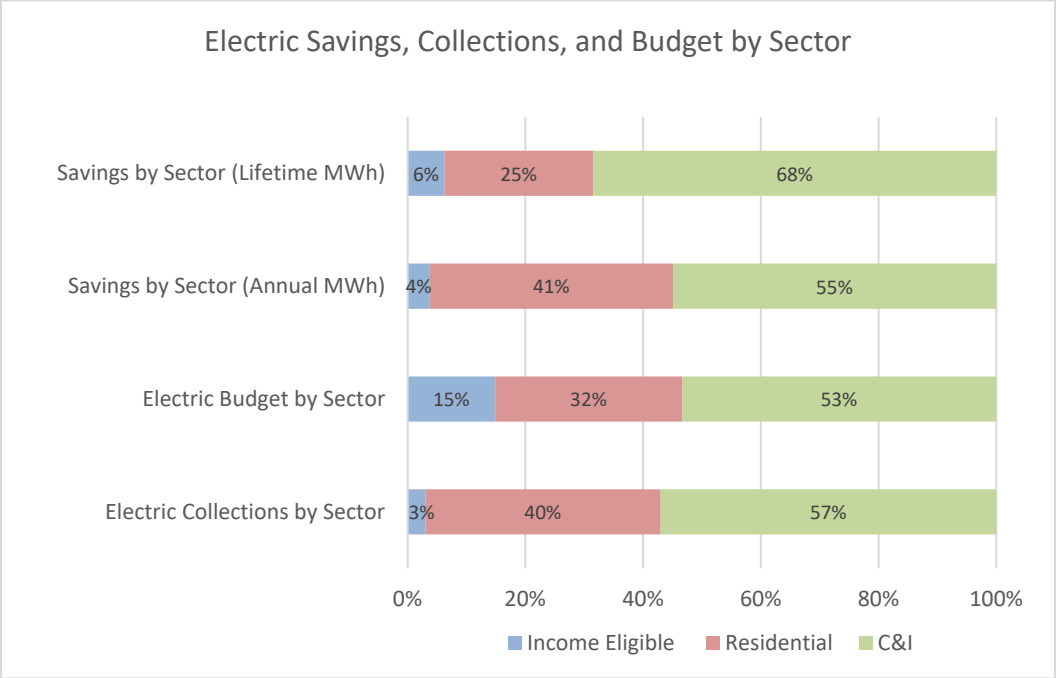
Effective use of funding. As describe in Section 9.2, the Company has identified a number of funding sources to support the Plan budget. Furthermore, several sources of financing are offered to customers to enable program budgets to go further to achieve Plan targets. Finally, effective use of funding is represented in the mix of measures and incentives planned in order to balance the portfolio to achieve the Plan's objectives.

Equitable Allocation of Cost and Benefits.[26] The Company has assessed equitable allocation among sectors along dimensions of collections, budgets, and savings. As shown in Figure 3, there is approximate parity between the collections by a customer class and its resulting budget and savings in the electric portfolio. The only exception is the income-eligible sector where part of the collections from the residential and C&I customer classes are used to help cover the income-eligible sector funding needs.

[26] The Company differentiates equitable allocation from considerations of equity of opportunity which are addressed in Section 2.7 and other areas of the Plan.

The income-eligible budget is higher compared to its savings due to several factors: incentives are 100% of the cost, the programs are more expensive because they are delivered in-home (compared to at retail sites or via rebates) which requires more labor and management, and the programs have fewer economies of scale (compared to C&I). $25.9 million is budgeted for the delivery of the gas and electric income eligible sector programs, 24% and 15% of the total funding for each fuel portfolio respectively in 2023. Taken together, these investments represent 16.96% of the overall electric and gas portfolio budgets.

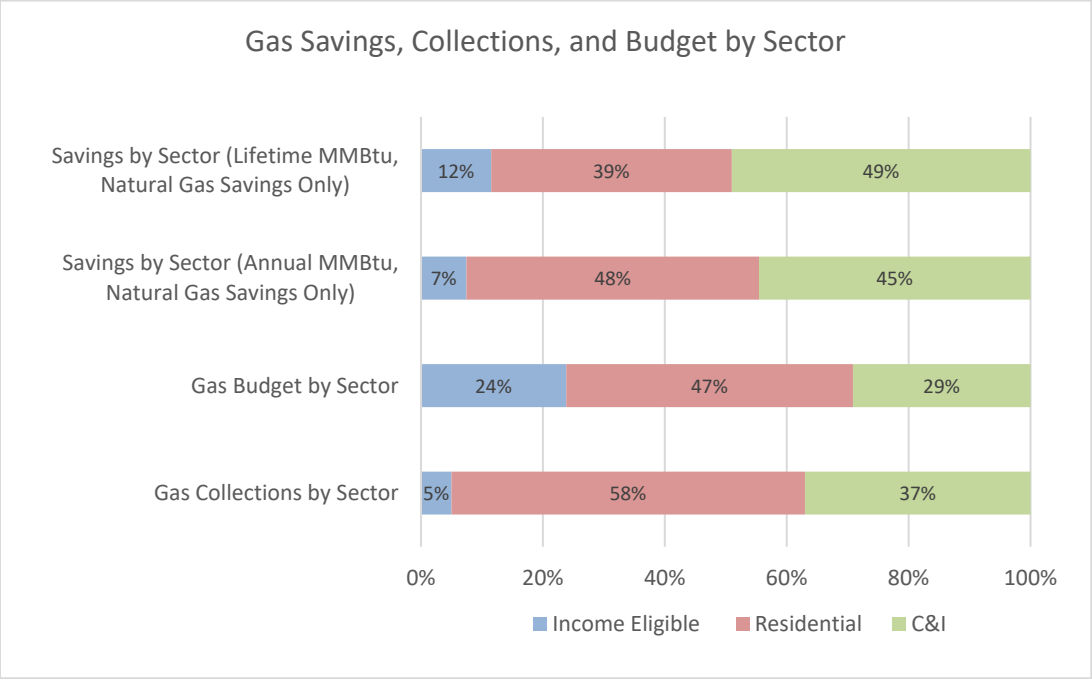
Figure 1. 2023 Graphical representation of Attachment 5 Table E-1, E-7, and total Electric Savings by Sector, Cumulative



For the gas portfolio, there is also parity between the collections by a customer class and the resulting savings. There is less equitable allocation between budgets and savings. This is due to several factors. First, the energy efficiency program charge varies by customer segment, which changes collections. Second, C&I projects tend to create more savings per dollar. This is due to larger economies of scale, larger projects, different delivery channels that require less labor or management and are more cost-effective, evaluation factors such as free-ridership and spillover, and different customer opportunities.

Given these considerations, as well as the continued interest in supporting income eligible programs, the allocation of costs and benefits is prudently equitable.

Figure 2. 2023 Graphical representation of Attachment 6 Table G-1, G-7, and total Gas Savings by Sector, Cumulative



Rate and Bill Impacts. *THIS SECTION WILL BE UPDATED IN THE FINAL DRAFT; ATTACHMENT 7 WILL BE DISTRIBUTED DURING THE WEEK OF JULY 18.*
The Company has assessed the rate and bill impacts of the proposed portfolios. Summary results for the rate and bill impacts are included in the tables below, while additional detail on results and methodology are available in Attachment 7 to this Plan. Electric programs are projected to generate slight upward movement on long term rates between tk% and tk%. For both residential and C&I participants, modeling shows a reduction in bills between tk% and tk%. Natural gas programs are projected to generate slight upward movement on long term rates between tk% and tk%. For the income eligible customer participants, the Small C&I participants, and Large C&I participants, modeling shows a reduction in bills between tk% and tk%. Details on the methods and results from both models are provided in Attachment 7, Rate & Bill Impacts.

Table 12 and Table 13 summarize the results of the electric and natural gas rate and bill analyses for the 2023 proposed programs, respectively. All electric sectors see slight increases in long term rates. With the exception of residential (all programs w/o HERs and all programs), average electric customers see small decreases in overall bills. All participant electric customers see decrease in their long-term bills. All gas sectors see a slight increase in long term rates due to their participation. With the exception of the Income Eligible sector, the average gas customer sees a small increase in long term bills. On the other hand, the average gas participant experiences a reduction in long term bills across all sectors.

Table 10: Rate and Bill Impact Results for the Electric Portfolio

Sector	Levelized net change in rates due to 2023 Programs	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential (Model 1: HERs only)				
Residential (Model 2: All Programs Except HERs)				
Residential (Model 3: All Programs)				
Income Eligible (Model 1: HERs only)				
Income Eligible (Model 2: All Programs Except HERs)				
Income Eligible (Model 3: All Programs)				
Small C&I				
Medium C&I				
Large C&I				

Table 11: Rate and Bill Impact Results for the Natural Gas Portfolio

Sector	Levelized net change in rates due to 2023 Programs	Long Term Average Change in Bills		
		Non-Participants	Average Customer	Average Participant
Residential (Model 1: HERs only)				
Residential (Model 2: All Programs Except HERs)				
Residential (Model 3: All Programs)				
Income Eligible				
Small C&I				
Large C&I				

When the HER program is considered in isolation (Model 1), average participants see a reduction in bills of on average tk% for residential electric, tk% for income eligible electric, and tk% for gas. These results can largely be attributed to the relatively short duration of savings from this program. When all other residential programs except HERs are considered together (Model 2), average participants see tk%, tk%, and tk% reductions in average bills for electric residential, electric income eligible, and gas customers respectively. Lastly, when all residential programs are considered together (Model 3), long-term average changes in bills are negative for electric residential (tk%) and electric income eligible (tk%), and very slightly positive for gas (tk%). As discussed in more detail in Attachment 7, this result is largely a byproduct of the modeling approach that combines the short-lived HER program with other longer-lived measures. The Company submits that these rate and bill impacts demonstrate a prudent investment of ratepayer funds in the pursuit of the objectives of Least Cost Procurement.

For 2023, at the request of stakeholders, the Company has developed an estimate of the delivered fuel bill impacts experienced by participants in electric energy efficiency programs who heat with delivered fuels. While delivered fuels are unregulated, including this with electric bills provides a sense of the impact on overall energy bills of the electric energy efficiency programs. Details on this are included in Attachment 7 as well.

The Company also includes an assessment of the Year-over-Year change in rates from 2022 to 2023 driven by the funding plan and budgets discussed later in this Plan. In developing the proposed level of investment in this plan, the Company considered the PUC's commentary and rulings at the December 22, 2020, August 11, 2021, and January 25, 2022 open meetings during which the PUC indicated

support for budget increases of up to 5 percent for years 2022 and 2023 in the Three-Year Plan.[27] The Company has steered based on these rulings as an indicator of prudency in development of the subsequent 2023 Annual Plan coupled with broader impacts of the plan as a whole. While the overall budget growth proposed in this plan is approximately a 5% increase above the budget level approved in the 2022 Annual Plan, several factors contribute to the change in the energy efficiency charges being less than 5%. These factors, which were projected in the 11-month indicative energy efficiency charges set forth in the Company's compliance filing dated January 27, 2022 which took effect February 1, 2022, include the budget levels, other sources of funding, fund balances, and anticipated electric loads and natural gas sales. These elements are discussed further in Section 9 of this Plan. Table 14 summarizes the changes in rates based on the E-1 and G-1 tables.

Table 12. Summary of Changes in Rates between 2022 and 2023

Rate Category	2022	2023	2022 – 2023 Growth
Gas Residential SBC ($/therm)	0.1354	tk	Tk%
Gas C&I SBC ($/therm)	0.0886	tk	Tk%
Electric SBC ($/kWh)	0.01222	tk	Tk%

Continuity of implementation efforts. While not explicitly spelled out in the Standards, the Company has historically considered the continuity of implementation efforts as an element of prudency. Contintuity of implementation efforts means changing the scope or scale of programs in a way that is sensitive to maintaining and developing a skilled workforce and sensitive to the prevailing economic conditions in the marketplace. The Company generally informs vendors of planned program changes to enable them to prepare their workforce as necessary, for example to ramp up or provide training. The Company also pays attention to this aspect of continuity because, absent continuity, skilled workforce may move to other jobs which could result in disruptions of energy efficiency services to customers.

7.4 Environmentally Responsible

7.4.1 Interpretation of Standard

Environmental responsibility includes compliance of the energy efficiency plan with state policies, particularly pollution reduction. It further requires proper valuation of environmental costs and benefits in the plan.

7.4.2 Compliance with Standard

The energy efficiency programs and portfolios described in the Annual Plan are environmentally responsible. As detailed in Section 5.3, the recently passed Act on Climate stipulates aggressive,

[27] PUC's guidance on 5% budget target confirmed in Order No. 24225, written order issued on September 21, 2021. http://www.ripuc.ri.gov/eventsactions/docket/5076-NGrid-Ord24225%20(9-21-2021).pdf.

mandatory, and time-bound emissions reductions for the state. This Annual Plan seeks to continue the progress that has been made in reducing emissions by providing customers across all sectors with ways to reduce their energy consumption. Energy efficiency therefore contributes directly to meeting the Act on Climate's goals. In addition to direct emissions reductions benefits, energy efficiency investments 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 other state environmental policy goals and initiatives.

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. As shown in Attachments 5 and 6, the electric and natural gas portfolios, considered together, will reduce emissions by 78,217 short tons of carbon in 2023[28] . The values of non-embedded avoided carbon are calculated using avoided cost values determined in AESC 2021: he non-embedded values of CO_2 and NO_x benefits generated by the 2023 annual plan over the lifetime of the measures are $61,328,373 and $3,676,649, respectively. These monetized values of emissions are included as benefit streams in the RI Test benefit-cost assessment and in the assessment of cost of supply for the portfolio; however, they are excluded from the calculation of net benefits in the Performance Incentive Mechanism.

As noted in Section 2.5.4, this Annual Plan includes several activities designed to support upskilling of the green workforce. 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.

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 and also contributes to the environmental responsibility of the Plan. Whether in the form of conveying potential environmental benefits of customer recommendations through Home Energy Reports, Energy*Wise* 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 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.

[28] While all energy savings seen in the plan are net, these emissions are calculated based on gross energy savings from EE measures. The marginal carbon emission rates are from "Avoided Energy Supply Components in New England: 2021 Report" Appendix G.

7.5 Cost of Annual Plan Compared to the Cost of Energy Supply

7.5.1 Interpretation of Standard

In accordance with the LCP Standards, the Company assessed the cost of incremental energy supply and the cost of energy efficiency using all applicable costs enumerated in the Rhode Island Benefit Cost Framework (Framework) approved by the PUC in Docket 4600-A and the Rhode Island Test as described in Attachment 4 RI Benefit Cost Test. This method is substantially the same as that used in the 2022 Plan.

The Company is proposing an adjustment to the methodology regarding utility non-energy impacts to align with how utility non-energy impacts are treated in the performance incentive mechanism. Called "Utility NEIs," they include non-energy impacts of decreased costs to the utility[29] from installing energy efficiency measures. The cost of supply methodology has been updated to include these costs, which is reflected in Table 13.

7.5.2 Compliance with Standard

Based on the Company's calculation, the total cost of energy efficiency for the electric portfolio is $152.3M and the total cost of electric supply to meet the same need would be $197.3M. This is a total savings of $45.0M over the life of the installed energy efficiency measures from investing in energy efficiency instead of electric supply. The total cost of energy efficiency for the natural gas portfolio is $47.5M and the total cost of natural gas supply to meet the same need would be $52.8M. This is a total savings of $5.3M over the life of the installed energy efficiency measures from investing in energy efficiency instead of natural gas supply. The methodology for calculating Cost of Supply is detailed below.

The RI Test is an appropriate mechanism to determine which costs to include in this assessment. The RI Test, as detailed in Attachment 4, captures the aspects of the Framework that pertain to energy efficiency programs. For the purposes of this assessment, the avoided cost values in the RI Test can also be applied as the costs of procuring additional energy supply. The RI Test also details what is considered a cost of energy efficiency. These are costs incurred by the utility to implement the Plan and the expense borne by the customer for its share of the energy efficiency measure cost.

The Company proposes to use the costs described in Table 13 to compare the cost of energy efficiency to the cost of energy supply. The categories listed in this table are all used in the RI Test, as defined in Attachment 4 of the Plan. As directed by the LCP Standards, the Company provides an explanation for why cost categories are either appropriate or not appropriate for inclusion in the assessment of the cost of energy supply compared to the cost of energy efficiency.

[29] This includes the NEIs of bad-debt write-off, terminations & reconnections, customer calls and collections, notices, and safety related emergencies.

Table 13. List of the Costs of Energy Efficiency and Costs of Energy Supply

Costs of Energy Efficiency		
Cost	**Included (Y/N)**	**Explanation**
Utility Costs	Yes	These costs are incurred to achieve implementation of energy efficiency measures and programs. Includes all costs in Tables E-2 and G-2.
Participant Costs	Yes	Customer contribution to the installation cost of the efficient measure. Customer costs included in Tables E-5 and G-5.

Costs of Energy Supply		
Cost	**Included (Y/N)**	**Explanation**
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 separate from those embedded in the cost of the electric market. While not a direct cost of electric energy supply, Rhode Island Energy 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	With the exception of the three NEIs 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
• Utility	Yes	Costs associated with utility carrying costs as a result of customers encountering issues with utility services or paying their 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 electricity, lifetime MMBtu of delivered fuels, demand, and natural gas savings for each measure included in the Plan in present value terms. The costs of the 2023 Plan occur only in 2023 and are therefore not discounted.

Table 14. Costs of Energy Efficiency and Costs of Energy Supply

Benefits	Electric	Gas
Electric Energy	$49,030,392	$593,695
Electric Generation	$6,515,981	$281,364
Electric Transmission Capacity	$17,896,767	$387,145
Electric Distribution Capacity	$20,332,721	$383,412
Natural Gas	$(1,236,061)	$27,031,407
Fuel	$24,212,640	$0
Price Effects	$35,683,743	$1,114,112
Non-Embedded Greenhouse Gas Reduction	$41,199,172	$20,129,201
Non-Embedded NOx	$1,421,428	$2,255,221
Reliability	$1,899,524	$34,661
Income Eligible Rate Discount	$92,447	$69,063
Arrearages	$66,879	$146,619
Utility	$147,679	$333,462
Cost of Supply	**$197,263,312**	**$52,759,361**
Costs	**Electric**	**Gas**
Program Implementation Expenses	$110,714,481	$37,751,232
Customer Contribution	$38,150,598	$8,718,703
Shareholder Incentive	$3,390,165	$1,000,000
Cost of EE	**$152,225,244**	**$47,469,935**
Difference	**$45,008,068**	**$5,289,426**

GOALS, BUDGET, AND FUNDING PLAN

Funding, budgets, goals, and cost-effectiveness information is provided in Attachment 5 Electric EE Program Tables for the proposed electric energy efficiency programs and in Attachment 6 Gas EE Program Tables for the proposed natural gas energy efficiency programs.

8 Savings Goals

In 2023, the Company will primarily measure performance based on lifetime energy savings. Lifetime energy savings units align with the energy savings Targets as set by the EERMC, and approved by the PUC, in Docket 5023.[30] The Company recognizes the long-term value of developing and achieving lifetime energy savings goals because of the focus on longer term customer savings and benefits. The electric portfolio will measure energy savings in units of lifetime MWh and the gas portfolio will measure energy savings in units of lifetime MMBtu. For comparability with past plans, the Company will continue to track and report on annual energy savings as has been done for the duration of the programs. Electric demand savings, from passive energy efficiency savings and active demand response, will continue to be measured and reported in annual units of kW.

The Company will also track net annual and lifetime all-fuel MMBtu (electric, gas, oil, and propane) savings for both the electric and gas portfolios[31]. Tracking net annual and lifetime all-fuel savings (MMBtu) more fully captures the net effect of all-fuel savings efforts (electric, oil, and propane). The tracking effort will provide useful information and benchmarking for state efforts to support decarbonization of the thermal energy sector and better support State and Company greenhouse gas reduction goals now and in the future.

Carbon reductions will be calculated and reported as a secondary goal in 2023 consistent with the Standards and the Act on Climate.[32]

Savings goals for the electric portfolio are presented in Attachment 5 and for the natural gas portfolio in Attachment 6.

8.1 Annual Plan Compared to the Three-Year Plan

The energy and cost savings for the 2023 program year are consistent with the objectives and requirements of Least Cost Procurement.

[30] RI PUC Docket 5023, http://www.ripuc.ri.gov/eventsactions/docket/5023page.html
[31] See Tables E6-A and G6-A for calculation of annual and lifetime MMBtu of all fuels

[32] See Tables E6-A and G6-A for calculation of annual short tons of CO2.

Table 15. Comparison of 2023 Electric Portfolio in Three-Year Plan Compliance Filing and 2023 Annual Plan

Electric Portfolio	2023 in 3YP Compliance Filing	2023 Annual Plan	% Change
Net Annual Savings (MWh)	131,873	107,221	-18.7%
Net Lifetime Savings (MWh)	1,333,218	734,645	-44.9%
Total Benefits (RI Test)[33]	$ 646,450,249	$223,091,936	-65.5%
Total Budget	$ 128,755,600	$110,714,481	-14.0%
Benefit Cost Ratio (RI Test)	4.29	1.47	-65.7%
Cost/Lifetime kWh	$ 0.109	$0.203	86.2%
EE Program Charge per kWh	$ 0.01726	$0.01036	-40.0%

Table 16. Comparison of 2023 Gas Portfolio in Three-Year Plan Compliance Filing and 2023 Annual Plan

Gas Portfolio	2023 in 3YP Compliance Filing	2023 Annual Plan	% Change
Net Annual Savings (MMBtu)	440,421	280,344	-36.3%
Net Lifetime Savings (MMBtu)	4,447,108	3,179,772	-28.5%
Total Benefits (RI Test)	$151,000,725	$86,375,476	-42.8%
Total Budget	$38,558,829	$37,751,232	-2.1%
Benefit Cost Ratio (RI Test)	3.08	1.82	-40.9%
Cost/Lifetime MMBtu	$10.63	$14.61	37.4%
C&I EE Program Charge per Dth	$0.787	$0.692	-12.1%
Residential EE Program Charge per Dth	$1.131	$1.074	-5.0%

The Company has proposed goals consistent with Least Cost Procurement, however there are some notable differences between the goals proposed in the 2023 Annual Plan and the Three-Year Plan Compliance Filing. First, the electric net lifetime energy savings goal is decreasing by 44.9%. This is mainly driven by evaluation results which significantly reduced the measure lives, and claimable lifetime energy savings, of Commercial and Industrial (C&I) lighting measures.[34] C&I lighting energy savings contributed to approximately 760,263 net lifetime MWh (57%) of the electric portfolio's net lifetime target for 2023 in the 2021-2023 Compliance Filing. In the 2023 Annual Plan, C&I lighting energy savings contributed to approximately 314,656 net lifetime MWh (43%) of the electric portfolio's net lifetime goal for the 2023 Annual Plan. This decline in C&I lighting energy savings and associated benefits is the

[33] 2023 Total Benefits in the Three-Year Plan included monetized economic benefits. In this table total benefit have been updated to exclude monetized economic benefits. For the 2023 in 3YP Compliance Filing, this resulted in a reduction of total electric benefits from $564M to $288M and a reduction in the electric Benefit Cost Ratio (RI Test) from 3.93 to 2.01. This also resulted in a reduction of total natural gas benefits from $144M to $98M and a reduction in the natural gas Benefit Cost Ratio (RI Test) from 3.09 to 2.12. For the 2023 Annual Plan monetized economic benefits are quantified but omitted from the primary presentation of benefits here. The exclusion of monetized economic benefits also applies to the Benefit Cost Ratio (RI Test).

[34] These results are adopted from a Massachusetts Market Characterization study, completed in March 2021. Rhode Island traditionally adopts the results of this study but is planning to do a RI-specific study for application in 2023.

primary contributor to the 44.9% decline in the lifetime MWh goal, the 86.2% increase in the Cost/Lifetime kWh, the 65.5% decline in the total electric benefits (RI Test) and the corresponding 65.7% decline in the B/C Ratio (RI Test) from the 2023 3YP compliance filing to the 2023 annual plan.

For both electric and gas portfolio differences, another major driver for the decrease in benefits can be attributed to increased inflation where less savings are achieved for every dollar spent. The amount of inflation that has occurred in recent months was not factored into the 2021 – 2023 Three-Year Plan, but has been considered in 2023 planning. Furthermore, differences in benefits despite relatively similar spend may be attributed to updates from the recently completed regional avoided cost study, referred to as AESC 2021, completed by Synapse Energy Economics as an update and replacement of the AESC 2018 Study that provided the monetization of most benefit categories in the 2019 – 2021 Annual Plans and the 2021 – 2023 Three-Year Plan.

9 Funding Plan and Budgets

In developing the budgets and funding plans for this 2023 Annual Plan, the Company took into account the traditional factors (anticipated 2022 year-end fund balances and anticipated 2023 sales volumes[35]) that always impact the relationship between requested implementation budgets and the required customer surcharges necessary to fund the proposed plan.

9.1 Budgets

Based on guidance from the RI PUC at the December 22, 2020 and January 25, 2022 open meetings, the Company is adhering to the 5% target budget increase communicated by the PUC in its approval of the 2021- 2023 Three Year Plan and 2022 Annual Plan. The Company has considered areas for potential growth but must balance this with the prudency requirements of the Standards.

The portfolio of energy efficiency programs and services for 2023 will have an overall budget of approximately $114.1M for electric programs and $38.8M for natural gas programs. The budget is segmented into three sectors: residential income eligible, residential non-income eligible, and commercial and industrial. Proposed sector and program budgets are provided in Attachment 5 Electric EE Program Tables, Table E-2 and Attachment 6 Gas EE Program Tables, Table G-2. A comparison of these proposed budgets to the 2022 budget is provided in Attachment 5, Table E-4 and Attachment 6, Table G-4.

The Company will continue the practice of funding commitments established in the 2014 Plan, Docket 4451. Specifically, the Company will continue to make funding commitments for projects with a

[35] The 2023 Annual Plan will be submitted to the RI PUC on October 1, 2022, consistent with the revised LCP Standards issued by the RI PUC in 2020. Given this updated timeline compared to prior years, the Company may not be able to include its updated annual electric load forecast for the October 1st filing. When the electric forecast is available, the Company will provide an updated filing to the RI PUC, consistent with past practice when incremental information on in-year spend is available following filing.

projected one time incentive in excess of $3 million. For all other projects, except those with incentives greater than $3 million, there would be no commitment budget.

9.2 Funding Plan

The 2023 budgets for cost-effective electric and natural gas efficiency investments are dependent on a number of projections that inform the amount of funding, including projections of electricity and natural gas sales, year-end 2022 large C&I program commitments, capacity payments received from ISO-NE (electric only), and year-end 2022 spending. The sources of funding and the amounts of the funding proposed for the 2023 energy efficiency programs are shown in Table E-1 for electric programs and Table G-1 for natural gas programs. Annual Plan funding sources are described in the sections that follow.

9.2.1 Energy Efficiency Charges

The sources of funding for the 2023 electric programs are shown in Attachment 5 Electric EE Program Tables, Table E-1. To collect these funding sources for the 2023 cost-effective programs, the Company proposes: (1) one line on the customers' bill labeled "Energy Efficiency Charge" at $0.01036 per kWh, as calculated in Attachment 5, Table E-1 (composed of the existing energy efficiency program charge of $0.01222 per kWh plus a fully reconciling funding mechanism charge of $0.00186 per kWh in accordance with the requirements of R.I. Gen. Laws § 39-1-27.7); (2) projected Large C&I commitments from 2022, if any; (3) projected carryover of the year-end 2022 fund balance, as applicable, including interest at the rate in effect for customer deposits; (4) forecast revenue generated by ISO-NE's Forward Capacity Market (FCM); and (5) other potential outside revenue sources, including but not limited to those generated through RGGI permit auctions. Funding sources do not include revolving loan funds.

The sources of funding for the 2023 natural gas programs are shown in Attachment 6 Gas EE Program Tables, Table G-1. The Company proposes that the 2023 budget should be funded from the following sources: (1) one line on the customers' bill labeled "Energy Efficiency Charge" at $1.074 per dekatherm for residential customers and $0.692 per dekatherm for non-residential customers as calculated in Attachment 6, Table G-1 (composed of the existing energy efficiency program charge of $1.354 per dekatherm plus a fully reconciling funding mechanism of $0.280 per dekatherm for residential customers and the existing energy efficiency program charge of $0.886 per dekatherm plus a fully reconciling funding mechanism of $0.194 for non-residential customers in accordance with the requirements of R.I. Gen. Laws § 39-1-27.7); (2) projected carryovers or under-recoveries of the year-end 2022 fund balance, including interest at the rate in effect for customer deposits. Funding sources do not include revolving loan funds.

The 15% decline in the proposed EE Program Charge per kWh is driven by a positive 2022 year end fund balance forecast of $28.1M. The decrease in the C&I and Residential Program Charge per Dth is driven by the positive 2022 Year End Gas Fund Balance forecast of $4.8M.

The Company forecasts electric energy deliveries and gas loads for a variety of filings. In the context of the Annual Energy Efficiency Plan, the forecasts primarily factor into the calculation of the per-unit

energy charges that fund the gas and electric energy efficiency portfolios. At the time of the first draft, an updated gas forecast based on the June 2022 release has been incorporated and an updated electric forecast based on the September 2021 release has been incorporated. These forecasts have been provided by National Grid under the Transition Service Agreement between PPL and National Grid. The sections below provide an overview of the forecasting processes for the electric energy delivery and gas load forecasts.

Electric Forecast Summary. The electric energy deliveries forecast is developed in several steps. The first step was to "reconstitute," that is add-back or subtract, as applicable, the impacts of energy efficiency ("EE"), solar-photovoltaics ("PV"), electric vehicles ("EV"), and electric heat pumps ("EH") to the historical monthly energy dataset. This set of programs and technologies is termed Distributed Energy Resources ("DERs"), and the reconstituted data is termed "gross" to reflect the fact that it represents data prior to the impacts of DERs.

The second step is to develop an econometric forecast of gross energy deliveries based on Rhode Island economic conditions, normal weather, and days billed, as appropriate, using this reconstituted dataset. The economic conditions are from Moody's economy outlook. The weather variables considered are cooling degree days ("CDDs") and heating degree days ("HDDs"). Normal weather is defined by the average CDDs and HDDs of the most recent ten years. Due to the unavailability and / or great uncertainties of long-term weather forecasts, it is a common practice to use normal weather for long-term load forecasting.

The third step is to create the "net" forecast by adjusting the gross forecast by the projections for future DERs. Impacts for EE and PV (reflecting decreased electric load on the system) are subtracted from the gross forecast, impacts of EV (reflecting increased electric load on the system) are added to the gross forecast, and impacts of EH are added to or subtracted from the gross forecast depending on the season to create the net forecasts. These forecasts were first developed in terms of revenue classes – residential, commercial, and industrial. They were then allocated to the various rate classes using the current revenue to rate class percentages from the Company's billing system.

Gas Forecast Summary. The Company's gas load forecast is based on a comprehensive methodology for forecasting retail customer load requirements using a series of econometric models to determine the changes expected for Residential Heating, Residential Non-Heating, Commercial, and Industrial markets. To determine the projected growth over the forecast period, the econometric models used historical economic, demographic, and energy price data, and weather data to determine total energy demand.

The product of the Company's retail demand forecast is a forecast of meter counts, use-per-customer, and volume by month by internal rate code under normal weather conditions. The Company's retail demand forecast is then converted to wholesale supply requirements at the Company's city gates based on the relationship between city gate volumes (including supplementals) and weather on the daily level. The product of the Company's wholesale customer requirements forecast is a forecast of volume by day under normal and design weather conditions."

9.2.2 Fund Balances

The Company estimates that the electric projected fund balance at year-end 2022 will be $28.1M, as shown in Line 3, Attachment 5, Table E-1; the gas fund balance at year-end 2022 is estimated to be $4.8M, as shown in Line 2 Attachment 6, Table G-1. For the first draft, the Company has included 2022 year end fund balance forecasts (electric and gas) on line 2 of the E-1 and G-1 tables in Attachment 5 and Attachment 6, respectively. The fund balance forecasts include estimated implementation expenses and estimated earned performance incentives.

Adjustments for 2022 Year-End Fund Balance. The 2022 year-end fund balance will be a function of actual implementation expenses and Company earned performance incentive through year-end 2022. Consistent with recent practice, on November 17, 2022[36] the Company will provide updated year-end fund balance forecasts, reflecting updated sales, collection, and program expenditure forecasts through year-end to provide the PUC with time to review the Company's proposed charges in advance of the Annual Plan hearing. This would allow the charges, if approved, to have an effective date of January 1, 2023. This will allow the Company to begin collecting the most accurate charge possible at the start of the program year and avoid any market confusion surrounding the status and implementation of the 2023 energy efficiency programs. If the actual year-end 2022 fund balance as filed in the Year-End Report is higher or lower than that amount projected in the November 17, 2022 revised Tables E-1 and G-1, any deviation will be fully reconciled in the next program year in accordance with the requirements of R.I. Gen. Laws § 39-1-27.7.

Two adjustments have been applied to the 2022 year-end fund balance. In the 2022 Annual Plan, the Company had included cost recovery of the FCM Penalty of $332,804.[37] The Company has subsequently agreed to not seek cost recovery of that penalty, and a credit of $332,804 has been applied to Line 4 of Table E-1. Second, the fund balance includes a $2,294,914.95 credit from shareholder funds, with interest, to the fund balance which the Company made in May and June, 2022 based on the Company's involvement in Docket 22-05-EE. That amount has been allocated to the electric and gas fund balances appropriately.

9.2.3 ISO-NE Capacity Market Revenue

Consistent with the LCP Standards, Annual Plan, and PUC decisions regarding annual plans since 2008, the kW-demand savings achieved via the electric energy efficiency and Combined Heat and Power programs continue to participate in the FCM as Passive On-Peak Demand Resources. The Company will manage and direct the revenues by bidding the demand savings attributed to energy efficiency measures and Combined Heat and Power facilities in the FCM and managing the associated capacity resources to maximize the resulting FCM revenue. The revenues from measures installed through this

[36] This date is being moved up two weeks due to the Annual Plan Filing date being moved up two weeks from October 15th to October 1st.

[37] Refer to Docket 5208 for more information.

Plan, as well as all previous Plans, will continue to be reinvested in energy savings for the life of the measure.

The Company is to recover all prudently incurred FCM expenses from ISO-NE capacity-payment revenue generated by the demand savings from efficiency programs represented by the Company. The Company expects that capacity payments received from the ISO-NE will exceed its administrative and Evaluation, Measurement and Verification (EM&V) compliance costs of participation in the FCM and will result in additional funds being made available to fund efficiency programs for customers. If these participation costs exceed the capacity payments, the Company may recover its prudently incurred costs from the energy efficiency program fund. Only prudently incurred expenses are deducted from ISO-NE capacity payments or the energy efficiency program fund.

In addition, as part of the FCM, all qualified auction participants are required to post Financial Assurance to provide security that the promised resource will deliver the promised MW at the promised time. If, as a result of circumstances beyond the Company's control,[38] the Company is unable to provide all or a portion of the megawatts of capacity proposed in its qualification packages and capacity auction bids, some or all the financial assurance monies would be forfeited.

9.2.4 RGGI Funding

RGGI funding is allocated to the State of Rhode Island based on quarterly auctions for emissions allowances. The OER develops a plan for the allocation of auction proceeds. In 2022, a portion of RGGI proceeds has been allocated to the Company in three specific work area:

- Enhanced incentives for deliverable fuel to electric efficient heating equipment
- Weatherization of Small Businesses
- Enhanced incentive for moderate income residential customers

Funds that are not spent in 2022 may be rolled over to 2023.

9.2.5 Exceptions to the Natural Gas Energy Efficiency Program Charge

All natural gas used for distributed generation projects approved since 2014 will be subject to the natural gas energy efficiency surcharge.[39]

The 2006 Act allows the PUC to exempt natural gas used for manufacturing processes from the energy efficiency surcharge where the customer has established a self-directed program to invest in and

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[38] Such circumstances may include legislative action to alter the EE Program Charge or discontinue the Company's authority to implement the energy efficiency programs underlying the Qualifications Package or a PUC decision limiting the Company's role in bidding the demand savings acquired through program efforts into the FCM.

[39] Natural gas used for distributed generation (excluding natural gas used by emergency generators) for distributed generation projects approved under the energy efficiency programs in 2013 and prior years - independent of the date those facilities become commercially operable – are not subject to the energy efficiency surcharge when natural gas used for that purpose can be clearly identified through uniquely metered use and when so requested in writing by the customer.

achieve best effective energy efficiency in accordance with a plan approved by the PUC and subject to periodic review and approval by the PUC. Consistent with prior PUC decisions, the Company has developed recommendations for a process under which a manufacturer may submit its self-directed program and the required annual reports for approval. The Company recognizes that this process may need to be reviewed and modified after the PUC has accumulated sufficient experience with these programs. Any customer that receives this exemption from the natural gas energy efficiency program charge will not be eligible to receive natural gas energy efficiency program services.

9.2.6 Budget Management

Deviations from the planned budget for 2023 are possible during the program year. The Company contemplates three scenarios, and will address them as follows:

- The Company's expenditures for 2023 may exceed the total budget by up to 10% so long as written notification is provided to the EERMC, OER, PUC, and DPUC for any deviation. The Company will track expected expenditures relative to planned budgets and will report to stakeholders through inclusion in the quarterly reports, or earlier, if the Company believes such overage is likely to occur. Any such notification will occur as soon as possible, and no later than the distribution of the Company's Third Quarter Report in mid-November 2023 and must explain the need for a higher budget and must justify how the expenditures are reasonably consistent with the original annual plan and in accordance with Least Cost Procurement.

- The Company agrees that, during 2023, if the Company anticipates that continued operation of its programs is likely to result in actual expenditures exceeding the total budget by more than 10%, the Company will seek a vote of approval from the EERMC. OER commits to making all reasonable efforts to schedule such vote as soon as feasible following notification, but no later than thirty days from receipt of notification. The PUC will not provide advance approval of expenditures exceeding the total budget by more than 10%. The Company will be required to demonstrate to the PUC that the transfer or overspend was prudent. Support from the Division, OER, and EERMC will be considered in the PUC's review of prudency.

- During a program year, if the Company did not anticipate and notify stakeholders identified above that its actual expenditures would exceed the total budget by more than 10%, but actual expenditures do exceed such threshold, such expenditures above 110% of approved budget will be at the Company's risk, and in order to secure cost recovery, the Company will bear the burden of demonstrating the reasonableness of its actions to the PUC, including an explanation of why the over-spending occurred and how the expenditures are reasonably consistent with the original plan and in accordance with Least Cost Procurement. Such demonstration would be required to be part of the 2023 Year-End Report, if not sooner.

In each of these three instances, the PUC retains its traditional ratemaking authority to review the prudency and reasonableness of the Company's actions.

9.2.7 Notification of Large Customer Incentives

The Company shall inform the PUC, DPUC, OER, and EERMC in writing of any energy efficiency incentive annual offer in excess of $3 million per a measure. The Company shall inform the DPUC, OER, and EERMC in writing of any CHP project with a net output of 1 MW or greater (where net is the nameplate MW output minus CHP auxiliary kW). The process for notification of CHP projects is described in Attachment 2 C&I Programs.

To prevent customer delays and to facilitate the Company's ability to meet customer expectation and annual energy savings goals, the OER, EERMC and Division agree to ask questions and provide comments on any non-CHP energy efficiency incentive annual offer in excess of $3 million within thirty days. The Company, through its own discretion, may proceed with an incentive offer. The incentive, and any other related proposals will be authorized to proceed after thirty days from the date on which the Company notified the PUC, OER, Division, and EERMC of the incentive unless the PUC suspends the filing and/or issues an order within such 30-day period to extend the time for purposes of further review.

10 Performance Incentive Plan

The RI PUC approved a performance incentive mechanism (PIM) for 2021 – 2023 in Docket 5076 that changed the way that the Company measures and earns a performance incentive.[40] The PIM, as approved in Docket 5076, established the measurement of performance as a net benefits framework based on a set of prioritized benefit categories. This prioritizes utility system impacts over resource benefits generated by the programs and omits the societal benefits. The "netting" calculation incents budget controls so that the benefits are achieved in line with the portfolio budgets as proposed in the Plan.

Equation 1. Illustrative Calculation of Net Benefits for Performance Incentive Mechanism

$$Total\ Benefits = (100\%\ of\ Utility\ System\ Benefits + 50\%\ of\ Resource\ Benefits)$$

$$Net\ Benefits = (100\%\ of\ Utility\ System\ Benefits + 50\%\ of\ Resource\ Benefits) - (Programmatic\ Costs + Regulatory\ Costs)$$

The PIM measures performance at the sector and fuel level:

- Non-Income Eligible Residential Electric
- Income Eligible Residential Electric
- Commercial and Industrial Electric
- Non-Income Eligible Residential Gas
- Income Eligible Residential Gas

[40] Refer to Appendix A of PUC Report and Order No. 24225; written order issued on September 21, 2021 for final guidance on the PIM as approved in PUC Docket 5076. http://www.ripuc.ri.gov/eventsactions/docket/5076-NGrid-Ord24225%20(9-21-2021).pdf.

- Commercial and Industrial Gas

In the non-income eligible residential and income eligible residential sectors, the calculation of net benefits using the above calculation of prioritized benefits results in negative net benefits, so the earning opportunities for each fuel's portfolio are allocated to the C&I sector. The PIM also includes Service Quality Adjustments (SQAs) in the non-income eligible residential and income eligible residential sectors which require the Company to achieve defined levels of performance equal to the sum of prioritized total benefits. If the defined levels of service (total benefits) are not achieved in the residential and income eligible sectors, the SQAs apply reductions to any realized earnings in the commercial and industrial sector. The SQAs also include a cost component that adjusts the realized performance, and consequently any reduction of C&I earnings, based on how the realized expenditures in the residential and income eligible sectors compare to planned budgets. The SQAs therefore provide a similar incentive signal as the "netting" calculation in the core of the PIM and provide the Company with signals that savings and benefits should be pursued and prioritized in each sector, rather than exclusively the Commercial and Industrial sector where the earning opportunity resides.

In addition, the PIM calculations include a set of potential adjustments that are intended to further incent the company to maintain budget controls in the delivery of savings, and therefore prioritized benefits, by adjusting earnings under this mechanism based on cost relative to budget. The Company is not proposing structural changes to the PIM for 2023.

Attachment 5, Table E-8A and Attachment 6, G-8A show the categories of benefits that are included in the PIM calculations, categories omitted from the PIM, and the weighting assigned to those benefits in the calculation. The categories of benefits are also summarized in Table 20 below. The monetized benefits included in the PIM are calculated from a subset of benefit categories included in the RI Test, calculated using the same methods and inputs as the RI Test.

Table 17. Electric Energy Efficiency Portfolio Benefits Alignment for PIM Calculations

Benefit	PIM Categorization	Percent Allocation in PIM Calculation
Summer Generation	Electric Utility System Benefits	100%
Capacity DRIPE		
Transmission		
Distribution		
Reliability		
Winter Peak Electric Energy		
Winter Off Peak Electric Energy		
Summer Peak Electric Energy		
Summer Off Peak Electric Energy		
Electric Energy DRIPE		
Utility Non-Energy Impacts (NEIs)		
Non-Embedded Carbon		
Natural Gas and Natural Gas DRIPE	Resource Benefits	50%
Oil and Oil DRIPE		
Propane		
Water		

Benefit	PIM Categorization	Percent Allocation in PIM Calculation
Non Resource (NEIs)	Other Not Included Benefits	0%
Non-Embedded NOx		
Economic		

Table 18. Gas Energy Efficiency Portfolio Benefits Alignment for PIM Calculations

Benefit	PIM Categorization	Percent Allocation in PIM Calculation
Natural Gas	Gas Utility System Benefits	100%
Natural Gas DRIPE		
Utility Non Energy Impacts (NEIs)		
Summer Generation	Resource Benefits	50%
Capacity DRIPE		
Transmission		
Distribution		
Reliability		
Winter Peak Electric Energy		
Winter Off Peak Electric Energy		
Summer Peak Electric Energy		
Summer Off Peak Electric Energy		
Electric Energy DRIPE		
Oil and Oil DRIPE		
Propane		
Water		
Non Resource (NEIs)	Other Not Included Benefits	0%
Non-Embedded Carbon		
Non-Embedded NOx		
Economic		

Tables E-8B and G-8B show the costs that are used in the "netting" calculations in the PIM, and that are incorporated in the SQAs in the sectors to which they apply. The core of the costs included in the PIM is the "Eligible PIM Budget"[41] derived from Attachment 5, Table E-3 and Attachment 6, Table G-3. The Eligible PIM budget is calculated based on the total budget from Tables E-2 and G-2 with commitments, EERMC costs, pilot costs, assessment costs, and performance incentive value removed.

The Company has two recommendations regarding the current definition of PIM inputs:

1) The Company proposes removing legislatively-mandated transfers to the Rhode Island Infrastructure Bank (RIIB) and the Office of Energy Resources (OER) from PIM-eligible costs. Rhode Island General Laws Title 39, Chapter 2, Section 39-2-1.2, Article (n) states that the RIIB transfer, "shall be eligible to be used in any energy efficiency, renewable energy, or demand-side management project financing program administered by the Rhode Island Infrastructure

[41] In Plans prior to 2023, Tables E-3 and G-3 showed the derivation of what was called the Spending Budget. This was a vestige of the prior performance incentive mechanism and the Tables have been re-formulated for 2023 to show the determination of the Eligible PIM Budget.

Bank **notwithstanding any other restrictions on the use of such collections set forth**."(emphasis added).[42] Article (j) of the same section states that the OER transfer can be used, "for activities associated with planning, management, and evaluation of energy-efficiency programs, renewable energy programs, system reliability, least-cost procurement, and with regulatory proceedings, contested cases, and **other actions pertaining to the purposes, powers, and duties of the office of energy resources**."(emphasis added).[43] Both quotes show that the RIIB and OER legislative transfers can be used for projects and initiatives other than energy efficiency programs administered by the Company. Therefore, neither transfer should be included in a PIM which is focused specifically on guiding Company's investments of energy efficiency funds to create net benefits to customers. The Company is not proposing the same exclusion for the funds transferred to the EERMC under section (j) from PIM-eligible costs, because the primary focus of the EERMC is oversight of the Company's programs.

2) The Company believes that the exclusion of carbon benefits from the PIM is not consistent with the Environmentally Responsible section of the LCP Standards. Even though the full value of carbon-associated environmental damages is not properly monetized in energy markets, and are therefore beyond the direct influence of the Commission and the Company, the Company respectfully suggests that the PUC consider recognizing within the PIM – consistent with the Standards and the Act on Climate - the importance of reduced carbon emissions in Rhode Island in guiding utility investments and, further, count the non-embedded carbon benefit calculated in benefit-cost analyses as a utility system benefit in the PIM for both the electric and gas programs.

The 2021 and 2022 Plan review process has indicated that the incentive pool is reset every year. For 2022, the Division proposed the application of three metrics to determine the incentive pool:[44] percentage of planned PIM-eligible net benefits (primary), basis points, and return on avoided capital costs. For 2023, the Company proposes to maintain the gas and electric incentive pools at the same amounts as the incentive pools for 2022. The Company is seeking electric performance incentives of $3.4 million (through non-income eligible and C&I) and natural gas performance incentives of $1.0 million (all through C&I). The Company believes that these amounts are consistent with PIM guidance and the Division's framework as follows:

[42] Rhode Island General Laws, Title 39 Public Utilities and Carriers, Chapter 2 Duties of Utilities and Carriers, Section 39-2-1.2. http://webserver.rilegislature.gov//Statutes/TITLE39/39-2/39-2-1.2.htm

[43] Ibid

[44] Corrected Attachment to Division Responses to National Grid Data Requests Set 1, submitted by the Division in Docket 5189 on January 6th 2022. http://www.ripuc.ri.gov/eventsactions/docket/5189-DIV%20Corrected%20Attachment%20to%20Division%20Reponses%20to%20National%20Grid%20Data%20Request%20Set%201.pdf

In 2022, the Division proposed that the target electric incentive pool be set at 15% of planned PIM-eligible net benefits. In 2023, the $3.4 million pool equals 11% of 2023 planned PIM-eligible net benefits, which is under the 15% threshold set by the Division.

In 2022, the Division proposed that the target gas incentive pool provide the Company with 21 basis points. In 2023, the unchanged $1.0 million pool will again provide the Company with 21 basis points.

Tables E-8C and G-8C show the final summarizations of the calculations for the PIM and SQAs, including target earning opportunities and maximum earning opportunities.

11 Future Performance Metrics

The Company does not propose any additional or future performance metrics. As noted in Section 8, in 2023, consistent with the Standards and Act on Climate, the Company plans to report on carbon and NOx reductions as secondary goals.

12 Advancing Docket 4600 Principles and Goals

Along with the quantitative benefits detailed in the Plan, as measured by the RI Test, the energy efficiency investments and innovation planned for 2023 also advance the Docket 4600 principles and goals.[45]

The Docket 4600-A Guidance Document directed that "the proposing party must provide accompanying evidence that addresses how the proposal advances, detracts from, or is neutral to each of the stated goals of the electric system."[46]

To meet this directive, the Company describes how the Plan either advances, detracts, or remains neutral on achieving the Docket 4600 goals for the electric system in Table 19.

Table 19. Docket 4600 Goals for the Electric System

4600 Goals for Electric System	Advances/Detracts/Neutral
Provide reliable, safe, clean, and affordable energy to Rhode Island customers over the long term.	Advances: The Plan gives customers tools to reduce their energy consumption. The safest, most reliable, most affordable energy is energy that is never used. Lowering energy consumption avoids investments in the installation, upgrade, or replacement of transmission and distribution infrastructure, and reduces strain on the system.
Strengthen the Rhode Island economy, support economic competitiveness, retain, and create	Advances: The Plan will create significant economic benefits in Rhode Island. The Company

[45] PUC Report and Order No. 22851 accepting the Stakeholder Report. Written Order issued July 31, 2017.
[46] Approved final clean version of Guidance Document 10/27/17.

4600 Goals for Electric System	Advances/Detracts/Neutral
jobs by optimizing the benefits of a modern grid and attaining appropriate rate design structures.	expects that investments made in energy efficiency under this Plan will add $304.2M to Rhode Island's Gross State Product (GSP), equivalent to 2,826 job-years.
Address the challenge of climate change and other forms of pollution.	Advances: The Plan will avoid 78,217 short tons of carbon in 2023 from the installed measures as well as reduce other pollutants associated with the generation and combustion of electricity, natural gas, and delivered fuels.
Prioritize and facilitate increasing customer investment in their facilities (efficiency, distributed generation, storage, responsive demand, and the electrification of vehicles and heating) where that investment provides recognizable net benefits.	Advances: The Plan provides incentives for customers to invest in cost-effective energy efficiency measures in their facilities and participate in demand response programs and provides handoffs to other programs including EV charging programs.
Appropriately compensate distributed energy resources for the value they provide to the electricity system, customers, and society.	Neutral
Appropriately charge customers for the cost they impose on the grid.	Neutral
Appropriately compensate the distribution utility for the services it provides.	Advances: The performance incentive contained in this Plan compensates the Company for achieving the energy savings goals through delivering cost-effective energy efficiency programs to customers while aligning with the PUC's PIM principles.
Align distribution utility, customer, and policy objectives and interests through the regulatory framework, including rate design, cost recovery, and incentive.	Advances: The Plan aligns Company, customer, and policy objectives and interests by incentivizing energy savings measures that enable customers to manage and reduce their energy consumption, which in turn contributes to the greenhouse gas reduction goals of the 2021 Act on Climate, Power Sector Transformation goals, Heating Sector Transformation goals, and the 100% Renewable Electricity goal while allowing the Company to earn a performance incentive.

CONCLUSION

13 Miscellaneous Provisions

- Other than as expressly stated herein, this Plan establishes no principles and shall not be deemed to foreclose any party from making any contention in any future proceeding or investigation before the PUC.
- Other than as expressly stated herein, the approval of this Plan by the PUC shall not in any way constitute a determination as to the merits of any issue in any other PUC proceeding.
- Rhode Island Energy may convene the Energy Efficiency Technical Working Group no less than six times in 2023 to review the status and performance of the Company's 2023 energy efficiency programs and advise the Company on potential energy efficiency programs for 2024.

14 Reporting Requirements

In 2023, the Company will provide quarterly reports to the EERMC, the Division, OER, the EE TWG, and the PUC on the most currently available program performance for both natural gas and electric efficiency programs. These reports will include a comparison of budgets and goals by program to actual expenses and savings on a year-to-date basis, and a status report on revolving loan funds. Consistent with PUC Order 24225 and R.I. Gen. Laws § 39-1-27.7, the Company will work with the Rhode Island Infrastructure Bank on appropriate loan fund reporting for 2021. Starting with the 2022 payment, RIIB must report direct to the PUC. The Company reports will also include a summary of program progress and will highlight issues by sector for EERMC, Division, OER, and Technical Working Group attention. Within the C&I sector, there will be separate highlighting of large and small customer program progress and issues. Beginning in the second quarter, the quarterly reports also include a forecast of expected results.

- Beginning with the 2019 Year End Report, the Company provided detailed costs schedules that were developed in collaboration with the Rhode Island Division of Public Utilities and Carriers. The Company proposes to submit detailed cost schedules in the 2023 Year End Report. In addition, the Company also proposes to submit confidential vendor schedules to the PUC, with a motion for protective treatment. These confidential vendor schedules detail costs to individual vendors and other external entities.
- The Company will provide to the EE TWG, and file with the PUC its 2023 Year-End Report no later than June 1, 2024. This report will include achieved natural gas and electric energy savings in 2023 and earned incentives for 2023.
- The Company will provide the EE TWG with a summary of evaluation results that have been incorporated into the Annual Plan within the annual plan, including a description of the impact of those results in planning the Company's 2023 programs, in the Plan to be filed by October 1, 2022.

15 Requested Rulings

The Company respectfully requests that the PUC approve the 2023 Annual Energy Efficiency Plan as presented in this document and the supporting attachments in its entirety. The plan has been developed with careful consideration of the linkages between all parts. The specific components of this plan for which the Company requests approval include:

- The savings goals, programs, measures, budgets, and associated customer collections required to fund the energy efficiency programs in 2023.
- The pilots, demonstrations, and assessments the Company proposes for program year 2023 and the associated budgets and customer collections required to fund those efforts.
- The performance incentive mechanism and associated earning opportunity provided in this Annual Plan.

ATTACHMENTS

Annual Plan Attachment 1. Residential and Income Eligible Energy Efficiency Solutions and Programs

Annual Plan Attachment 2. Commercial and Industrial Energy Efficiency Solutions and Programs

Annual Plan Attachment 3. Evaluation, Measurement & Verification Plan

Annual Plan Attachment 4. Rhode Island Benefit Cost Test Description

Annual Plan Attachment 5. Electric Energy Efficiency Program Tables

Annual Plan Attachment 6. Gas Energy Efficiency Program Tables

Annual Plan Attachment 7. Rate and Bill Impacts

Annual Plan Attachment 8. Pilots, Demonstrations & Assessments

Annual Plan Attachment 9. Cross-Program Summary

Annual Plan Attachment 10. Definitions

2023 Residential and Income Eligible Energy Efficiency Solutions and Programs

1. Overview

The goal of the 2023 Plan is to support an equitable transition from inefficient homes to energy efficient homes by maximizing the potential of weatherization, heating/cooling/hot water systems, efficient appliances, and Wi-Fi controls, with a particular focus on customer segments that have been previously underserved. Attainment of the energy efficiency savings goal is supported through high-efficiency equipment and well-trained energy experts and service providers. This vision is for all homes to be well weatherized, have safe and efficient heating, cooling and hot water systems, encourage customers to see their home as a comprehensive system, and transform the residential new construction industry to a Zero Net Energy market. 2023 therefore builds on the transition away from lighting by concentrating on longer energy savings benefits in the residential portfolio and equitable access to the programs for all Rhode Island customers.

To achieve this vision, the Company will rely heavily on the findings of the participant, multifamily census, and non-participant studies that relied on survey data and interviews to identify opportunities to remove barriers to participation in the residential programs, improve program outreach, and reach customers who have previously been underserved. These findings have been integrated into the 2023 plan with the intention of increasing outreach and participation equitably in the state.

The detailed program descriptions provided in Attachment 1 offer a snapshot and evidence of how programs are continuously evolving, building from one Plan year to the next. It shows how high-level strategies are translated into specific actions and activities that secure savings for customers; help to contextualize specific program innovations and enhancements described only briefly in the main text of the Annual Plan; and demonstrate how key strategies cross multiple program designs and end use targets while cross promoting other programs.

What to look for in 2023

The Company has focused heavily on weatherization, efficient heating, and equity across all residential programs. The elevation of these three critical areas reflects stakeholder priorities and opportunities identified during the planning process. The innovations and enhancements also reflect many ideas and insights that have evolved from the close collaboration with the Energy Efficiency & Resource Management Council (EERMC) and its consulting team, the Office of Energy Resources (OER), the Division of Public Utilities and Carriers (the Division), Technical Working Group Stakeholders, our vendors, and customer feedback. There are electric heat opportunities introduced in more programs and enhancements that make participation in multiple programs easier or more attractive, and reduced barriers to adoption of comprehensive measures.

Equity opportunities have been applied across all residential programs to ensure all Rhode Islanders have access to program opportunities. A Comprehensive Energy Efficiency Campaign will focus on increasing awareness in the state and will be conducted in several languages to engage more non-participating communities. Five specific communities, identified from the non-participant study, will be the focus of additional direct marketing and engagement to increase program activity. Low and no-cost opportunities will be communicated for customers including income eligible, moderate income, and landlord/renter opportunities. The Income Eligible Services (IES) program is working closely with the Company's discount rate program to introduce newly enrolled customers on the discount rates to the income eligible efficiency program where 100% of energy upgrade costs are covered.

The residential programs support workforce development of high growth, long-term, energy jobs through trainings and education. This effort supports the shift to high performance homes and technologies, air source heat pump (ASHP) design and installation, and Zero Net Energy New Construction buildings. Trainings are planned to help expand the workforce and to support the emphasis on deeper home energy upgrades.

The Residential Energy Efficiency Programs have benefitted from the Rhode Island Builder's Association (RIBA) and Residential Construction Workforce Partnership (RCWP) first cohort of weatherization focused training (completed in Spring 2022) with Energy Efficiency vendor partners hiring or in the process of hiring 42% of the class. The Energy Efficiency Programs support the RIBA and RCWP with curriculum development, weatherization specific trainings and mentorship. Support of this workforce development effort aligns with Least Cost Procurement's (LCP) standard, which states, "The distribution company shall include wherever possible and practical partnerships with existing educational and job training entities."

Inflation and equipment shortages are external factors that apply pressure to program cost effectiveness and affordability of the offerings to customers. The programs are adjusting to cost increases and working to adapt to equipment shortages, but the Company is impacted by global supply chain issues as are others nationally and worldwide.

Residential and Income Eligible Programs

The Company offers the below overarching programs to provide comprehensive services to two regulatorily defined sectors, market rate and income eligible:

Table 1. Residential and Income Eligible Programs

Market Rate Residential Sector	Income Eligible Sector
Energy*Wise* Single Family	Income Eligible Single Family
Multifamily	Income Eligible Multifamily

Market Rate Residential Sector	Income Eligible Sector
Residential New Construction	
Home Energy Reports	
Residential Consumer Products	
Residential High Efficiency Heating and Hot Water	
Residential Connected Solutions	

This attachment provides detailed descriptions of the residential energy efficiency and active demand programs, including detail on the market (customer/building types) targeted, eligibility requirements, offers, the implementation and delivery design, and new items for 2023. There are several programs where income eligible customers are still able to participate although the program is listed under market rate residential. Those programs include Residential New Construction, Residential Consumer Products, Residential High Efficiency Heating and Hot Water, Home Energy Reports, and Residential Connected Solutions.

Program Description Structure
In order to streamline review of program information in the 2023 Annual Plan, the Company has adopted the following structure for each of the programs:

a. Description of offering
b. Eligibility criteria
c. Delivery
d. Changes for 2023
e. Other considerations/research

2. EnergyWise Single Family (Electric and Gas)

2.1. Offerings

EnergyWise offers comprehensive energy efficiency services using a whole-house approach to identify energy saving opportunities in all major energy systems and uses, including heating, cooling, water heating systems, appliances, lighting, water saving measures, plug loads, and building envelope leaks. 12,500 home energy assessments are planned for 2023. EnergyWise provides in-home services in two phases: home energy assessment and weatherization.

Home Energy Assessment
Continuing in 2023, customers will be able to choose whether to have an in-person assessment or a virtual home energy assessment (VHEA). Approximately two-thirds of customers have selected the in-person assessment over the VHEA.

During the in-home assessment, an energy specialist(s), a Building Performance Institute certified building analyst will look for immediate energy saving opportunities that can quickly be addressed during the visit as well as identify deeper, energy saving opportunities. Applying a comprehensive, whole-house approach, the energy specialist will evaluate all major energy systems including the heating and water heating systems, appliances, lighting, water saving measures, plug loads, and tightness of the building envelope (the roof, the basement, and the walls).

Virtual assessments were introduced in 2020. The virtual assessment provides multiple options to communicate energy savings information depending on customer familiarity with smart phone and video calling technologies. A video call can be used to guide the customer around their home so an energy specialist can assess the home's energy use. If the customer is not able to use video, the specialist will have the customer send in pictures (before or after the VHEA) of important areas such as the attic, heating and water heating system, and basement crawl spaces while walking through the assessment by phone. An Energy Action Plan is presented to the customer at the end of the assessment. The Energy Action Plan gives the customer a clear roadmap for upgrading their home, including a recommended path to weatherization (air-sealing, insulation, and duct sealing) and associated costs, including the company incentive and customer costs. The Energy Action Plan also provides the customer a streamlined path to engage a qualified independent insulation contractor to perform the weatherization work. The Energy Action Plan also details other potential energy upgrades and additional incentives the customer may be eligible for, including heating and hot water systems. Opportunities for financing the customer share of the weatherization (as well as other upgrades) are also provided at this time. If a customer accepts the Energy Action Plan recommendations and wants to move forward with weatherization, the customer signs a contract with the Lead Vendor. The work will then be assigned to a weatherization contractor who will contact the customer directly to schedule a date for weatherization work.

Weatherization

The energy specialist's primary focus during an in-home assessment is to examine the opportunity to increase the home's building envelope through air sealing (decreasing air leaks), duct sealing, and increasing insulation, collectively referred to as "weatherization." Weatherization is a cost-effective way to improve a building's performance. It also offers customers a healthier and more comfortable home that will passively remain cooler in the summer and warmer in the winter, helping reduce energy bills for customers. Many health and safety considerations are addressed when weatherizing, such as adding attic ventilation or using mechanical fans to ensure a healthy air exchange rate. The basic EnergyWise incentive currently covers 50% -75% of the project cost depending on the customer's primary heating fuel. EnergyWise will continue with the 100% landlord weatherization incentive which encourages landlords to weatherize homes by removing any direct costs for the landlord. Renters then benefit with

lower energy bills and a more comfortable home. The program will also continue offering 100% moderate income incentives for customers with a household income up to 80% of State Median Income.

The EnergyWise evaluation completed in 2020, as well as additional research from prior assessments, identified a number of pre-weatherization barriers, generally health and safety or physical barriers, which prevent the continuation of weatherization until remediated. At this time, EnergyWise does not pay for remediation of the pre-weatherization barriers, nor are they included in the weatherization scope of work to be implemented by program contractors. The Company recognizes, however, that if a customer learns that additional work not included in the weatherization scope is required before weatherization can proceed, customers may become confused or disheartened. Therefore, the program provides a $250 incentive to customers that certify that pre-weatherization barriers have been remediated by appropriate licensed professionals. Pre-weatherization costs for knob and tube wiring, vermiculite, and asbestos can be included in the HEAT Loan. Additionally, in 2022, the lead vendor began including more information on addressing pre-weatherization barriers for customers who face these constraints. This includes information on types of contractors to call (with a list of contractors for some barriers) and information on available grants and loans. The information packet also emphasizes the importance of addressing pre-weatherization barriers for reasons other than continuing with the weatherization process to further persuade customers to move forward with the process.

2.2. Eligibility Criteria

EnergyWise is the flagship in-home comprehensive energy efficiency offering for all Rhode Islanders in single family residences (defined as one to four units) that are not candidates for Income Eligible Services. All market rate customers with either an electric or gas Rhode Island Energy account can participate. Homeowners, renters, and landlords are all encouraged to participate. Customers with any heating fuel type, including delivered fuels, are served as long as they have a Rhode Island Energy account.

2.3. Implementation and Delivery

EnergyWise is delivered through a Lead Vendor model where the Lead Vendor provides assessments and schedules weatherization projects with the Independent Insulation Contractors that provide weatherization services (air sealing, duct sealing, and insulation). The Lead Vendor provides program oversight of all weatherization work. Before the insulation contractor closes the job, the Lead Vendor provides a quality assurance check of all weatherization work to verify that all work has been completed. This process minimizes return visits and complaints from customers. Spanish and Portuguese speaking energy specialists are available by request and a translation service is available for other languages.

The Lead Vendor model facilitates consistent assessments for customers and allows the program to incorporate testing of new concepts as well as generating leads for other programs. The RI program

design has consistently been recognized as best in class with six years of ENERGY STAR® Partner of the Year awards for program implementation.

Many customers face health and safety barriers that must be remediated before they can proceed with weatherization or other energy efficiency measures. To help facilitate this remediation, in 2022 the Company coordinated with the lead vendor to provide additional information on mitigation to customers facing these barriers, including details on the safety hazard, reasons for mitigating the barrier outside of completing the weatherization, information on the type of contractor to call to complete the remediation, and, if available, a list of Company-approved contractors for reference.

The customer can apply for 0% financing through the Heat Loan to finance the customer costs associated with the upgrade(s). Financing the energy upgrades requires selecting an approved lender and applying for the loan. For customers with low credit, there is a lender that specializes in financial coaching and approves Heat Loans for energy upgrades.

An independent company provides quality control and quality assurance to at least 5% of all assessments and weatherization projects.

2.4. Changes for 2023

Leveraging the Participant/Nonparticipant Studies
In 2023, the Company plans to leverage the results of the non-participant and participant study research to identify previously underserved geographic areas in the state to target program outreach. Underrepresented areas are more likely to be non-English speaking households, lower-income, and renters. Targeting these geographic areas will increase access to the programs and improve equity. The program will also take advantage of statewide promotion of the energy efficiency programs, targeted landlord outreach, promotion of the landlord/return and moderate income offerings, and direct community engagement through the contractor network. Contractors will be able to directly market to customers within the underserved areas and tag these customers for the contractor's weatherization services when the customer is ready to proceed with these services. This enables these contractors to directly build their customer base and business.

Facilitating connections to contractors and grant/loan funding for pre-weatherization barriers
Upwards of 45% of all home energy assessments have some type of pre-weatherization barrier that prevents the customer from moving forward with the weatherization project. 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 help customers remediate these barriers, the program will provide customers with more information about the pre-weatherization barriers they are facing, the

type of contractor they need to contact, a list of pre-approved RI contractors (where applicable), and detailed information on local and state loans or grants available for financing this work. The Program will also encourage customers to use the HEAT loan to finance these upgrades. Lastly, while the Program does not provide direct funding for pre-weatherization barriers, it will continue to offer a $250 pre-weatherization incentive for addressing any issues identified.

2.5. Other Considerations

Connecting Customers with Additional Opportunities
The EnergyWise assessment process also identifies opportunities to engage the customer in additional energy saving programs including HVAC, Consumer Products, and Connected Solutions. During home visits, energy specialists capture the age and condition of heating systems, the heating fuel type, and verify the number of stories in the home. This data is used to identify if homes are good candidates for high efficiency heating, cooling, and hot water systems such as air source heat pumps and heat pump water heaters. Homes meeting optimal building design with current electric heating and/or water heating systems are provided information about enhanced incentives for air source heat pump systems and automatically referred to the HVAC program for follow up.

The EnergyWise assessment can identify if a home has central air conditioning and a smart thermostat, which allows the Company to offer these customers the opportunity to participate in the Connected Solutions program.

3. Multifamily (Electric and Gas)

3.1. Offerings

The Multifamily program offers comprehensive energy services for multifamily customers including:

- Energy assessments.
- Incentives for efficient electricity, natural gas, or delivered fuels equipment including heating and domestic hot water systems, cooling equipment, lighting, thermostats, smart strips, water saving measures, and air source heat pumps.
- Coordination for all services will be offered for multifamily properties that participate in the Market-Rate and Income Eligible Multifamily Programs.

3.2. Eligibility Criteria

Eligible multifamily program participants are defined as the following:

- Buildings with five or more dwelling units

- Properties consisting of four or more one- to-four-unit buildings that meet both of the following requirements:
  - Are within a reasonable geographical distance from each other, or to a five plus unit building, and
  - Are owned by the same individual or firm.

Both market-rate and income eligible multifamily properties are subject to the above multifamily eligibility requirements for coordinated services. For the income-eligible properties, co-payments for energy efficiency services and measures may be waived.

The income-eligible multifamily sector is defined by properties that meet one of the following criteria:

- Owned by public housing authorities or community development corporations;
- Receive affordable housing tax credits or other types of low-income funds/subsides from the state or federal government; or
- Consist of building units where a majority of customers (over 50% of occupants) qualify as income-eligible customers (receive utility service on the A-60 Low-Income rate and/or have a household income of less than 60% of the Area Median Income).

Moderate income customers (customers that are at 80% or below the state median income) are included in the eligibility criteria of the Income Eligible Multifamily Program as they are represented in other units of an income eligible multifamily property that may not meet the eligibility criteria for low-income customers. For example, if a multifamily property has a total of 20 units, and 12 of which qualify as income eligible, the moderate customers could make up the remaining 8 units of the property and therefore be eligible to participate in the Income Eligible Multifamily Program offerings. All customers who have an electric account with the Company are eligible, regardless of their heating fuel type.

A multifamily property may be eligible for services and incentives under both residential and commercial programs. As an example, a building with 20 dwellings that is electrically sub-metered (20 residential accounts) with a commercial electric account for common areas and one commercial gas account serving a central heating/hot water system will likely qualify for incentives through both Multifamily and the Commercial & Industrial Multifamily programs. While this adds a layer of complexity for the Company, it is critical that the Company maintain accounting via these various program budgets to ensure equity for all customers, funding energy efficiency through the energy efficiency program charge. In contrast, the customer will not need to experience this added layer of complexity and will instead receive a consolidated incentive for all efficiency work completed at the site. The Programs' Lead Vendor is well versed in managing projects with multiple types of multifamily designations and can help the customer navigate the process of participating in both programs.

3.3. Implementation and Delivery

The Rhode Island Multifamily Program has a single Lead Vendor that utilizes a network of Rhode Island sub-contractors to serve all customers, including income eligible customers. A customer can learn about the Company's Multifamily Program offerings in a myriad of ways ranging from communicating directly with the Lead Vendor, the Rhode Island Energy website, direct mail and print marketing, and digital marketing campaigns.

If the customer is interested in starting the process, the Lead Vendor would do an eligibility assessment and then schedule a home energy assessment. The Lead Vendor then conducts post site screening to identify which measures pass a benefit/cost (B/C) screening on a project level basis. If a measure does not pass, customers can still include it in the project without an incentive. Projects may participate in the Multifamily Program as long as the overall program remains cost-effective.

A final proposal is then presented to the customer that includes the scope of work, costs, available incentives, and an estimated time frame. The customer is made aware of financing options available to them as well. If the customer decides to proceed with the project, installation work is then scheduled.

Once installation work is completed, a final walk through with the customer is done. A completion report is then created and presented to the site's authorized representative and signed off on. A customer survey is also conducted once work is complete.

Individual condo owners within the multifamily program are eligible for financing under the Heat loan. An on-bill financing offer to multifamily C&I gas customers is being initiated in 2022 and will be offered during the 2023 program year.

An independent company provides quality control and quality assurance to at least 5% of all assessments and weatherization projects.

3.4. Changes for 2023

Leverage data from the Residential Non-participant Study to identify and target non-participants. In 2023, the Company plans to leverage the results of the study to identify program non-participants. The Company will identify the customers that have the greatest savings potential and highest propensity to participant. Outreach to these customers will be done through direct mail and email campaigns and the program's Lead Vendor will utilize this data to perform direct outreach to the customers with the greatest savings potential.

Leverage recommendations and solutions from the Non-participant Market Barriers Study to improve marketing and outreach

In 2023, the Company plans to continue to enhance its Multifamily and Income Eligible Multifamily marketing and outreach efforts by updating customer-facing marketing materials, particularly those

geared toward multifamily landlords, including the multifamily brochure and case studies. Based on feedback from the participant and non-participant studies, the Company plans to provide clearer customer communications that emphasize the energy and non-energy benefits of participating.

Improve customer financing options
In 2023, the Company will continue to explore financing solutions for landlords and/or property managers of both commercially and residentially metered multifamily buildings. Expanding financing solutions in the Multifamily program will make it easier for owners to fund larger improvements to renter-occupied buildings, and therefore achieve deeper energy savings. A financing option could increase multifamily participation within the five-20 unit building segment if the upfront co-pay cost were able to be financed over time.

4. Income Eligible Services (Electric and Gas)

4.1. Offerings

IES consists of two, no-cost[1], in-home or virtual services to increase comfort in the home and decrease a customer's energy costs.

Appliance Management Program (AMP) Assessment

- The energy specialist educates the homeowner or tenant about their energy bill and monthly usage; assesses the home and learns about the day-to-day activities that consume energy in the home; discusses ways the customer can save energy and money, educates the customer to properly operate energy efficient equipment and how to identify signs that indicate if weatherization or heating system replacement is needed.

- Installation of instant energy savings measures such as energy efficient LED bulbs, advanced power strips, water saving measures (faucet aerators and low-flow showerheads) and thermostats.

- Evaluation of existing appliances: refrigerator, freezer, window air conditioning unit(s), clothes washer and dehumidifier to determine energy efficiency and eligibility for a no-cost

[1] 100% incentive via the systems benefit charge (SBC) that funds all Rhode Island Energy's energy efficiency programs. Customer incurs no cost for audit, weatherization or equipment replacement.

replacement with an energy efficient appliance mode and replacement of eligible existing inefficient appliances (including delivery and installation)[2].

Weatherization and Heating System Assessment

- An industry-certified energy specialist conducts a comprehensive assessment of the building envelope and heating and cooling systems including visual and equipment-required inspections, infrared camera thermal imaging, combustion safety testing of heating system, energy efficiency testing of heating and cooling systems.
- Air sealing, duct sealing and insulation upgrades in attics, walls and basements.
- No-cost replacement of eligible heating or cooling systems if they are determined to be inefficient or unsafe. Applicable to all existing heating/cooling systems: electric, gas, oil and propane.
- If home has existing electric resistance heat, the customer will be offered to replace it with energy efficient air source heat pumps (ASHP) that provide heating and cooling.

4.2 Eligibility Criteria

The Income Eligible Services (IES) Program serves Rhode Island homeowners, renters, and landlords, who have a Rhode Island Energy account and meet the any of following criteria:

- Household income equal to, or less than, 60% of Rhode Island's State Median Income Levels which are set each program year[3] **or** enrolled in Rhode Island Energy's fuel discount rate plans, Electric A-60 rate and/or Gas 11, 13 rates[4].
- Customers enrolled in the Low-Income Home Energy Assistance Program (LIHEAP)[5], also known as "fuel assistance".

[2] All appliances are purchased/supplied through a central organization, SMOC, a nonprofit agency, to ensure that all delivery personnel meet Rhode Island Energy's security and liability criteria, and all appliances meet IES Program requirements, warranty calls are handled expeditiously and properly documented and non-efficient appliances are removed and recycled safely and properly.

[3] http://www.dhs.ri.gov/Programs/LowIncomeGuidelines.php.

[4] https://www.nationalgridus.com/RI-Home/Bill-Help/Payment-Assistance-Programs

[5] https://www.benefits.gov/benefit/1572

- Homeowners and renters who live in a one to four unit building with either an electric or gas RI Energy Discount Rate account can participate, including customers with delivered fuel heat (oil, propane, wood, or coal) if they have an electric account.

Additional eligibility criteria, including the 50% rule,[6] shelter and group home eligibility, renter eligibility and repair or replacement eligibility are available in the RI Weatherization Assistance Program (WAP/IES) Operations Manual. All criteria adhere to 10 CFR 440 requirements.

4.3 Implementation and Delivery

Program Delivery
IES Program is administered through a Lead Vendor (LV) that is responsible for managing the implementation of IES work through the six Rhode Island geographically-based Community Action Program (CAP) Agencies. In addition, the LV is engaged with all customers as they conduct post-inspections when jobs are complete for 100% of the customers. The CAP Agencies serve as a trusted entity where income eligible customers can obtain essential resources within their respective community.

The IES Program is marketed through the Program's marketing specialist as well as cross marketed at Community Expos, via the Consumer Advocates dedicated to the RI IES consumers, and the Company's call center. The primary point for customers to enroll in the IES Program is through the CAP Agencies as they provide income verification and comprehensive resources for income eligible customers.

Other channels for enrollment in the IES Program are:

- Low-Income Home Energy Assistance Program (LIHEAP);
- Community Expos;
- Consumer Advocate appointments; and
- Rhode Island Energy's Customer Service Center[7].

The LV monitors the work of the CAP agencies. If the CAP Agency determines they cannot complete their pipeline of weatherization jobs, the CAP will refer the job to a third-party entity to do the weatherization. The LV works closely with the CAPs to regularly review weatherization pipeline and

[6] Customers that are not on the income eligible rate but live in a two- to four-unit building where more than 50% of the units are income eligible are also eligible to receive weatherization and health and safety services. This exception is referred to as the "50% rule".
[7] (1-800-322-3223)

timeliness of job completion. The referred jobs will get accounted for in the referring CAP Agencies participation and job completion goals.

Key Performance Metrics (KPIs) are tracked to measure/improve consistency of Program delivery as well as drive performance of the CAPs. KPIs include: timeliness of administrative reporting, monthly/year to date spending compared to goals, participation numbers for AMP, electric & gas weatherization and heating system installations and cost.

- Quarterly IES Best Practices meetings are held with the Company, the Lead Vendor, the CAPs, DHS, program vendors (i.e., lighting vendor, appliance delivery vendor), or speakers to address a pertinent topic.

- Monthly engagement of the Company, the Lead Vendor, Executive Directors of the CAPs, and DHS to review the overall performance of the IES Program and coordination of best practices across the CAPs.

- On-going customer feedback and communication.

The LV also coordinates home performance/HVAC contractors and appliance vendors that install weatherization, heating (space and hot water), window air conditioners and appliance measures.

Customer Journey:

- A customer begins the process for a no-cost home energy assessment by contacting (call/in-person) their local CAP Agency to submit their information to determine if they meet the income eligibility requirements for participation in IES.

- After the CAP Agency verifies income eligibility, the CAP will schedule a no-cost AMP or virtual AMP and/or Weatherization/Heating System assessment. In some cases, the AMP and Weatherization/Heating System assessments are separate due to the customer's past assessments, renting vs. owning, time availability or the CAP Agency's availability of two-person assessment teams.

- Energy education is provided to the customer regarding the pre- and post-energy assessment process, opportunities to save energy, processes for receiving appliance or heating/cooling system upgrades and/or weatherization.

- If needed, health and safety services will be provided including replacing smoke and CO detectors if non-functioning or expired, clean and tune heating systems, and address conditions such as mold before the EE work is able to be completed.

- The CAP Agency will schedule all necessary follow-up services for insulation, air sealing, appliance and heating/cooling system replacements. All services and appliance and heating/cooling system replacement are provided at no cost to the customer.

Customer receives a "comment card" to provide their feedback on all aspects of their journey through the IES Program.

An independent company provides quality control and quality assurance to at least 5% of all assessments and weatherization projects.

4.4 Changes for 2023

Increasing Participation in the Income Eligible Program through Referrals
In 2022, the Income Eligible program is forecasted to be below the energy savings goals identified in the annual plan. The primary impediment was an insufficient number of qualified staff at the Community Action Agencies (CAPs) to perform assessments. However, there have been numerous hires in 2022 which will increase the CAP workforce in 2023. Because of existing staffing issues, several CAP agencies were unable to meet their spending goals and underperformed work in many of these communities. While many faced these barriers, some CAP agencies performed very well and will either met or exceeded their goals.

Currently, CAP agency budgets are tied to their assigned communities and cannot be moved to other CAP communities. The purpose of this restriction is to ensure that each community receives an equitable amount of funding that is tied to its population size. While ensuring equity in the communities served, this rule prevents over-performing CAP agencies from taking on additional work in their territories by leveraging unused funds from other territories. Ultimately, by not reallocating funds, income eligible customers are not served that could be. In 2022, the program is looking to serve more customers with two additional options. First, CAPs that are overperforming will be allowed to overspend their budget allocation while there are still customers awaiting services in their territories. Second, an inter-agency Referral program is being established to assist CAPs that do not have staffing capacity to meet their goals. CAPS that can assist in the other under-resourced areas will receive referral services to serve customers in an under-resourced service area. The Company will continue both of these pathways in 2023

The inter-agency referral process enables entire communities assigned to a particular CAP to be reassigned to a different CAP that is able to complete the work while preserving the equity of the program by keeping the budget tied to the community.

The inter-agency referral program is expected to increase budget utilization, enable the CAP agencies to reach more customers, achieve greater energy savings, improve the health and wellness of many income-eligible households, and create a more equitable program.

Focused communication and engagement with landlords on behalf of interested tenants
The Company will continue efforts to increase renter participation, via landlord outreach, to effectively improve the focused communication and engagement with landlords: Landlord participation in the IES Program is important for the success of reaching potentially older homes that often have deferred maintenance. Without landlord commitment to the IES Program, renters cannot gain the benefits of energy efficiency which causes an issue with equity of program resources.

Landlords can use the Heat loan to support tenant upgrades. Income Eligible qualified customers receive all program services at no-cost to the customer.

4.5 Other Considerations

Leveraged Funding and Coordination with Other State Programs
The IES Program collaborates with the State of Rhode Island Department of Human Services (DHS) Weatherization Assistance Program (WAP)[8] and the Low-Income Home Energy Assistance Program (LIHEAP)[9] to create synergy between the programs, which improves outcomes of all the programs.

The IES Program benefits from leveraging LIHEAP funds, resulting in more customers being served. The amount of funds leveraged is approximately 25% of total customer incentive benefits for weatherization and heating system replacements. The LIHEAP funds also help pay for the remediation of non-energy related health and safety improvements, that if not remediated, would prevent a customer from receiving weatherization and/or heating system upgrades, i.e., roof repair and/or replacement, knob and tube removal, glass repair/replacement and carpentry. Conversations with DHS indicate additional funds available for weatherization in 2023. If funding can also be secured for deferral remediation, more income eligible customers may be served.

[8] overseen by the U.S. Department of Energy. http://www.dhs.ri.gov/Programs/WAPProgramInfo.php
[9] overseen by the U.S. Department of Health and Human Services. https://www.benefits.gov/benefit/1572

Other elements of coordination are

- Starting in 2021, WAP (DOE) funding became available for leveraging IES funding for IES energy efficiency measures. DHS provides training and equipment to weatherization auditors.
- DHS provides the IES Program with important operational data including demographics, participation, amount of DHS funding leveraged with IES Program funds, and customer data for those on fuel assistance (LIHEAP), but not the RI Energy discount rate.
- CAPs provide the full suite of energy efficiency services including:
    - Income-eligibility verification
    - Customer education regarding energy and cost savings opportunities
    - Energy assessments
    - Installation of instant energy savings measures
    - Recommendations for energy savings measures

Emergency heating system replacements

The Company wants to 1) reduce the number of emergency oil/propane heating system replacements in Income Eligible dwellings (replacing oil/propane heat systems with high efficiency oil/heat systems), and 2) find supplemental funding that can offset the cost of fuel switching from oil/propane to high efficiency heat pumps heating systems. In order to achieve this, in 2023, the IES Program will continue to build a list of oil/propane systems they observe during on-site and virtual energy assessments and will work with supporting stakeholders (RI OER, DHS, DOE, and others) to identify funding that can be leveraged to replace oil/propane heating systems with high efficiency heat pumps. At the time when fuel switching can be done, the IES Program will determine if a dedicated team of contractors can be designated for emergency replacements so that homes can be weatherized, heat pumps systems sized and installed in a shorter time period than is currently possible during emergency heating system replacement season.

Currently, if an income eligible customer heats their home with oil or propane and they have a heating system failure or the system is deemed unsafe, the original oil or propane heating system is replaced with a more efficient oil or propane heating system. This 1:1 replacement is the most efficient solution to satisfy the emergency nature of a customer's heating needs. Ideally the Program would prefer to upgrade the oil/propane heat systems with more energy efficiency heat pumps, but the RI EE Programs are not able to provide deliverable fuel to electric heating switching with ratepayer funds. Even if fuel switching was allowed, the time to design and install a completely different system takes many weeks, and a customer cannot be without heat for many weeks in the winter. It is important to note other barriers for heat pumps are that not all homes are well-suited for ASHPs; the IES Program pays for 100% of equipment, labor and inspection costs, which can become very expensive for fuel switching. The PUC recommended that the Company look into possible solutions to stop the installation of new oil/propane

heating systems for emergency heating system replacements as they perpetuate the burning of carbon-intensive fuels. A working group, convened to address this topic, provided recommendations to reduce the number of oil/propane heating system replacements and to identify funding sources for paying for the fuel switching.

5. Residential New Construction (Electric and Gas)

5.1 Offerings

Design and Construction Assistance

- Energy modeling and design assistance to verify compliance with the RNC requirements and justify the respective incentives.
- In-field training and inspections to verify compliance with the RNC requirements and promote efficiency in subsequent projects.

Market Development

- Technical training on high efficiency and Zero Energy building practices, as well as energy code compliance, to build necessary market capacities.
- Training and certifying Home Energy Rating System (HERS) raters to increase the number of qualified raters based in RI.
- Rating and certification services, including HERS, DOE Zero Energy Ready Home, Passive House, and ENERGY STAR, to promote visibility of energy efficiency in the marketplace and support increased use of the RI Residential Stretch Code.

Incentives

- Whole-home efficiency incentives for buildings based on achieved level of efficiency and number of units.
    - Path to Energy Efficiency incentives ranging from $200 to $4,000 per home.
        - Three efficiency tiers, with an entry threshold of 15% more efficient than baseline and progressive maximum air leakage requirements.
        - Additional incentive options of $250-$1,000 per home for all-electric home and $100-$200 per home for ENERGY STAR® certification.
    - Path to Zero Energy Ready incentives ranging from $500-$1,500 per home in addition to Path to Energy Efficiency.
        - Projects must meet a minimum base efficiency level, be all-electric, and achieve DOE Zero Energy Ready Home, Passive House, or equivalent certification.
    - Projects with >75 units are eligible for custom incentives.
    - Adaptive Reuse projects are incentivized based on a separate set of prescriptive measures tailored to mill conversion projects.

- Certification incentives provided to support third-party verification of energy efficiency measures.
- Equipment rebates for qualifying high efficiency heating, cooling, and hot water equipment.
- Complimentary WaterSense showerheads.

5.2 Eligibility

The Residential New Construction (RNC) program is designed to advance the Rhode Island housing market toward Zero Energy homes. The program provides technical services, inspection services, and project incentives for new construction, additions, and major renovations to both one to four unit and five plus unit buildings. The program also supports major renovation of adaptive reuse projects (e.g. mill building conversions). The RNC program supports both market rate and income eligible housing units.

5.3 Implementation and Delivery

Design and Construction Assistance, Incentives: The RNC project pipeline is developed primarily through coordination with RI permitting departments, engagement of the building industry, and referrals from Energy*Wise* and Rhode Island Housing. A participating customer/project team begins the process by calling or emailing the RNC program. The project team meets with the RNC program team (led by a Lead Vendor), to discuss the project design, learn how to modify design or mechanical systems to improve energy efficiency, and initiate energy modeling of the project to determine the potential for incentives. Once construction has begun, RNC staff provides on-site training as needed and conducts inspections of the completed project to determine energy efficiency and respective incentives. When the project is complete and has met program requirements, the performance and equipment incentives are issued.

Market Development: RNC identifies opportunities to build necessary market capacities to advance toward Zero Energy Homes and delivers education and outreach programming designed to achieve this goal.

5.4 Changes for 2023

Lighting is no longer an eligible component in Residential New Construction program. RNC is being evaluated in 2023. Recommendations from that evaluation will inform in program year enhancements.

6. Home Energy Reports (Electric and Gas)

6.1 Offerings

The HER program is a state-wide energy efficiency program that provides benefits for Rhode Island residential customers through the mailing of customer-specific energy usage reports and insights. While over 300,000 customers receive HERs (i.e., the treatment group) by way of direct mail and/or e-mail, all account holders have access to insights of their energy consumption via the web tools located on the RI

Energy website. The program has evolved since 2013 from offering only mailed insights to now being integrated into the Company's website with online assessment tools, sending Non-Advanced Metering Infrastructure (AMI) High Usage Alerts, and utilizing segmentation to target different populations with relevant messaging.

6.2 Eligibility

The majority of Rhode Island residential Electric and Gas customers are eligible for the Home Energy Reports (HER) program. Customers with an email address on record will also receive an electronic version of the report (eHER). All customers have access to the online home energy assessment and related insights. Randomly compiled control and treatment groups are necessary for accurate savings reporting. Thus, some customers will not receive print or electronic reports (control group), while others receive both print and electronic HERs (treatment group).

6.3 Implementation and Delivery

The program is administered by a Lead Vendor, a company with subject matter expertise selected by the Company to deliver the program. This Lead Vendor also developed and launched the first HERs in the country. The Lead Vendor is responsible for maintaining HER distribution groups, tracking data, managing the Web Portal, and documenting energy savings. The Lead Vendor works with the Company to craft the messaging and delivery of the HERs, and also works with the Company to introduce additional program enhancements, aligning with the Company's state-wide comprehensive marketing efforts.

All eligible customers will receive a minimum of 6 print versions of the report a year and up to 4 gas specific reports in the winter season. All customers with email on record will receive up to 12 reports a year. The reports include marketing messages informing customers of other program opportunities so that they may be made aware of the most current and relevant energy efficiency offerings. For customers interested in learning more about energy saving tips and their home's energy consumption, they may log into the online portal and use the available tools.

6.4 Other Considerations

Customer Feedback

The Company's Customer Energy Management team overseeing program strategy continues to work with the Customer Contact Center to ensure customer complaints are addressed. In each report there are multiple options for the customer to contact the Company to learn more or opt-out of the reports.

The Lead Vendor completes a Customer Engagement Tracker (CET) annually to assess customer perception of the program.

7. Residential Consumer Products (Electric)

7.1 Offerings

Residential Consumer Products incorporates both the federal Environmental Protection Agency (EPA) ENERGY STAR and Department of Energy (DOE) categories of consumer appliances, select building products, and some energy saving items not included by the federal agencies. The largest savings elements of the Consumer Products program come from recycling older refrigerators and freezers. In 2023 the program will also support dehumidifiers, dehumidifier recycling, dryers, refrigerator and freezer recycling, room air cleaners, room air conditioners, efficient shower heads, pool pumps, and low-emissivity storm windows. ENERGY STAR most efficient clothes washers and refrigerators were added in 2022. Consumers can purchase products at a local retailer, online through any online retailer as long as the product meets product specifications and there is a receipt, or at the marketplace (https://rienergymarketplace.com/).

In 2022, the Company began offering midstream incentives with the introduction of ENERGY STAR® most efficient clothes washers and refrigerators, two products that previously did not receive incentives. This midstream incentive is being tested with one big box store, to understand the ability of incentives to influence retailer stocking practices.

7.2 Eligibility

Residential Consumer Products serves all residential customers by offering incentives on electronics, ENERGY STAR® consumer appliances, and other high use energy saving devices.

7.3 Implementation and Delivery

There is a Lead Vendor for this program that works with retailers, so they are knowledgeable about the products and ensure proper signage within the stores. The Lead Vendor also jointly provides staff at customer outreach events at retailer locations. The program supports a combination of upstream and midstream incentives as well as post-purchase consumer incentives. The upstream, negotiated with manufacturers and distributors, and midstream, working with retailers, incentives encourage retailers and manufacturers to support ENERGY STAR with increased production and availability of products. Consumer incentives are designed to bring efficient product costs in line with less efficient equipment, thereby encouraging the adoption of the more efficient item.

A rebate processing vendor verifies and processes post-consumer incentives which can be submitted electronically or by traditional mail. This vendor also processes upstream and midstream incentives.

7.4 Changes for 2023

Midstream Delivery

The Company will continue to assess the success of midstream incentives with the two measures and one big box store as mentioned above. Takeaways will influence decisions on whether to continue the program, expand the program to more stores, expand the program to more products, or adopt the Energy Star Retail Products Platform (ESRPP). ESRPP aims to transform markets by streamlining and harmonizing energy efficiency programs with retailers, making them less complex and more cost effective. While this platform could allow the program to reduce incentive and administration costs and increase savings via higher adoption, evaluation of the success of the currently limited midstream incentive program will facilitate a better understanding of if the ESRPP will be cost effective.

8. Residential High-Efficiency Heating, Cooling, and Hot Water (Electric and Gas)

8.1 Offerings

The High-Efficiency Heating, Cooling, Ventilation and Hot Water Programs (HVAC Programs) promote and incentivize the installation of high efficiency electric and gas equipment through:

Customer rebates on energy efficient equipment

- Boilers
- Combined condensing boilers and furnaces
- Furnaces
- Triple-paned windows
- Hot water heaters
- Heat recovery ventilators
- Air source heat pumps (space and water heating)
- Central Air Conditioners
- Smart thermostats

Ability to enroll in the ConnectedSolutions demand response program for additional energy savings

Contractor Services

- Quality Installation Verification
- Contractor training
- Contractor incentives
- Upstream incentives (discount taken at the distributor level)

The HVAC Electric and Gas Program is cross-promoted through the Energy*Wise* Home Energy Assessment, Multifamily, Residential New Construction, Community-Based Initiative and Home Energy Reports Programs. Training elements and best practices of the Program are also provided to the Income

Eligible Services Program to maintain consistency in contractor skills for accurate sizing, design, installation and performance verification of the high efficiency HVAC systems.

8.2 Eligibility

Residential High-Efficiency Heating, Cooling, Ventilation and Hot Water (ENERGY STAR® HVAC) serves all residential customers by offering incentives on high-efficiency building space conditioning and water heating equipment and equipment maintenance. Energy efficient equipment must be installed by a licensed heating or cooling contractor or plumber.

8.3 Implementation and Delivery

The program is administered by a Lead Vendor that is responsible for contractor training, maintaining distributor relationships, tracking data, providing content for marketing and documenting monthly, quarterly and annual energy savings. The Lead Vendor works closely with the Company to deliver the HVAC Program and provide strategic insight for program improvements.

Contractor training and education is a primary component of the program to ensure accurate sizing, design, installation and performance verification of heating, cooling, and hot water equipment and results in energy savings and customer satisfaction.

The Lead Vendor provides regular communication and in-store time with distributors to provide training and information on the equipment and gain feedback on customer interactions. The Lead Vendor also ensures distributors have proper promotions and marketing signage within the distribution stores.

The Company and Lead Vendor work with manufacturers to develop special offers, or “flash sales”, to further incentivize customers to participate in the Program to gain the benefit of the energy savings.

Product channels for ease of customer use and for product adoption:

- HVAC contractors during routine maintenance service, emergency service, or contractors’ marketing communications
- Residential New Construction/Major Renovation energy advisors during project design consultation.
- Upstream and midstream incentives
- Comprehensive RI Energy marketing channels including emails, Home Energy Reports, bill inserts and radio and media advertisements.
- RI Online Marketplace https://rienergymarketplace.com/ offers customers the ability to purchase instant discount rebates on energy efficient thermostats and water fixtures.
- The program supports a combination of upstream and midstream incentives as well as post-purchase consumer incentives. The upstream and midstream incentives encourage retailers, distributors and manufacturers to support ENERGY STAR products with increased production

and availability of products. Consumer incentives are designed to bring efficient product costs in line with less efficient equipment, thereby encouraging the adoption of the more efficient item.

- Energy*Wise* single family or multifamily programs
    - The Home Energy Reports sends targeted communications to electric heat customers promoting air source heat pumps as an energy efficiency solution.

A rebate processing vendor verifies and processes post-consumer incentives which can be submitted electronically or by traditional mail. This vendor also processes upstream and midstream incentives.

Customers who complete a Home Energy Assessment through the Energy*Wise* Program can apply for 0% Heat Loan financing for qualified high-efficiency space heating and cooling and hot water equipment upgrades.

8.4 Changes for 2023

Triple-Paned Windows
Triple-paned windows are a new offering for customers in 2023. Customers that have single paned windows and upgrade to triple paned windows will be eligible for the incentive.

Heat Pumps

Concurrently with the drafting of this plan, a proposal to provide $37 million in federal funding for heat pump deployment is moving through the Rhode Island legislature. If this proposal is passed, the HVAC programs will work to align with the state's program and take advantage of synergies where possible.

8.5 Other Considerations

Cross-Promotion
The HVAC Electric and Gas Program is cross-promoted through the Energy*Wise*, Home Energy Assessment , Residential New Construction, Community-Based Initiative and Home Energy Reports Programs. Training elements and best practices of the Program are also provided to the Income Eligible

Services Program to maintain consistency in contractor skills for accurate sizing, design, installation and performance verification of the high efficiency HVAC systems.

The Electric HVAC Program and the Residential New Construction/Major Renovations Program will work closely together to develop and implement an HVAC contractor training for the design and installation of heating/cooling/ventilation/hot water systems in projects striving to meet Zero Net Energy and Passive House.

Communications

The HVAC Program will coordinate on strategic communication and technical support to assist HVAC contractors engage with Zero Net Energy and Passive House projects to ensure the mechanical system is ideally designed and installed to meet the very low energy requirements of the homes. Consideration of requirements for contractors to participate in Zero Net Energy and Passive House training or successful completion of a project to be listed as a Zero Net Energy and Passive House participating HVAC contractor.

HVAC Contractors will be listed on the Program's webpage as having completed the training and/or for the completing Zero Net Energy and Passive House projects.

HVAC Contractors are still the primary pathway to the HVAC program. Feedback from the contractor community is that consistency of incentives is valuable throughout the year. Contractors are busy with installations and changing incentives create additional work and tracking to very busy schedules.

Customer Feedback

The Company's HVAC Lead Vendor has quality assurance (QA)/quality control (QC) staff who perform onsite inspections and engage with customers to obtain feedback and/or questions. Staff often have extended discussions with customers about their new system and how to best operate and maintain it for optimal performance. The QA/QC staff also frequently meet with HVAC service technicians and installation crews on project sites. Staff also provides Air Source Heat Pump (ASHP) Installation and Operation Best Practices for contractors and customers. The purposes of these visits are to perform QA/QC inspections, test the equipment and installation, capture customer feedback, and provide additional 1:1 training. The QA/QC staff frequently meet with HVAC distributors at their distribution centers to share new program information and provide feedback from contractors, customers, and the utility program administrators. Finally, these same staff lead larger HVAC contractor trainings and annual contractor meetings where the lessons learned from field visits are shared. The program's central focus is on these frequent direct interactions with customers, contractors, and distributors to obtain feedback and share lessons learned from the field, while mentoring and training HVAC service providers.

9 Residential ConnectedSolutions

9.1 Offerings

Thermostats
The Company has offered an EnergyStar certified Smart thermostat-based demand response program since the summer of 2016. There are nine different smart thermostat manufacturers supported in the program.

This program precools the customers' home before the grid peak and then sets back the thermostat setting during peak periods. This lowers the chance of customers' central air conditioning units running during grid peaks. A customer may opt out of the program or events at any time. Customers receive an initial enrollment incentive and an annual incentive for staying in the program.

Batteries
The Company has offered a battery-enabled demand response program since 2019. There are six different smart inverter manufacturers supported in the program. The Company added two more inverter manufacturers since the summer of 2020. The inverters control the battery systems.

This program sets batteries to discharge during grid peaks. Often, this means that power is being exported to the grid during peak times, which reduces the load on the grid. This export is supported in both the Net Metering and RE-Growth programs.

Customers may apply for a seven-year, 0% interest HEAT Loan for the cost of the battery system. Customers receive no other upfront incentives from the program. Customers are incentivized based on the average performance (kW) of their battery system over the 30 to 60 summer events each year.

Pool Pumps
The Company is working with its vendor to integrate internet enabled pool pumps into its Connected Solutions program. This work is projected to be completed in late 2022 and should be ready for the 2023 summer season. This program will control internet connected pool pumps to automatically stop pumps when the electric grid is at or near its annual peak. These peak events will be called on the same dates and times as the battery-based demand response program.

This program will control internet connected pool pumps. Customers will earn an enrollment incentive and an annual incentive for staying in the program.

Solar Inverters

The Company is in the process of completing the Solar Inverter Demonstration and will evaluate its results in 2022. Should the demonstration provide favorable results, the Company will offer this as a full program in 2023.

This program will enroll customers who already have a supported solar inverter or who are installing a new solar photovoltaic system with an inverter from a supported inverter manufacturer. Customers will earn an enrollment incentive and annual incentive for staying in the program.

9.2 Eligibility

ConnectedSolutions is an active demand reduction program that focuses on electric demand reduction during peak demand periods during the year. Consumers with eligible controllable equipment can enroll to participate in active demand reduction.

9.3 Implementation and Delivery

Thermostats

In this BYOD (Bring-Your-Own-Device) program, customers are free to purchase a thermostat from any of the nine supported manufacturers. After purchase, thermostat manufacturers send emails and in-app notifications to customers inviting them to enroll in the ConnectedSolutions program. Enrollments in smart thermostat-based demand response options have historically exceeded expectations. In 2023, approximately 7,200 enrollments are planned.

The enrollment incentive for thermostats is $25 per device. Once enrolled, there is an additional annual incentive of $20 per thermostat. There is no performance incentive per demand response event. Thermostat participants are not eligible for a HEAT Loan.

Batteries

In this BYOD program, customers are free to purchase an inverter from any of the supported inverter manufacturers and have it installed by the customer's preferred installer. Inverters control the battery systems. Enrollments in the residential battery-enabled demand response program have been lower than expected even though generous incentives are offered in RI for batteries through other programs. In 2022 there were over 400 batteries enrolled in the program. 2023 is looking for over 520 batteries to be enrolled.

There are no enrollment or annual incentives for batteries. There is a performance incentive of $400/kW-year of demand reduction provided. Battery participants are eligible for a HEAT Loan.

Pool Pumps

The pool pump demand response program will also be new in 2023. In 2021 Guidehouse completed a report showing that pool pumps could cost effectively be added to the Company's demand response programs[10].

In this BYOD program, customers earn an incentive for signing up for the program and for each year they stay in the program. In 2022 only one pool pump manufacturer may be supported by the Company's DERMs. However, the Company expects this number to grow in 2023.

The Company has set the goal of enrolling 25 customers into the pool pump program in 2023. Marketing for this program will be mostly through the pool pump manufacturer to customers who already have a supported internet connected pool pump, and to new customers considering the purchase of a new pool pump. The incentives will help to offset the incremental cost of customers installing an internet connected pool pump instead of a standard pool pump.

The enrollment incentive for pool pumps is $100 per account with an additional annual incentive of $20 per account. There is no performance incentive per demand response event. Pool pump participants are not eligible for a HEAT Loan.

Solar Inverters

The Company will work with some of the inverter manufacturers already in the ConnectedSolutions battery measure to email customers to opt-in to updating their inverter settings. Customers will receive an enrollment incentive and an annual incentive for staying in the program. Customers may leave the program at any time. The Company will receive data from every inverter to quantify how often and how much power factor was corrected. If the customer's solar generation (kWh) is decreased larger than the annual incentive, the customer will be given an additional incentive to guarantee they are not penalized for their participation in this demonstration.

The Company's Electric Business Unit (EBU) has provided the preferred setpoints for power factor correction. The EBU will use sensors on the grid to monitor this demonstration for any negative effects or unintended consequences. The EBU may periodically change the preferred inverter setpoints, which will be pushed out to all participating inverters by our inverter manufacturer partners.

9.4 Changes for 2023

Pool pump and Solar Inverter enrollment

[10] https://ma-eeac.org/wp-content/uploads/2021-Cost-Effectiveness-of-ADR-for-Residential-End-Uses-Final-Report-2021-07-19_CLEAN-1.pdf

In 2023 the company will launch a pool pump-based and solar inverter demand response program. Additional detail about these new offerings is described in Offerings above. These devices can act as actively controlled distributed energy resources to shape the use of electricity to reduce the cost of running the grid for all customers.

9.5 Other Considerations

Program Expansion
The program is planning to achieve demand reductions above the set Targets for Active demand response (i.e. the maximum scenario in the Market Potential Study). The Company is identifying and pursuing opportunities beyond what was identified by the Market Potential Study.

The solar inverter demonstration study was started in 2021 and will continue into 2022 with an expected completion in the summer of 2022. This study looks to verify the energy savings in kWh and determine customer acceptance of the offering if converted to a full program offering in the future.

Feedback
Feedback from customers and vendors is used to continuously improve all of the Company's programs. This is especially important for new measures such as the batteries and pool pump demand response measures.

10 Marketing, Outreach & Education

10.1 Overview

The goals of the Company's marketing efforts are to build awareness of and drive participation in the Company's efficiency offerings and services among residential customers, while providing a positive customer experience. The Company uses an integrated, multichannel approach featuring consistent messaging and visual design elements (as appropriate) across communications. General awareness tactics (i.e., print ads and radio) as well as digital and direct one-to-one tactics (such as e-mail, online banner ads, social media, and direct mail) generate customer interest and program participation. All ratepayers receive bill inserts and quarterly 'We Connect' printed newsletters and can access www.rienergy.com at any time (provided they have internet access).

10.2 Delivery, and New for 2023

During 2021, familiarity of energy efficiency programs among RI customers remained strong and stable with respect to 2020 levels, per the Company's online survey of a representative sample of Rhode Island Energy customers. 66.1% of the customers surveyed between April 2021 and June 2021 were "very

familiar" or "somewhat familiar" with "energy savings or rebate programs from Rhode Island Energy that help you with ways to use less gas or electricity.

Rhode Island Energy uses a multichannel marketing approach to generate interest and drive adoption of solutions across the portfolio, as well the use of residential segmentation to enable personalization and optimize a channel strategy based on customers' preferred communication channels. The Company aligns marketing efforts with residential customer research, customer segmentation, propensity modeling, media habits research, and behavior data. Due to COVID-19 pandemic, recent campaigns reflect the 2020 changes made to energy efficiency strategies and programs to engage customers during this time. The Company's ecommerce Marketplace at www.rienergymarketplace.com serves as the online destination for customers to purchase top branded energy-efficient products at instantly discounted prices. Rhode Island Energy's website remains an important resource for information on products and services as well as rebates available to customers. The Company's social media advertisements and messages on Facebook, Instagram, Twitter, Snapchat, and NextDoor ensure customers are learning about energy efficiency opportunities while they are online with their family, friends and neighbors.

Across marketing campaigns, messaging focuses on the benefits of energy efficiency products and programs while aligning with overall Company communications and demonstrating an understanding of current customer sentiment and needs based on internal research. Core to our messaging is helping customers save energy and money and lower their environmental footprint. Where appropriate, messaging around safety is incorporated into marketing materials given health and safety concerns. Overall messaging tone is helpful, empathetic, and informative to ensure the information reflects the Company's role as a trusted advisor who truly cares about customers' needs.

Rhode Island Energy's newest energy efficiency education/awareness campaign complements all programmatic marketing efforts. The omni-channel outreach plan includes a mix of owned and paid tactics and channels. Ads are intended to be informational while providing tangible ways to take action. Core to the campaign is an interactive landing page that captures the essence of the whole-home approach and serves as the destination for customers to comprehensively understand the value of the energy efficiency programs. This webpage allows customers to learn more about the various programs, potential savings and energy efficiency measures they can take, as well as link to more program details. Customers can also access a library of seasonal and year-long energy saving tips and information about energy efficiency offers and rebates.

New for 2023

The participant and non-participant studies, which concluded in 2022, provided the company with valuable insights on participation trends and barriers. These studies analyzed residential program participation between 2016 and 2020, identified and compared nonparticipants to participants to model propensity scores, and conducted interviews with nonparticipants to better understand programmatic barriers and ways to address them.

The research identified key barriers to participation as low awareness of energy efficiency and its value, a lack of trust and understanding of why an energy company would engage in promoting less use of energy, and limited access to program information that meets their needs (such as availability in their language). A statewide comprehensive campaign will be deployed in 2023 to consistent message both the purpose of energy efficiency and the availability for customers.

Using lessons learned from a 2021 Spanish-language campaign that was created for fridge recycling and smart thermostats, the Company will scale its multi-cultural educational efforts through the creation of a new in-language and in-culture campaign in 2023. The goal will be to increase awareness and participation of the energy efficiency programs among multicultural customers. Initially the campaign will begin with Hispanic customers and expand to other multicultural groups. Aside from this campaign, the Company will also be more consistently sending its direct mail and emails in both English and Spanish.

The Company participated as a major sponsor at the annual Rhode Island Home Show in April 2022. Participation will be evaluated for 2023 as well.

2023 Commercial and Industrial Energy Efficiency Solutions and Programs

Table of Contents

1. Overview

The Commercial and Industrial (C&I) programs are designed first and foremost to help RI Energy's business, institutional, and government customers to save on their utility bills by reducing their energy consumption. The programs support other customer objectives as well, including sustainability goals, reducing operations and maintenance expenses, and improving air quality.

The Company continuously evaluates customer needs and market dynamics to develop program enhancements and adjust offerings to secure more comprehensive savings, improve program operating efficiency, and evolve program designs to drive market transformation across multiple end-uses. The C&I sector encompasses a diverse range of customers.

For large customers where the Company sees the greatest opportunities for cost-effective savings, RI Energy operates primarily through an account management approach. Each account manager focuses on one or more industry verticals, often supported by an implementation vendor (through the Industrial, Grocer, or Restaurant Initiative) or through a large-scale agreement (a Strategic Energy Management Plan). This enables the Company to tailor offerings to meet the needs of specific customers, apply learnings from customers operating in similar industries or facilities, and encourage repeat program participation through this relationship-based approach.

Smaller customers are served primarily through the Small Business Direct Install (SBDI) initiative. SBDI offers audits, enhanced incentives, financing, and installation services through either the Company's turnkey vendor or an alternate vendor of the customer's choice.

The Upstream program subsidizes high-efficiency equipment to encourage distributors to stock and promote this equipment. Any C&I customer, regardless of size, can benefit from the Upstream pathway simply by purchasing qualifying high-efficiency lighting, HVAC, hot water, or kitchen equipment.

The C&I sector encompasses a diverse and complex set of customers. RI Energy is focused on a Market Sector Approach for commercial and industrial programs. This approach allows the Company to address customer needs that are shaped directly by the industry and geographies in which the customers operate, and on strategic and commercial pressures specific to the industry or sector, resulting in customized solutions that fit customers' needs and increase participation in energy efficiency.

The detailed program descriptions provided in the Annual Plan explain how programs are continuously evolving, building from one plan year to the next. They translate high-level strategies into specific actions and activities that secure savings for customers and meet other goals set forth by stakeholders. The detail in this attachment is designed to allow stakeholders, the Public Utilities Commissioners and staff, and other interested parties to delve deeply into the complex interplay between specific customer and building types, program implementation and delivery, incentive design, and high-efficiency technologies.

What to look for in 2023

In 2023, the Company is focused on building a program ecosystem that supports a more diversified mix of electric measures, while harvesting remaining lighting savings, controlling program costs, and promoting equity among small business owners and within the workforce. Although the Company anticipates that lighting will continue to constitute the largest single source of electric savings in the C&I programs, its efforts are focused on driving non-lighting program enhancements that encourage deeper, more comprehensive measure adoption and build for long-term program success. There is a particular focus on high-efficiency heating, cooling, ventilation, and air conditioning (HVAC) measures, as well as controls to improve the performance of HVAC equipment.

In 2023, some highlights of the Company's efforts will be to:

- Scale up the Building Analytics initiative to help customers optimize the performance of HVAC and other systems.
- Improve technical processes by streamlining savings calculators, revisiting burdensome data collection practices, and better leveraging site visits to identify EE opportunities.
- Expand on equity efforts begun in recent years.
- Conduct targeted training activities to upskill the program delivery workforce on specific focus areas, such as HVAC, building controls and automation, and building envelope.
- Monitor and help mitigate supply chain disruptions and inflation impacts.
- Streamline the Large Commercial and Industrial New Construction pathways, required documentation, and savings calculations.
- Sunset efforts that have failed to demonstrate the potential to generate significant cost-effective savings, including the Telecommunications Initiative and various demonstrations to reduce costs and focus on efforts with greater savings potential.
- Investigate promising new measure offerings, including gas leak detection and repair.

In some cases, these are long-term investments where it may take years to realize the full benefits. For example, a more highly trained workforce can complete better system installations

for years. Likewise, Building Analytics systems can drive significant savings over time but often requires a year or more to yield results. Similarly, the Whole Building New Construction approach seeks to influence the design of buildings that take several years to complete.

The focus areas in the 2023 Plan reflect ideas and insights that have evolved in part through collaboration with the Energy Efficiency & Resource Management Council (EERMC) and its consulting team, the Office of Energy Resources (OER), and the Division of Public Utilities and Carriers (the Division), as well as program vendors, customers, and trade allies.

Although equity has historically been less of a focus for the C&I sector than Residential, it is a significant focus in this Plan, in alignment with the objective set forth in the Least Cost Procurement (LCP) standard. To that end, the Company will continue to offer robust opportunities to small businesses customers, with a specific focus on woman and minority-owned enterprises, hiring multilingual small business auditors, conducting participant surveys in multiple languages, and promoting equitable hiring practices through vendor agreements. The Company is continuing to monitor the Equity Working Group's progress and will implement new recommendations as appropriate and prudent within the C&I portfolio.

The Company has also collaborated with stakeholders to address workforce development issues in alignment with the LCP standard, which states, "The distribution company shall include wherever possible and practical partnerships with existing educational and job training entities." To meet these objectives, the Company plans to ensure contractors and engineers participating in the programs receive proper training on identification, design, and installation from manufacturers or others and encourage achievement of advanced certifications to further enhance expertise. To complement this effort, the Company will sponsor targeted training sessions to upskill the workforce in supporting high-performance buildings, including trainings on advanced controls for HVAC and lighting. These efforts are described under Cross-Cutting Programs.

Finally, this plan will be implemented in an environment of rapidly rising inflation, potentially driven by government stimulus, workforce shortages, and supply chain disruptions. According to the U.S. Bureau of Labor Statistics' most recent Producer Price Index (PPI) report (April 2022), nationwide producer prices have risen 11.0% over the past year and 16.2% since February 2020

at the outset of COVID-19.[1] Lighting, HVAC, and other distributors have reported significant price increases since the start of COVID lockdowns in February 2020. Inflation is a headwind that will reduce the portion of customer project costs covered by program incentives and lengthen project payback periods. Furthermore, growing equipment delivery timelines, compounded by workforce shortages, are causing extensive project delays – with many projects that would have been completed in 2022 pushed into 2023. This phenomenon is likely to continue for the foreseeable future. Several customers that have historically been active in the program have scaled back spending on energy efficiency and capital measures.

Commercial & Industrial Programs

There are five C&I energy efficiency programs.

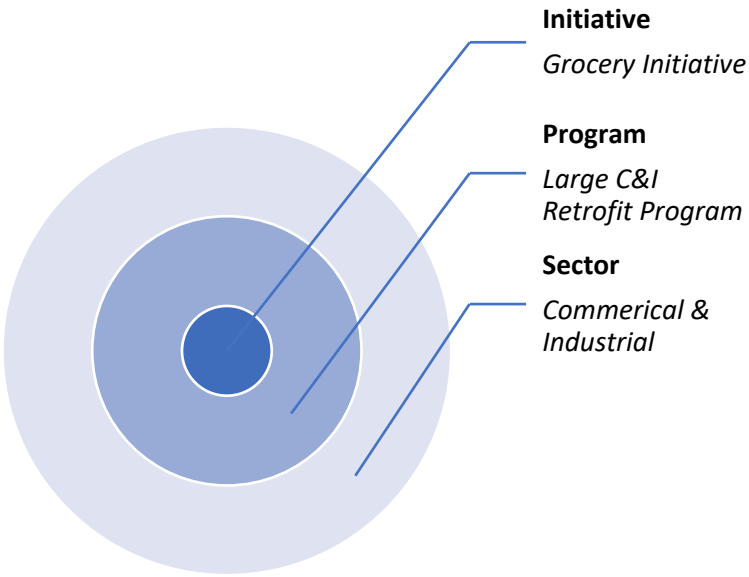
Table 1. Commercial and Industrial Programs

Large Commercial and Industrial New Construction
Large Commercial Retrofit
Small Business Direct Install
Connected Solutions (Active Demand Response)
C&I Multifamily Program

All C&I customers are eligible to participate in the Large Commercial and Industrial New Construction Program and the Large Commercial Retrofit Program. The Small Business Direct Install (SMB/DI) Program, however, is restricted to customers that consume less than 1,000,000 kWh per year. Larger and more complicated measures not offered by the SMB/DI vendor can be accessed by small business customers through the New Construction or Retrofit Programs. Within a given program, there may be one or more initiatives that offer a targeted approach or tailored delivery design to more effectively and efficiently attract and secure savings from target customers. An initiative is defined as 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. Examples include the Grocery Initiative and Industrial Initiatives, primarily within the Large Commercial and Industrial Retrofit Program (though some savings and incentive spend within these programs are captured in the New Construction Program). Anticipated savings, budgets, and participants for each initiative are included in the program-level totals.
All initiatives support both electric and gas measures, unless otherwise noted or self-evident (e.g., lighting initiatives only cover electric measures).

[1] U.S. Bureau of Labor Statistics. (2022, May). PRODUCER PRICE INDEXES – April 2022. U.S. Department of Labor. https://www.bls.gov/news.release/pdf/ppi.pdf

Figure 1. Relationship between Programs and Initiatives



This attachment provides detailed descriptions of C&I energy efficiency and active demand response programs and initiatives, including detail on the target market (customer/building types), eligibility requirements, offers, implementation and delivery, and changes for 2023, along with the rationale for changes, in a standardized table format.

Enabling strategies for efficient delivery, better customer experience, and participation in energy efficiency programs are covered in the Finance and Marketing sections. Workforce development is addressed in the main text and covers initiatives for training, education, and awareness. A list of measures and incentives can be found at the end of this Attachment. The Company will continue to engage in pilots, demonstrations, and assessments; please refer to Attachment 8 for a detailed scope and list for each pilot, demonstration, and assessment proposed for the 2023 Energy Efficiency Plan.

Financial mechanisms structures are described in section

Figure 2. Financial Mechanisms Structure

Customer type	This section highlights the customer consumption in kWh or customer type for which the mechanism is best suited
Loan size	Shows maximum loan size
Maximum Tenor	Shows the maximum length of time for which a customer can borrow funds

Loan Volume	Shows the dollar volume of loans outstanding or the range of funds borrowed in the past years or both
Benefits to customer	Describes the benefits of a mechanism to a customer
Limitations	Describes the limitations of a mechanism to a customer
2023 Actions	This area is included for EBF and C-PACE as the Company is working with RIIB and others on these mechanisms
More information	This area describes where more information can be found on the mechanism such as numeric tables. This area may also include additional information such as justifications for OBR fund injections (gas) or OBR rightsizing (electric)
Relevant notes	This area contains notes and will vary from mechanism

2. Large Commercial and Industrial New Construction Program

2.1. Offerings

The services and incentives offered are designed to promote and support high performance building design, equipment selection, and building operation. This program offers both technical assistance and financial incentives based on projected energy savings performance to incentivize building beyond the current RI program energy baseline. Technical assistance ranges from simple plan review and efficiency upgrade recommendations to complete technical reviews. Incentives are available for building owners, design teams, post occupancy verification, and Zero Net Energy certification and verification.

The Large Commercial and Industrial New Construction Program offers four pathways for ground up new construction or major renovation projects which were introduced in 2021. In 2023, the Company will consolidate and simplify the structure described below, as described below under Changes for 2023.

- **Path 1: Zero Net Energy Ready**
- **Path 2: Whole Building Energy Use Intensity Reduction**
  These two paths are based on achieving energy use intensity (EUI) project goals and are suitable for projects that engage early in the schematic design process.
- **Path 3: The Whole Building Streamlined**
- **Path 4: Systems Approach**

These pathways support projects that are in the design development stage and incorporate energy efficient equipment and energy conservation measures (ECMs).

Table 2. Requirements for Large Commercial and Industrial New Construction Pathways

Zero Net Energy Ready	Achieve 28 EUI or lower	Over 20,000 Square Feet
Whole Building Energy Use Intensity	Achieve 10% better than RI Baseline EUI	Over 50,000 Square Feet
Whole Building Streamlined	Custom and Prescriptive ECM measures	20,000 to 100,000 Square Feet
Systems Approach	Prescriptive rebates for installing energy efficient equipment and measures	No Square Foot requirement

Zero Net Energy Ready

This path provides building owners and design teams with energy efficiency expertise and financial incentives to help achieve a very low EUI and Zero Net Energy Ready projects. This path focuses on EUI outcomes during design modeling and in post occupancy. To qualify, the planned building must include a minimum of 20,000 square feet of heated and cooled spaces, commit to achieving an EUI of 28 or less, engage RI Energy before 50% Schematic Design, and commit to commission the completed building. An exception to the EUI of 28 or less requirement may be sought based on the type of building or hours of operation.

Whole Building Energy Use Intensity Reduction

This path is based on achieving EUI project goals and is suitable for projects that engage before the end of design development. Buildings over 50,000 square feet (mid- to large-size building) are eligible. This pathway provides energy efficiency expertise to building owners and design teams early in the design process. Technical assistance supports setting aggressive EUI targets and providing financial incentives to meet the EUI goals. To be eligible for incentives in this pathway, projects need to achieve a minimum 10% EUI reduction from the RI baseline. The RI baseline for 2023 will be based on the current RI building code.

Whole Building Streamlined

This pathway provides design teams and owners energy efficient expertise in selecting the most cost-effective energy conservation measures for small- to mid-sized buildings that are early in project design. This pathway is targeted at buildings of 20,000 to 100,000 square feet. Incentives are provided based on savings achieved by the energy saving measures implemented (Custom and Prescriptive measures). A whole building spreadsheet analysis tool is used to estimate energy savings and incentives early in the project.

Systems Approach

This pathway provides incentives to building owners for incorporating energy efficient equipment into buildings less 20,000 square feet, for major renovations that do not include the entire building (e.g., tenant fit outs), or for customers that lack the resources or appetite to pursue the whole building approach. This pathway aligns with the state's Commercial Stretch Code, including providing incentives and technical support to projects pursuing this goal.

2.2. Initiatives Primarily Targeting Large C&I New Construction

Performance Lighting Plus

Any customer with a commercial meter is eligible to participate in this initiative. All projects that qualify under this incentive must:

- Be a new construction or renovation project that includes the installation of new LED light fixtures and qualifying lighting controls for commercial, industrial, educational, or municipal building(s).
- Be a code-dependent project or extensive/substantial renovation.
- Average a minimum of 2,000 lighting operating hours per year (before controls).
- Provide maintained light levels in accordance with the recommendations of the Illuminating Engineering Society of North America's 10th Edition Lighting Handbook or supporting Design Guides.

Objectives of this initiative are to:

- Move the market forward for luminaires and systems with additional savings and capabilities.
- Increase the deployment of demand responsive lighting.
- Performance Lighting may also be utilized in Retrofit applications as well. Please see the Retrofit portion of this attachment for more details.

Performance Lighting Plus incentives are offered in two tiers.

<u>Tier 1 – LED lighting with Luminaire Level Lighting Controls or Wirelessly Accessible Controls</u>

This pathway offers an incentive of $0.55 per gross kWh saved greater than 40% below code for the building or space type and must meet the following requirements: 80% of lighting project load must be controlled LED fixtures (listed in the Design Lights Consortium (DLC) Qualified Product List or RI Energy approved by the Company), with all controlled LED fixtures wirelessly accessible to initialize, configure, and commission. Individual fixture addressability and luminaire level lighting control (LLLC) as outlined by DLC is optional. The project must include and demonstrate a minimum of one control strategy per fixture and two different control strategies

at the project level (e.g., occupancy, daylighting, or task tuning/high-end trim). If luminaires are not LLLC, RI Energy will consider "room based" controls on a case-by-case basis.

Tier 2 – LED Fixtures with Networked Lighting Controls System

This pathway offers an incentive of $0.85 per gross kWh saved greater than 40% below code for the building or space type and must meet the following requirements: 80% of project load must utilize a networked lighting control system, as defined by DLC. The system must be capable of energy monitoring and demand response, as defined by DLC. The customer must provide a control narrative for the system with a minimum of two different control strategies at the project level (e.g., occupancy, daylighting, task tuning/high-end trim, and it must be fully commissioned with reporting. RI Energy recommends that these systems demonstrate demand response capability.

RI Energy has worked with the consultants to the EERMC to alter incentives and requirements to encourage the adoption of luminaires and systems that offer greater savings and control flexibility. In addition, the incentives have been restructured to increase transparency to vendors, allowing for increased participation. The incentives and requirements are modeled on a successful offering in Connecticut.

Products Offered Through "Upstream"

When the Company refers to an "Upstream" initiative it is referring to the practice of offering an incentive directly to a manufacturer or distributor (mainly distributors in Company initiatives) of efficient equipment instead of offering an incentive to the customer through an application form after the sales transaction has been made. This allows them to sell the product for less and make it more appealing to a potential customer. It also allows the customer to acquire this more efficient equipment without the burden of paperwork and waiting for reimbursement.

The **Upstream HVAC initiative** is available to all C&I customers. Discounted premium efficiency HVAC equipment and controls at the point of sale at qualified distributors including air-cooled air conditioning and heat pumps systems, water-cooled air conditioning and heat pump

The **Upstream Gas initiative** is available to all commercial customers. Discounted premium efficiency water heating equipment at the point-of-sale through qualified distributors. The 2023 initiative will include water heaters (indirect and on-demand), water heating boilers, and condominium water heaters.

The **Upstream Kitchen Equipment initiative** is available to all commercial customers. Discounted premium efficiency electric and gas kitchen equipment at the point of sale at qualified distributors. RI Energy currently offers more than 9 different types of energy efficient cooking equipment across both fuels.

The **Upstream Lighting** initiative is available to all commercial customers, primarily focused on Retrofit. Discounted luminaires, luminaires with controls, lamps, and controls at the point of sale at qualified distributors.

All Upstream products follow a similar implementation and delivery process. RI Energy targets marketing to relevant customers and works in collaboration with qualified distributors, who also conduct marketing. Distributors sell products directly to consumers or relevant intermediaries (e.g., electricians) and provide discounts at the point of sale. The distributor then submits data on the purchase and the Company pays the incentive to the distributor and conducts quality control visits.

2.3. Eligibility

The New Construction Program is divided into two main categories to address the two primary new construction target markets: those pursuing ground-up new construction and major renovations, and those investing in new equipment and major systems upgrades.

New Buildings, Additions, Major Renovations and Tenant Fit-Ups

This is specifically for projects that are ground up new construction or major renovations, all of which traditionally involve some level of design and are governed by code.

End-of-Life Replacements

Typically, there is no design component to these projects. Customers purchasing new energy-consuming equipment or replacing equipment that has reached the end of its useful life are incentivized to purchase and install energy efficient equipment. Customers are encouraged to make efficient choices with every category of equipment purchase. Baseline energy use is considered to be the energy code or industry standard practice where applicable. Savings are calculated using the baseline. Where equipment has reached the end of its life, savings from new measures are calculated not from the old equipment, but assuming all new equipment against the current codes and standards baselines. This works the same way as the "systems approach" described below, whether through prescriptive or custom pathways.

2.4. Implementation and Delivery

Zero Net Energy Ready

The Company's implementation team, which includes vendor support, reaches out to potential customers and design teams that may be interested in building to a Zero Net Energy (ZNE) Ready standard. After vetting a project to ensure that it meets the program requirements, a ZNE expert is brought in to assist the customer in assessing the project and identifying services that may be needed to achieve the ZNE goal. The ZNE consultant will be

engaged by the customer, with the fee cost-shared between RI Energy and the customer. The ZNE consultant is engaged from early in the project through the end of design development. The consultant provides services such as EUI benchmarking to help set EUI targets, conducting an energy charrette, load reduction analysis, and HVAC selection analysis and model feedback.

The customer signs the program memorandum of understanding (MOU). Incentives are paid to the customer in two payments: the construction incentive and the post occupancy incentive. The first customer incentive payment (as well as any design team incentive) is paid based on review of the design teams' model and verification that the design achieves an EUI of 28 or less (or the expected EUI target if there is a special exception). The second customer payment is available when one-year post-occupancy data demonstrates the building is achieving the target EUI, confirming that the building is performing as designed. Prior to the post occupancy payment, the customer must provide verification that the enhanced commissioning and envelope commission have taken place. The ZNE certification fees are reimbursed when a project becomes ZNE certified. An optional verification incentive is offered to help customers identify and correct issues that may arise after construction to help achieve the target EUI during building occupancy.

Whole Building Energy Use Intensity Reduction

The RI Energy EE implementation team reaches out to customers, owners, and developers regarding new construction project opportunities. If the customer decides to participate in energy efficiency programs, the Company's team engages with the customer project design team and facilitates a design charette to establish customer project goals. Based on the project goals, an EUI target range is established, and a technical assistance (TA) vendor is engaged to model the baseline project and proposed design project. The customer then signs a MOU that outlines the EUI target that is included in the project documents and the post occupancy EUI verification plan and the other incentive details. An application including the energy conservation measures and systems agreed upon is signed by the owner. The owner commits to implement the efficiency recommendations and accepts the associated incentives. A Minimum Requirements Document (MRD) created by the RI Energy engineer is created as part of the application process. The RI Energy sales team remains engaged during the design development and construction process to ensure energy efficiency measures and solutions are incorporated in the building projects to achieve the EUI targets. After completion, the project undergoes a post inspection that includes a visual inspection and review of construction design submittals. If there are any HVAC controls or variable load ECMs that have been incorporated in the project, field measurements are required to verify operation standards, as described in the Minimum Requirements Document. The EUI measurements are then monitored over a prescribed period,

under the prescribed conditions, before final incentive payment is made based on the savings achieved. An optional verification incentive is offered to assist customers in identifying and correcting issues that may arise in the first year of occupancy to help achieve the EUI. Verification documents must be submitted to obtain the optional verification incentive.

Whole Building Streamlined

The RI Energy implementation team contacts customers engaged in building new facilities. (Occasionally, the sales team may be approached by the design team regarding a new building project.) If the project meets the path requirements (buildings ranging from 20,000 to 100,000 square feet), a technical vendor is brought in at no cost to the customer to conduct an energy charrette and provide feedback on the building design to increase the project's energy efficiency. An MOU is signed. The technical vendor monitors the design progress and provides an estimate of energy savings and incentives at a mid-design review. A final technical report is provided at design completion that details the project savings and incentives to develop the incentive application and MRD. Once the building has been built, the customer and design team incentives are paid upon construction and MRD verification.

Systems Approach

The RI Energy implementation team approaches customers, building owners, and owner representatives regarding new construction or major renovation projects. When a customer decides to move forward with a project, the customer has a choice to use their vendor of choice to install measures or to develop the project with technical assistance from the RI Energy team. Once the project is installed, the project undergoes inspection of installed measures and review of design submittals. Incentives are paid out to the owner on documented savings from the project.

2.5. Changes for 2023

At the time of this writing, RI Energy and its consultant have begun evaluating the program's four-pathway structure. Although the structure above describes the current pathway, the Company is exploring the possibility of consolidating the program into two separate pathways beginning in 2023. The goal is to simplify the process for customers seeking to participate. Originally, the pathways were designed to serve both the Massachusetts and Rhode Island markets, however, the new proposed structure is designed specifically for the Rhode Island market, with few buildings greater than 100,000 square feet, and thus little need for a separate program to serve this size class.

The Company also intends to revise the memoranda of understanding (MOU's), reduce the number of forms requiring signature, and streamline the technical assistance (TA) study

process to reduce the time and cost required to participate. The recommendations would be to combine Path 1 with Path 2 to create a single EUI-based pathway, as well as combining Path 3 with 4 to create a pathway with incentives directly based on savings. Both pathways would contain multiple tracks. The tracks in the EUI-based path would be based on building type, while the tracks in the savings-based path would be based on project design phase.

2.6. Other Considerations

Customer Feedback

Customer feedback is gained through implementation team interactions with customers and design teams, who regularly provide insights on what types of technical assistance and design support moves builders, architects, and customers to adopt the high-efficiency measures and design practices.

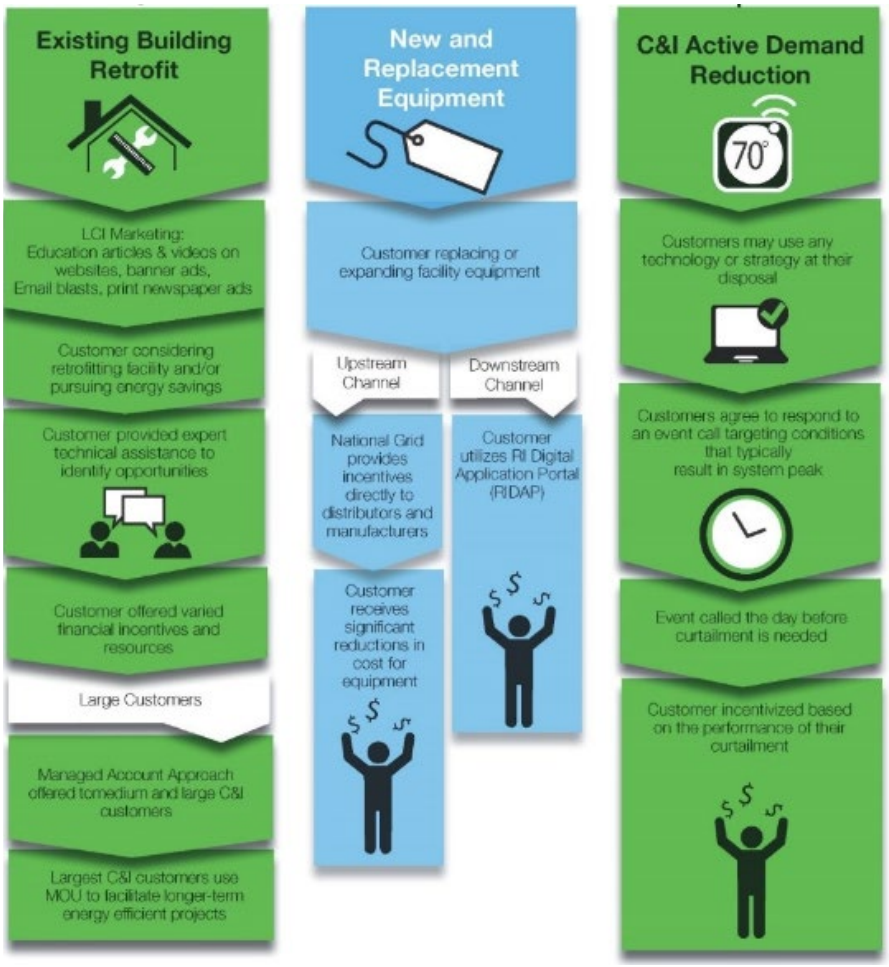
Market Characterization

The Company leverages municipal electronic permitting information (subject to this data being easily and broadly accessible) to identify trends and better characterize the State's C&I new construction market.

3. Large Commercial Retrofit Program

The figure below describes the pathways through which the Company delivers programs to existing buildings.

Figure 3. Large Commercial Retrofit Program (Existing Buildings)



3.1. Offerings

The Company has several pathways by which customers can participate in the Large Commercial Retrofit program for energy efficiency in existing buildings. Customers can participate via the:

- **Prescriptive application** process;
- By working with a RI Energy Sales Representative or a Project Expeditor (PEX) to complete a **Custom application** for any energy improvement that is not covered by the Prescriptive pathway; or
- Via the **Upstream program** for Lighting (described with other Upstream products under New Construction).

The Retrofit program also offers initiatives targeting specific market segments, such as the grocery and industrial initiatives that focus on specific needs of that customer type. The Company also serves some of its largest customers through Strategic Energy Management Plans (SEMPs). These are described in more detail below.

The Company has found that although sector specific initiatives and SEMPs are helpful in gathering more savings and completing measures beyond lighting, they do not cover our entire customer base. The following areas that are specific to a technology or do not address a specific market sector are also included as part of the Large Commercial Retrofit program and are included in this section of the plan:

- Building Operator Certification
- Equipment & System Performance Optimization
- Performance Lighting
- Customer Owned Streetlights
- Company Owned Streetlights
- Combined Heat and Power (CHP) and Fuel Cells

3.2. Initiatives Primarily Targeting Large Commercial Retrofit

Industrial Initiative

The Industrial Initiative offerings are available to all manufacturing and industrial customers. The following assistance and incentives are provided under the Industrial Initiative: technical assistance; project management; measure incentives; installer and customer educations sessions; monitoring-based commissioning; production systems and line efficiency coordination; and support in identifying and implementing process-related energy efficiency improvements that increase the efficiency of both energy use and business processes.

The initiative will continue to expand outreach to customers in the 200 to 400 kW range to encourage greater participation by small- and medium-sized industrial customers. Historically, the Industrial Initiative has primarily targeted large C&I customers to ensure economies of scale. Expanding outreach to mid-sized customers will improve parity among customer sizes and may capture projects with rapid paybacks.

The Industrial Initiative has helped diversity the Electric portfolio, with 66% of electric savings from 2016 to 2020 deriving from non-lighting measures, especially compressed air (17%), process (15%), HVAC 14%, and motors & drives (9%) – as well as contributing significant Gas savings.
The Industrial Initiative offerings are available to all manufacturing and industrial customers. The following assistance and incentives are provided under the Industrial Initiative: technical assistance; project management; measure incentives; installer and customer educations sessions; monitor-based commissioning; production systems and line efficiency coordination; and support in identifying and implementing process-related energy efficiency improvements that increase the efficiency of both energy use and business processes. The ability to participate in the Strategic Energy Management Demonstration, now called the Continuous Energy Improvement demonstration, has been offered to industrial and manufacturing customers since 2019. These customers will continue to be able to participate through 2022, the final year of the demonstration. Please refer to Attachment 8 for details on the demonstration, which is implemented by a separate vendor from the Industrial initiative. The initiative will expand outreach to customers in the 200 to 400 kW range to encourage greater participation by small- and medium-sized industrial customers. Historically, the Industrial Initiative has primarily targeted large C&I customers to ensure economies of scale. Expanding outreach to mid-sized customers will improve parity among customer sizes and may capture projects with rapid paybacks. Since 2016, the Industrial Initiative has helped diversity the Electric portfolio, with 66% of electric savings from 2016 to 2020 deriving from non-lighting measures, especially compressed air (17%), process (15%), HVAC 14%, and motors & drives (9%) – as well as contributing significant Gas savings.

Grocery Initiative

EnergySmart Grocer (ESG) is an initiative that serves commercial customers who sell food at the retail or wholesale level. ESG offers technical assistance, project management, targeted incentives, financing, and education sessions for installers and customers. This initiative primarily delivers electric savings through lighting and refrigeration upgrades. In 2022, the vendor's compensation structure was altered to encourage greater emphasis on non-lighting measures.

In 2022, the Company collaborated with its vendor to conduct an assessment investigating the energy and carbon reduction benefits of integrating leak detection and repair as a standard offering. At the time of this writing, the Company anticipates the assessment will be completed in 2022, at which point a determination will be made whether to include this as a standard offering. Typically, refrigerant leak surveys are only performed when leaking refrigerant is visible to the naked eye or identified as a problem by the customer.

National and Regional Restaurant Initiative

The Serve Up Savings (SUS) initiative serves regional and national restaurant chains not currently engaged with SEMP Agreements. Restaurants with multiple locations within Rhode Island only will be served by the Small Business Program. Technical assistance, project management, incentives, collaboration with franchisors to develop a package of efficiency measures that will work for their franchisees. The Company's vendor regularly collects insights and feedback from customers. RI Energy's sales team and program managers regularly check in with vendors to capture this feedback.

Telecommunications Initiative

This initiative was designed to serve mobile, fiber optic, and cable data companies and their associated infrastructure. It offers technical assistance, project management, and incentives to these customers. This initiative began delivering audits and reports to customers in Q1 2021, with a focus on identifying HVAC measures in particular. Given the mixed success of the program in building a pipeline or securing savings thus far, the Company is exploring the possibility of terminating this initiative and eliminating the associated costs. If this were to take effect, Telecommunications customers would still be served through other pathways, potentially including the Industrial Initiative.

Strategic Energy Management Plans (SEMP)

The Strategic Energy Management Plan (SEMP) Initiative is available to the Company's largest C&I customers. These partnerships offer an integrated package of technical, financial and program management support to drive broader and deeper energy savings. This initiative targets customers that commit to achieving deeper energy efficiency savings, have sufficient in-house sophistication to make organizational changes to incorporate multi-year energy planning, and are motivated by corporate and institutional sustainability goals.

The SEMP Initiative provides customers with customized support and flexibility to address the energy efficiency and sustainability opportunities of the organization and its facilities in the context of the Company's self-identified business needs. Working with a SEMP provides the customer the opportunity to think long-term about their energy needs and equipment, resulting

in more comprehensive savings compared to traditional energy efficiency programs. Where appropriate and valued by the customer, automated benchmarking is available to help demonstrate the impact of energy efficiency at these facilities.

The Company has existing SEMP agreements in place with customers that operate in the following sectors: Colleges and Universities, Chain Restaurants, Health Care, Industrial, Municipal and State Government.

In 2023, the Company will continue to partner with these large customers to meet shared energy efficiency and sustainability goals, while expanding the scopes of these agreements to include other customer programs, such as demand response and clean transportation. The Company will continue to partner with OER's Lead by Example program to achieve energy savings goals with public entities, including state agencies, state colleges and universities, and municipal buildings.

Building Operator Certification

RI Energy sponsors Building Operator Certification (BOC) classes for facility engineers and maintenance staff. This training helps these operators to make their buildings more comfortable and efficient. Many participants follow up BOC training by actively seeking out energy efficiency solutions at their facilities.

Equipment & System Performance Optimization

The Equipment & Systems Performance Optimization (ESPO) Initiative is available to all C&I customers averaging greater than 2,000 building operating hours a year. ESPO helps customers optimize the efficiency of their HVAC, refrigeration, compressed air, and steam systems. This may include retro-commissioning (RCx), operations & maintenance (O&M), and monitoring-based commissioning (MBCx). ESPO is a means of capturing savings and may be delivered through other initiatives (such as the State SEMP or Industrial Initiative). This initiative covers several technologies and end-uses identified in the Market Potential Study, including boilers (steam and hot water), waste energy recovery, refrigeration, scheduling and set point optimization, energy management systems, and rooftop units.

ESPO provides multiple pathways for participation depending on the customer's energy efficiency opportunity, building characteristics, and the sophistication of existing control systems:

Low-Cost Tuning offers prescriptive incentives to customers for systems in need of common tuning measures. These measures are often identified through facility audits or retro-

commissioning efforts, which can also serve as vehicles to identify additional efficiency measures. Pre-approval for implementation had been required before the customer or outside party can receive an incentive on the installation. The Company is developing guidelines for documenting baseline conditions to enable program participants to implement some Low-Cost Tune-Up measures without pre-approval. Incentives are provided to sites where the baseline condition and proposed upgrade are documented through a simple data input, which is used to determine savings at the measure level. Only selected HVAC, steam, refrigeration, and compressed air measures are eligible for prescriptive incentives. Customers participating in the two other ESPO pathways described below may opt to apply for Low-Cost Tuning incentives, eliminating the need to submit custom savings calculations.

Targeted Systems and Whole Building & Process Tuning offer a custom RCx approach. Targeted Systems Tuning offers an in-depth investigation of specific process or end-use. The Whole Building and Process Tuning pathway offers a comprehensive approach to RCx for customers with a functional control system in place and electric usage greater than 5,000,000 kWh annually. Investigation funds are available for System Tuning and Whole Building & Process Tuning. Incentives are offered per unit of savings for measures implemented through this pathway, with higher incentives available for meeting certain site-specific thresholds.

MBCx is a process intended to maintain and continuously improve building performance over time achieved through monitoring and analysis of large amounts of data. Also known as real-time energy management, this approach requires the installation of a software platform and monitoring equipment that captures and analyzes operational data from a facility's building automation system. Larger systems may continuously monitor hundreds of control points within a building. MBCx systems can provide fault detection and diagnostics capabilities, meaning building operators can find equipment that is not operating as intended due faulty programming, current settings (e.g., scheduling or setpoints), damaged equipment, or simply systems in need of maintenance. The MBCx pathway is similar to the Whole Building and Process Tuning approach in that most savings calculations are custom; however, this pathway assumes that identified measures will persist for at least three years.

Building Analytics is a new initiative that at the time of this writing the Company anticipates will launch in the second half of 2022, with customer recruitment and savings ramping up in 2023. This initiative will fund system set-up costs for MBCx systems from a closed qualified service provider (QSP) list. This structure will address the historical barriers to MBCx adoption, including:

- Up-front support for installation of systems that produces unknown savings.

- Identifying sites that would benefit from MBCx.
- Vetting best-in-class providers and recommending them to the specific customer base each provider is best able to serve.
- Minimizing program transaction costs to customers and providers through an implementation vendor with expertise in this niche field, working with a limited pool of QSPs, and providing up-front guidance on savings calculations and required documentation.
- Selection of vendors that, in most cases, provide ongoing service analysis to help customer facilities staff interpret MBCx system output and improve system functionality.
- Improving measure persistence through long-term service contracts, training for facilities staff, and a focus on long-lasting measures like physical repairs and reprogramming of control systems.

The Company is working to standardize the process of completing and documenting RCx savings calculations and classifying different measure types. This should assist customers and trade allies participating in the MBCx and System and Whole Building pathways. Calculating savings and classifying RCx and controls measures has posed a significant challenge for ESPO participants and created an administrative burden for program implementation staff. The guidebook will answer common questions and eliminate points of confusion.

Program staff have suggested that unit ventilators and other gas measures located in school classrooms and other occupied zones (as opposed to heating and cooling equipment located in mechanical rooms) frequently need significant tuning or repairs. This may be an excellent opportunity in schools.

Energy Management Systems (EMS) show the second-highest savings among Electric non-lighting measures in the Market Potential Study. Although ESPO is designed to improve the performance of existing systems, MBCx and Tuning investigations very often lead to the installation of new EMS equipment or reprogramming of controls treated as an EMS for program purposes (New Construction or Retrofit, depending on the situation).

Performance Lighting

Any customer with a commercial meter is eligible to participate in this initiative. All projects that qualify under this incentive must:

- Average a minimum of 2,000 lighting operating hours per year (before controls).

- Provide maintained light levels in accordance with the recommendations of the Illuminating Engineering Society of North America's 10th Edition Lighting Handbook or supporting Design Guides
- The Customer must submit a copy of the Manufacturer's technical specification sheets ("cut sheets") for each type of eligible equipment to be purchased.

Incentives will be offered in two tiers: Tier 1 – Performance Lighting – LED lighting with Luminaire Level Lighting Controls or Wirelessly Accessible Controls and Tier 2 -Performance Lighting – LED Fixtures with Networked Lighting Controls System.

Lighting Designer Incentives (LDI) are offered to lighting design teams for qualifying Performance Lighting projects at both new and existing buildings. RI Energy maintains a list of qualified Lighting Designers, as well as Engineers and Architects who have demonstrated at least 5 years of lighting design experience. RI Energy markets the program to the construction and design community. Lighting designers cannot sell products for the project that they are receiving LDI.

The Lighting Designer must have at least one of the following qualifications:

- Lighting Certified (LC) – granted to those who successfully complete the NCQLP (National Council on Qualifications for the Lighting Professions) Lighting Certification Examination
- CLEP – certification from the Association of Energy Engineers (AEE);
- IALD – International Association of Lighting Designers Professional Membership status
- CLD – the IALD sponsored Certified Lighting Designer, certification.

Guidelines related to the LDI incentive:

- This incentive goes directly to the lighting design team to fund their efforts to achieve lighting energy savings while maintaining quality lighting design.
- LDI equals 20% of the customer lighting incentive for Performance Lighting Tier 2 projects, 15% of the incentive for Performance Lighting Tier 1 projects, and 10% of the incentive for all other projects.
- There is a $15,000 maximum per project.

These incentives have been recalibrated to encourage projects to achieve higher tiers in Performance Lighting.

Customer-owned Streetlight Equipment

The customer owned LED streetlighting initiative is available to any city or town in Rhode Island serviced by Rhode Island Energy for electric service on the Customer Owned Equipment S-05 tariff (Rate S-05), as well as fire districts, municipal water utility boards, Kent County Water Authority, Rhode Island Commerce Corporation, Narragansett Bay Commission and the State of

Rhode Island. Incentives are available for qualifying LEDs and/or controls associated with either the dimming or part-night run hours as set forth in the streetlighting tariff.

Company-owned Streetlight Equipment

Eligibility for the incentive for company owned LED streetlighting is dependent on service on the 3 unmetered streetlight tariffs, S-06, S-10 and S-14 with exchange of an existing roadway or post-top style, Incandescent, Mercury Vapor or High Pressure Sodium Vapor sourced luminaire to one of the Company's LED offerings. The tariffs allow LED street or post-top fixtures to be available to all customer groups. All company owned street and area lights are operating at a dusk-to-dawn schedule.

Combined Heat and Power

Eligibility

To qualify for a Combined Heat and Power (CHP) energy efficiency incentive, a proposed project must meet the following conditions:

- Host customers must be in the franchise service area of the Company.
- Proposed systems must either be (i) thermal leading and sized so the recoverable heat can be used to offset other facility thermal loads and generate electricity as a by-product, or (ii) electric load following and meeting a total system efficiency greater than 60%.
- Both new construction and retrofit installations are eligible; in either case, the baseline system must be documented.
- The overall minimum total system efficiency of the proposed CHP units must be 60% or greater, unless the system uses at least 25% opportunity fuels, renewable natural gas, or biogas as its fuel, in which case there is no minimum system efficiency requirement. System efficiency is calculated as Annual Useful Energy/Annual Natural Gas Input where

  *Annual useful energy = Net Annual kWh*3,413/100,000 + utilized thermal output (therms)*

  Annual natural gas input = CHP gas input in therms (HHV)

- The equipment to generate electricity may be an internal combustion engine, gas turbine engine, steam turbine, or fuel cell, and the facility will capture waste heat for use in the facility.
- For systems greater than 250 net kW, projects must reduce carbon emissions related to overall site energy use by a minimum of 25%, which may be achieved through other simultaneous EE installations.
- The project must pass cost effectiveness screening.

In order to support Rhode Island's climate objectives while still promoting CHP, for 2023 the Company proposes the following changes which are reflected above.

1. Total system efficiency must be greater than or equal to 60%

2. Back pressure and extraction turbines are no longer eligible

3. For systems greater than 250 net kW, eligibility for incentives will be available to only those CHP projects that reduce carbon emissions related to overall site energy use (including source generation, even if out of state) by a minimum of 25%; the amount of carbon reductions may be achieved through other simultaneous EE installations to achieve the site carbon reduction goal. In this way, long term investment in larger fossil fuel generation facilities would be offset by deep reductions in consumption.

Offerings

If a project has been shown to be cost effective, presents no capacity or reliability concerns, and has met the required eligibility criteria, it will be eligible for a non-variable incentive. [2]

Table 3. Determination of Non-Variable Incentive Level for CHP Projects

SYSTEM	INCENTIVE <= 250 kW	INCENTIVE > 250 kW and reducing carbon footprint of site by 25% or more
CHP with total system efficiency ≥60%	$1,000 per net kW	$1,000 per net kW
CHP that utilizes more than 25% opportunity fuels, renewable natural gas, or biogas as the fuel source	$1,250 per net kW	$1,250 per net kW

For the purpose of determining the non-variable incentive level, the Company has defined opportunity fuels, renewable natural gas and biogas as gaseous fuels derived from the biological breakdown of waste.

[2] If CHP facility sizing is determined by electric load (or not constrained by either electric or thermal load), the requirement will be 5% of electric usage; if the facility sizing is determined by thermal load, the requirement will be 5% of thermal energy usage. The energy efficiency measures will themselves be eligible for incentives and are not part of the CHP incentive package cap described.

The CHP system costs must include: all system, auxiliary, and interconnection costs, and CHP maintenance. If the CHP system is receiving a tax credit or other financial arrangement that reduces the cost of the CHP project to the customer without distributing that cost reduction as an additional cost to other electric or gas ratepayers, it may be treated as a credit against the cost of the CHP project.

The CHP incentive package cap from the Company will be 70% of the total project cost inclusive of the installation incentive, incentives related to gas service, present value of any performance incentive, system reliability procurement incentive, and any other incentives related to the transaction. For new construction installations, the incentive cap will be 70% of the incremental cost difference between the cost of what would have been done absent the CHP project and the cost of the CHP project. In the event the incentive is greater than 70% of the total project cost, the incentive amount will be reduced to an amount equal to or less than 70%. A minimum of 20% of the energy efficiency incentive payment will be held until commissioning is completed.

An additional optimal operations and maintenance energy efficiency incentive capped at $20/kW-year ($1.66/kW-month) and $50/kW-year ($4.16/kW-month) for systems utilizing biogas will be offered as part of the incentive package for any project with a net output greater than one MW for a period of up to 10 years. No payments will be made until the unit is in operation and provides demonstrated load reduction. The optimal operations and maintenance energy efficiency incentive will be made semiannually based on actual metered load reduction. Load reduction performance will be based on the net daily metered kW output of the system during ISO-New England's on-peak periods averaged over each six-month period.

The optimal operations and maintenance energy efficiency incentive provides the customer with a post-commissioning incentive for maintaining or increasing the total system efficiency of the CHP system. This helps ensure the system is operating efficiently and that the system capacity savings are in-line with those bid into the ISO-NE Forward Capacity Market.

The customer will repay a portion of the incentive to the Company if the project is abandoned, removed from the premises, sold, or otherwise no longer utilized as the primary source of heat and electricity by the customer, within 10 years from the date of final incentive payment authorization. The repayment will be the energy efficiency installation incentive times the number of years remaining until the required ten years of service divided by ten.

Identification and Recruitment of Qualified CHP Projects

The Company currently works with vendors and customers to identify CHP opportunities at customer locations. The Company promotes CHP systems and outlines the process for qualification and implementation of CHP facilities through the Company's energy efficiency programs. The Company has sales and technical staff that are the primary points of contact for customers and vendors with potential CHP projects. The Company will continue to communicate criteria for CHP assessment and will communicate to vendors so that their presentations to customers will be more consistent with Company technical assistance requirements.

Large Commercial Retrofit Program

Targeted Outreach and Support for Potential CHP Customers

The CHP offering is available for small, medium and large customers. The Company also works with TA vendors that provide assistance in identifying and executing CHP projects. In addition, the Company works with CHP vendors to offer RI customers smaller CHP units where installation and operations are turn-key. Other strategies that will enhance CHP acceptance will also be considered, such as: preparing and distributing case studies, providing customer plant operator training depending on the size and complexity of the system and whether the management of the system will be outsourced, and providing easier customer access to CHP unit performance data.

Installation of Incremental or Additional Energy Efficiency Measures for Customers who have Previously Installed CHP

The Company will individually review the installation of proposed incremental energy efficiency measures for customers who have previously installed CHP on site or who are adding additional energy efficiency equipment that might affect the performance of an existing CHP unit. The Company will carefully categorize and protect the benefits attributed to previously installed CHP projects, while at the same time foster any additional cost-effective energy efficiency measures that further reduce total energy use.

There are two types of project categories. The first category is “CHP Optimization” and involves measures which are installed with the purpose of increasing the output or operating efficiency of the existing CHP or other distributed generation (DG) unit; for example, the addition of combustion air precooling on a gas turbine CHP unit. In order to maintain compliance with ISO-NE’s FCM rules, such projects will be tracked in the FCM, if applicable, as incremental output of the associated DG facilities. The second category is “Incremental EE”, which includes “traditional” energy efficiency measures installed with the intent of reducing energy consumption in sites that have previously installed CHP. These measures may or may not affect CHP performance and output.

For locations where an existing CHP unit covers a large percentage of the total load at the facility, additional energy efficiency savings measures installed may result in lowering the output of the CHP system instead of a load reduction on the Company’s electric grid. Therefore, to assess savings that can be claimed by the energy efficiency programs, hourly load mapping may be required to accurately assess the net savings on the Company’s electric and gas distribution systems, which will be assessed at the Company’s electric and/or gas revenue meters at the customer’s site. In cases where a typically electric measure (like lighting) reduces the electric load enough to require reducing the CHP output, gas savings

may result from a normally electrical energy efficiency measure and could be claimed in the Gas utility DSM programs.

Scoping Study/Qualification

The Company will offer technical assistance on CHP projects beginning with a preliminary scoping of a potential site. This scoping will be based on an evaluation of:

- Monthly (or hourly, where available) electric, gas, and other fuel usage
- All site-specific forms of thermal energy end-uses
- Coincidence of electric and thermal loads
- Proposed project cost
- A high-level analysis of the fuel resources needed for the project and any actual or anticipated fuel capacity constraints and/or actual or anticipated fuel reliability issues

This scoping will determine if further study of the site appears favorable, i.e., provides CHP operating hours and load factors that would be an appropriate application of CHP.

Technical Assistance Study

Assuming a favorable screening during preliminary scoping, Rhode Island Energy will offer to co-fund a TA study of CHP with the customer. The TA study will be performed by an independent, qualified engineering firm. This study will assess thermal and electric loads, propose an appropriate CHP size and technology, compile a budget cost estimate, and identify potential barriers to the technology, etc. Rhode Island Energy typically funds 50% of the cost of any TA study conducted by a preferred vendor selected by the Company, and up to 50% of the TA for other qualifying independent engineering firms. Any TA study by a CHP vendor or its representative which fulfills the CHP TA requirements may be accepted, though no co-funding will be provided. The TA study must be completed, submitted, and approved by the Company prior to implementation. The TA study must include an assessment of the likely on-peak kW reduction from the CHP given the proposed nameplate rating, the net CHP output after subtracting parasitic loads associated with the CHP, projected availability based on anticipated site-specific operating characteristics, performance data on other similar units, and a greenhouse gas analysis that estimates the change in greenhouse gas emissions expected from the project and a statement that informs the customer of the state goal to reduce greenhouse gas emissions by 45% below the 1990 levels by 2030; 80% below 1990 levels by 2040; and net-zero by 2050. (On-peak kW reduction = Net Output x Availability x % Loaded.) This kW load reduction should be used in the benefit-cost screening.

As indicated in the offering section, for CHP facilities greater than 250 net kW, incentives are only available for CHP projects that reduce the carbon footprint of the host facility by more than 25%. The TA study of the CHP proposal could include an assessment of energy efficiency

measures that would help meet that objective. These opportunities themselves will be eligible for energy efficiency incentives and will help make sure that the CHP facility is correctly sized for the facility's needs and will avoid creating a disincentive for future load reduction at the site.

Cost Effectiveness

The screening for cost effectiveness specific to CHP is included in the Rhode Island Test included as Attachment 4. However, given the Division's concerns over the applicability in all circumstances of what the Division characterizes as generic economic benefit assumptions identified in the CHP economic development benefit study underpinning theses adders, the Company will provide two scenarios of the benefit cost screening for CHP systems with a net output of one MW or greater: one test that includes the economic benefits adder within the Rhode Island Test, and one test that excludes the economic benefits adder. If the scenario of the screening test for the project would not pass without the economic benefits included, the Company will provide a written and well-supported justification explaining why the economic benefits are reasonably likely to be obtained. During the project notification process described elsewhere in this section for projects of one MW or greater, if any party who has intervened in the notification dockets disagrees with the Company's justification, the matter will be set for hearing at the Commission for resolution.

Other Contract Terms and Guidelines

In order to ensure proper operation of the CHP facility and persistence of energy savings, the following terms and guidelines will be required:

- As part of the TA study, a minimum requirements document (MRD) will be developed. This MRD will contain engineering hardware and operational specifications that directly affect the savings estimates developed in the TA study. Compliance with the MRD will be necessary to receive rebate payments.
- All systems greater than one MW will require electric, thermal and gas metering for commissioning and monitoring of system efficiencies.
- The project must be commissioned. Commissioning is a process following installation whereby a third party verifies that the project is installed and operating as detailed in the TA study and MRD.
- The customer must sign and produce a contract for O&M services through the first planned major overhaul of the CHP unit after post installation commissioning. On-going O&M contracts for a minimum of 10 years from project commissioning are recommended.
- Customers applying for interconnection of a CHP systems must not operate the unit until they receive the authorization to interconnect from the Company.

- kW-demand savings achieved via the electric energy efficiency programs, including CHP, will continue to be reported by the Company to ISO-NE as Other Demand Resources (ODR) and the revenue generated will be used to fund future energy efficiency projects through the Company's programs.

Qualification

The cost of the project will be provided by a design/build or general contractor experienced with CHP projects and revised as necessary.

Options for a CHP proposal that fails cost effectiveness testing

If a CHP project does not pass the benefit-cost test, the Company will work with the customer to develop other solutions that may still support the CHP facility. Such other solutions may include one or all of the following:

- Re-analyzing the optimal size of the CHP unit, or the number of generators. A different sized CHP unit might provide better efficiencies and pass the benefit cost test.
- Identifying other load reduction opportunities at the facility. Benefits can be garnered from load reduction in lieu of achieving that load reduction through CHP.

Attribution of CHP Energy Savings to the Company

For CHP projects one MW or greater in size that meet the eligibility criteria, 100% of the project savings shall be attributed to the energy efficiency programs. For CHP projects smaller than 35 kW, the Company shall use the latest net to gross adjustments determined by impact evaluations conducted on the RI CHP programs. These evaluations shall be conducted at least once every five years.

Notification Process

The Company shall inform the DPUC, OER, and EERMC of any CHP project with a net output of one MW or greater (where net is the nameplate MW output minus CHP auxiliary kW). The notification shall occur after the cost benefit screening and before the offer letter is presented to the customer. For CHP projects with a net output of one MW or greater, the Company shall submit the following documents for review by the Division:

- Documentation demonstrating that the project would not move forward without energy efficiency technical assistance and/or incentives. The documentation shall justify its finding with the following evidence:

  - A letter signed by a senior executive or site operations manager stating that the project would not move forward without the energy-efficiency technical assistance and incentive;
  - Documentation from the customer on all relevant leases, agreements or commitments related to the CHP system or incentive offer;
  - Estimated project budget.
- A complete benefit cost analysis for the CHP project using the Rhode Island Test, as well as application of this test applying sensitivities related to the removal of economic benefits
- A report including a natural gas capacity analysis that addresses the impact of the proposed project on gas reliability; the potential cost of any necessary incremental gas capacity and distribution system reinforcements; and the possible acceleration of the date by which new pipeline capacity would be needed for the relevant area.

For any proposed CHP project greater than one MW:

- The Company will submit a project description to the Division, providing all the pertinent details relating to the project.
- The Division may submit information requests to the Company at any time after receipt of the project description. The Division may also submit follow-up data requests, as needed.
- The Company shall respond to all information requests as soon as reasonably possible, but no later than fourteen days from receipt of information requests, unless the Division grants an extension.
- The Division will make all reasonable efforts to communicate decisions around the provision of a notification of support within thirty days of the receipt of the last set of information request responses received from the Company.
- To the extent that additional review time is required, the Division will provide notification to the Company.
- If at the end of fifty days from the date the Company provided the project description to the Division, the Division has not provided to the Company its opinion of support or opposition to the project, the Company retains the right to make a filing with the Commission seeking approval of the CHP incentive. The Division retains its right to take any position on the project it deems appropriate and shall not be prejudiced by the fact that it did not provide an opinion to the Company within the fifty-day period.

Even if the Division provides its opinion to the Commission that the Division supports the CHP project, the Company must file a notification with the Commission, setting forth the pertinent facts relating to the project. If (i) the Commission takes no action within thirty days and (ii) the Division or any other party has not objected to the proposed project, the project will be deemed

approved. If the Division or any other party objects, the Commission will set the matter for hearing.

Stakeholders including vendors and installers provided feedback at the 2022 Rhode Island Annual CHP Public Meeting. The stakeholders expressed that the interconnection process remains the most significant barrier to CHP adoption, noting that the process is time-consuming and costly, and creates difficulty in planning projects as interconnection requirements and costs are not known until late in the design process. Stakeholders also expressed desire for streamlined interconnection and additional support for smaller CHP systems.

The Company is currently exploring options for a prescriptive pathway for micro-CHP systems. This process would simplify the interconnection process and expedite the installation time for smaller CHP systems.

Due to the high capital cost and technical requirements of installing CHP, there is a very long lead time for a successful installation. With small numbers of projects and wide ranges of possible project sizes, the Company anticipates substantial variability in MW realized in any given year. Due to the high capital cost and technical requirements of installing CHP, there is a very long lead time for a successful installation.

Given the small number of projects and wide range of possible project sizes, the Company anticipates substantial variability in MW realized from year to year. As of July 2022, the Company is not aware of any projects under development, and no funds have been budgeted for specific large-scale projects. The Company commits to providing an updated estimate of projects in the current-year pipeline in each annual Energy Efficiency Plan and reconciliation filing to the PUC going forward.[3] Direct notification shall be sent to the Division of Public Utilities & Carries, the Office of Energy Resources, and the Energy Efficiency and Resource Management Council via email whenever a CHP project with a net output of one MW or greater is added, removed, or updated after the Technical Assistance Study and before the offer letter to the customer.

The Company continues to explore alternative fuel options for CHP systems, such as renewable natural gas, hydrogen, biogas, and other opportunity fuels.

[3] Other project information such as Name*, Approximate Size of CHP (kW and Net Lifetime MWh), Location, and Current Status (Scoping, Study, Notification Process, Under Construction, Post-Inspection or Commissioning), may be provided depending on the state of advancement of CHP projects.

3.3. Eligibility

The Large Commercial Retrofit Program serves the needs of existing buildings in their pursuit to lower energy consumption. All commercial and industrial customers are eligible for the Large Commercial Retrofit Program.

3.4. Implementation and Delivery

Prescriptive Application

Customers complete a prescriptive application through the Rhode Island Digital Application Portal (RIDAP; https://www.ridap.nationalgridus.com) for a wide variety of energy efficient products such as lighting, air compressors, or variable speed drives (VSDs).

Upstream

The Upstream Initiatives, which offer "instant incentives" to customers for the purchase of qualified, high-efficiency products. Product categories covered include such as luminaires, kitchen equipment, water heating equipment, and high-efficiency heating and cooling technologies at participating distributors at a discount. Offering discounts through distributors obviates the need for individual customers to submit incentive applications, which previously was a significant barrier for non-managed accounts (smaller customers). These are described in more detail in section 6.5. Eliminating the need to submit applications is a huge benefit to customers, driving far greater program participation and more equitable distribution of incentive funds. These are collectively known as the Upstream Initiatives, which offer "instant incentives" to customers.

The Upstream programs impact the market both by reducing the cost of high-efficiency products compared to alternatives and by encouraging distributors to stock and promote these high-efficiency products. Note that Upstream Lighting savings and budget are captured within the Retrofit program, and Upstream HVAC and Food Service are captured within New Construction.

Custom Application

A RI Energy Sales Representative or Project Expeditor (PEX) assists customers and their vendors with completion of custom applications for any energy conservation measure that is not covered by Prescriptive or Upstream pathways.

Project Expeditors

The Company utilizes Project Expediters (PEX) to provide turnkey services for Retrofit and New Construction energy efficiency projects for its large commercial and industrial customers. A PEX is an authorized vendor who serves as a customer's main point of contact and personal guide to

energy cost savings. Several PEX's work closely with the Company's account management team, who work with the PEX to evaluate EE opportunities and determine incentives.

A PEX can connect large C&I customers with the latest energy technology solutions and savings on equipment, including:

- Lighting and lighting controls
- HVAC efficiency improvements
- Energy management systems
- Variable speed drive upgrades for fans, motors, and pumps in HVAC, refrigeration, and other systems
- Gas heating and hot water system upgrades
- Compressed air solutions, including air compressors, dryers, drains, engineered air nozzles and more

3.5. Changes for 2023

Building Analytics

The Building Analytics initiative is expected to launch in the second half of 2022, including selection and onboarding of Qualified Service Providers, finalization of program materials, and initial outreach to customers. In 2023, outreach and system installation are expected to ramp up. Although it often takes a full year after system installation to achieve significant customers savings, some savings is likely to be captured in 2023.

Technical Processes

In 2023, the Company will implement multiple improvements to technical processes. The Company will also develop streamlined savings calculators for target measures, such as energy management systems. Furthermore, the Company will revisit burdensome data collection practices that can discourage customers from pursuing custom projects. The objective is to strike a better balance between the need for accurate savings calculations and the need to minimize the time required by customers and their contractors to participate in the EE program.

Finally, RI Energy engineers often conduct site visits when validating project installations and savings calculations. Going forward, the engineers will leverage these site visits not only to validate installed measures but to identify additional savings opportunities.

Telecommunication Initiative

Given the mixed success of the program in building a pipeline or securing savings thus far, the Company is exploring the possibility of terminating this initiative and eliminating the associated costs. If this were to take effect, Telecommunications customers would still be served through other pathways, potentially including the Industrial Initiative.

New Measures

The Company is conducting a demonstration to explore the possibility of adding a gas leak survey as a new measure. This is described in greater detail in Attachment 8.

3.6. Other Considerations

Supply Chain Disruptions

RI Energy has observed significant supply chain disruptions since the outset of the pandemic. These have become worse over the course of 2022 as a result of extended lockdowns in China and the war in Ukraine/trade sanctions on Russia. These add to existing disruptions resulting from ongoing domestic truck driver shortages, constraints at ports, and insufficient supply relative to demand for some equipment. This has led to rising prices and significant delays for certain types of equipment. Like other employers, contractors have been impacted by the tight labor market, which has further compounded project cost increases and delays.

Where feasible, the Company and its vendors are working with customers to (1) identify alternative suppliers for equipment experiencing long lead times or major price increases and (2) order equipment as early as possible for EE projects. However, these phenomena affect the entire global economy. By and large, there is no easy fix, and RI Energy has limited control over the situation.

The Company has commissioned a study of the situation to discuss key equipment types with distributors, contractors, and other utility EE programs to quantify the impact of these supply chain disruptions and price increases, and to seek additional mitigation strategies where possible.

Tuning Pre-Approval

The Company is exploring a process to allow some tuning measures to be implemented without pre-approval, provided baseline conditions are documented sufficiently to withstand M&V scrutiny. A study is currently underway to determine the extent to which this is feasible at RI schools and to develop a methodology for documenting baseline conditions and calculating savings for HVAC measures commonly found at schools. The option to waive pre-approval for tuning measures will enable building auditors/RCx agents to implement many measures in a single trip, eliminating the need for a return trip (and the associated cost and time lag).

Low-Cost Tuning

The Company is investigating the possibility of adding Low-Cost Tuning measures, including a CHP system tune-up as well as gas measures such as unit ventilator adjustments. This effort can only proceed if sufficiently broad savings calculations can be developed.

Workforce Development

In 2022, the Company began offering additional trainings to upskill the C&I workforce. Technologies of focus include HVAC, building controls and automation, building envelope, and energy management. These trainings target a mix of customers, trade allies (PEX's, contractors, engineers, etc.), program vendors, and other project influencers.

A particular area of focus is facility auditors, who are often charged with identifying potential opportunities. While some have broad-based expertise, in many cases these auditors possess expertise in lighting but have limited experience with other EE technologies.

In addition to the direct benefits of these trainings, the events can serve to drive program participation by increasing awareness of EE incentives and services. Likewise, events help RI Energy staff and program implementers form deeper relationships with attendees, increasing the likelihood that trade allies and customers will participate in the programs going forward to implement EE projects.

4. Small Business Direct Install Program

4.1. Offerings

The Small Business Program begins with a no-cost site assessment conducted by a Small Business Energy Specialist to understand the customer's energy-related needs and goals. The assessment keys in on energy efficiency measures such as lighting systems and controls, cooler/refrigeration control, water saving measures, HVAC controls, motor controls, weatherization/insulation, and custom measures. Turn-key install and OBR is offered to support the adoption of the recommended measures to the customer.

A Customer Directed Option (CDO) is also available. In this pathway, customers may use their own electrician to install measures while the Small Business program vendor processes and submits all necessary paperwork to RI Energy.

4.2. Eligibility

Commercial customers who have less than 1,000,000 kWh in annual usage may participate in the Small Business Direct Install Program. K-12 schools, national and regional chain restaurants, and small grocery stores who consume less than 1,000,000 kWh per year are excluded from this program as they are served through other pathways or initiatives.

4.3. Implementation and Delivery

A customer begins the process for a Small Business energy assessment by either calling, emailing, or using an online form to express interest in the program. The customer is connected to a dedicated, internal Small Business program staff to learn more details about the process and the next steps. The assessment is scheduled with the customer, and the Energy Specialist meets the customer at the scheduled time. The Energy Specialist performs the assessment, identifies strategies to pursue opportunities, reviews design considerations with the customer, and incorporates this detail into a proposal describing appropriate energy efficiency measures. The proposal reflects the installed costs, the expected energy savings, and the applicable program incentives.

Once the customer decides to proceed, the Energy Specialist hands off the project to a Project Coordinator who works with the customer to set a convenient installation schedule that will minimize interruptions to their business operations. After installation, the customer certifies in writing their satisfaction with the work provided. Dedicated support staff are available to address any post-install issues that arise. This support structure is designed to ensure smooth project execution and allow customers to remain focused on their daily tasks.

4.4. Equity

Beginning in 2022 and continuing in 2023, the Company incorporated two equity-related initiatives. First, the Company and its vendor have deployed bilingual auditors who speak either Spanish or Portuguese – the two most widely spoken languages besides English in Rhode Island.

Second, in addition to collecting information about who is served by this program, the program targeted its marketing directly to Woman and Minority Owned Enterprises (WME). This effort extends beyond the WME businesses registered with the state and sought to develop relationships with groups such as the RI Black Business Association and the RI Hispanic Chamber of Commerce to determine how to better serve these businesses. The Company's vendor also canvasses in conjunction with local community organizations, such as Progresso Latino.

Finally, the Communities initiative includes equity elements, including a focus on microbusinesses.

4.5. Changes for 2023

Language Access

Also related to furthering the equity of the small business direct install offering, the Company will translate small business program materials into Spanish and Portuguese.

Additionally, the company will support participation by minorities in vendor training by offering certain trainings in commonly spoken languages.

Targeted All-Fuel Weatherization

In 2021 and 2022, the Company utilized a $1,100,000 RGGI allocation from OER to help increase weatherization installations. Through April 2022, the SBDI program had already achieved 43% of its gas target, primarily as a result of this effort. The company will explore additional funding sources for 2023 to continue supporting a high volume of installations. Without additional funding, the Company anticipates this installation volume will regress substantially.

To help increase the volume of weatherization installations, the Company will explore the development of a weatherization tool to enable vendors and customers to easily identify cost-effective weatherization projects for small business customers. The Company will also revisit incentives for weatherization and air sealing, balancing the desire to increase savings with the need for cost control.

Finally, because many insulation contractors often have less experience with commercial buildings, and weatherization measures are more complex to identify and implement than for homes, the Company plans to offer training to help contractors develop additional expertise in commercial insulation and air sealing. Insulation contractors are the primary targets of this training, and others who perform energy audits of facilities will also benefit.

4.6. Other Considerations

The Company's vendor collects insights and feedback from customers. RI Energy's program managers regularly check in with the vendor to capture this feedback. In 2022, the Company introduced a short, formal customer satisfaction and input survey. In addition to questions typical of a customer satisfaction survey, the Company asked optional questions about whether the customer identifies as a woman, minority, or LGBT owned business. This will allow the Company to create a baseline of customers served. This survey was offered in English, Spanish, and Portuguese.

The Company's 2022 goal is to achieve the following penetration ratios for luminaires and retrofit kits, and report on progress quarterly:

- At least 8% of installed luminaires with one or more control strategies.
- At least 10% of installed retrofit kits with one or more control strategies.

In 2022, the Small Business vendor has been educating customers on the benefits of participating in the ADR program using WiFi thermostats and providing information on how to enroll.

5. Connected Solutions (Active Demand Response)

5.1. Offerings

The Company implemented an active demand reduction program beginning in 2019. Under this program, customers agree to reduce their electricity use during the system peak. Customers participating in the demand response (DR) program are free to curtail their energy use by any means possible, as this program is technology neutral.

Targeted Dispatch (One to eight DR events per summer)

This option calls on customers to curtail their electricity use or discharge energy from generators only a few times per summer. Typical technologies or strategies used to curtail load include building management systems to control HVAC systems, lighting control systems, and manual or automated changes to manufacturing processes. The customer's performance is calculated using either the Company's electric meter where available (typically G-32 customers) or third-party metering (typically G-02 customers). Please refer to the program materials available on the Targeted Dispatch page of the Company website for a detailed explanation of the baseline method used and examples.

This initiative uses Curtailment Service Providers (CSPs) to assess curtailment opportunities at a facility and deliver curtailment services to enrolled customers. CSPs identify curtailment opportunities for deployment under the Company's initiative (often in collaboration with RI Energy's implementation team), as well as demand charge and Installed Capacity (ICAP) tag management opportunities and present a complete curtailment proposal to the customer. The demand charge and ICAP tag management provide opportunities for direct bill savings to customers.

Customers and CSPs respond to dispatch signals sent by the Company. Customers and CSPs are notified of events one day before the event. The core model remains focused on reducing demand during summer peak events, typically targeting fewer than twenty hours per summer. The program is structured to avoid interfering with the ISO-NE programs or penalizing customers for participating in both programs.

This Energy Efficiency Plan is being coordinated with the SRP Plan to ensure that the customer offerings are cohesive, not duplicative, and a comprehensive marketing plan is being implemented. This coordination between SRP, NWAs, and DR is detailed in the 2021-2023 SRP Plan sections on NWAs in System Planning and on Coordination with Energy Efficiency.

Daily Dispatch (40 to 60 DR events per summer)

This option calls on customers to curtail their energy use or discharge energy many more times per summer than the Targeted Dispatch. Because of the number of dispatches, customers typically look for an automated participation path with a technology that does not disrupt their comfort or business, such as battery storage or thermal storage.

5.2. Eligibility

Commercial and Industrial customers

5.3. Implementation and Delivery

Targeted Dispatch (One to eight DR events per summer)

The number of enrolled MW in Targeted Dispatch has decreased since 2019. This is in large part due to customers choosing to move their enrollment from Targeted Dispatch to Daily Dispatch. This is a good trend, because Daily Dispatch generates more system benefits per MW than Targeted Dispatch offering.

Please refer to the program materials available on the Targeted Dispatch page of the Company website[4] for a detailed explanation of the baseline method used and examples.
Customers have the option to receive their incentives directly from the Company, or have the Company send the incentive to the customer's curtailment service provider.

Daily Dispatch (40 to 60 DR events per summer)

[4] https://www.rienergy.com/RI-Business/Energy-Saving-Programs/ConnectedSolutions

The estimated performance for Daily Dispatch in 2022 is projected to be at or above the proposed MW goal for 2022. As mentioned above, some Targeted Dispatch customers have moved to Daily Dispatch which generates more system benefits per MW.

One of the curtailment service providers (CSPs) who participates in the Connected Solutions program has begun the process of installing large energy storage (battery) projects at customer sites. These projects are large and may or may not be ready for the 2023 summer season. They would be looking to participate in the Daily Dispatch program to export the energy of the battery to the electric grid during events. The Company is proposing to increase the Daily Dispatch goal and decrease the Targeted Dispatch goal due to these prospected projects.

Please refer to the program materials available on the Daily Dispatch page (same as Targeted Dispatch page) of the Company website for a detailed explanation of the baseline method used and examples.

Customers have the option to receive their incentives directly from the Company, or have the Company send the incentive to the customer's curtailment service provider.

5.4. Changes for 2023

At this time, there are no anticipated program changes related to Targeted or Daily Dispatch for 2023 based on performance projections and results from currently available data. The results from the summer 2022 performance may highlight opportunities to improve the program in 2023, however results are not expected until shortly after the filing of this Plan. The Company will share any proposed program changes resulting from the evaluation with stakeholders prior to implementing changes.

5.5. Other Considerations

Coordination with other Company Energy Storage programs

The Company is supporting an OER-led Department of Energy (DOE) grant for the field validation of an Integrated Refrigeration Energy Management (REM) technology for controls, active demand response, and continuous commissioning in grocery stores. The objectives supported by the DOE grant are to recruit grocery stores to participate in ConnectedSolutions offerings using refrigeration systems yielding flexible active demand reduction and demonstrate revenue and/or operational savings for grocery customers.

The Company's other efforts related to storage are complementary to the ConnectedSolutions program's goal of reducing electric use during system peaks. Routine coordination with other Company programs helps leverage opportunities for further savings while minimizing duplication of efforts that could otherwise confuse customers.

6. C&I Multifamily Program

6.1. Offerings

See Attachment 1, Section 3, for offerings.

6.2. Eligibility

See Attachment 1, Section 3, for eligibility information.
In addition to criteria listed in Attachment 1, Section 3, the multifamily program provides joint residential and commercial energy services to condominiums and apartment complexes for energy efficiency upgrades with no cost audits. The multifamily C&I program also serves customers like non-profits, group homes, and houses of worship that traditionally do not fit within the predefined program structure.

6.3. Implementation and Delivery

See Attachment 1, Section 3, for implementation and delivery.
In addition to what is listed in Attachment 1, Section 3, note that the program coordinates with the Residential New Construction Program, Multifamily Programs, and the Small Business Program.

6.4. Changes for 2023

6.5. Other Considerations

See Attachment 1, Section 3, for customer feedback and program changes.

7. Finance as an Enabling Strategy

Many customers face challenges in bringing energy efficiency projects to fruition. These may include structural limitations within a business, information overload, cultural resistance within companies, and access to capital. The Company's plan deals with the first three barriers in various ways, but this section of the plan focuses on mechanisms that can help customers afford to carry out energy efficiency upgrades and/or perceive costs differently.

Mechanisms Offered

RI Energy and its partners have developed four primary finance mechanisms to help customers afford energy efficiency upgrades, each with unique attributes. Some may only be available or apply to certain customers, building, or ownership types.

7.1. On Bill Repayment (OBR) - Electric

Customer type	Commercial customers who consume more than 1,000 MWh per year
Loan size	$1,000 to ~$100,000 (may be larger for SEMPs)
Maximum Tenor	5 years for commercial accounts, 7-10 years for State facilities
Loan Volume	Variable, between $5MM to $10MM per year
Benefits to customer	No formal credit check/ rapid approval, on bill repayment, zero interest
Limitations	Maximum tenor too short for many comprehensive upgrades, cannot be used to support upgrades customers may desire such as windows and roofs as they have a B/C ratio less than 1.0.
More information	RI Energy's revolving loan fund projections for 2023 are illustrated in Attachment 5, Table E-10.
Relevant notes	The Company is requesting a $2,000,000 infusion into this revolving loan fund as the Company is projecting a negative balance in this fund by the end of 2023. This includes estimated repayments made by customers in 2023.

7.2. On Bill Repayment (OBR) - Electric Small Business

Customer type	Commercial customers who consume less than 1,000 MWh per year
Loan size	$500 to $50,000
Maximum Tenor	5 years
Loan Volume	Variable, between $1.8MM and $3.0MM per year
Benefits to customer	No formal credit check/ rapid approval, on bill repayment, zero interest
Limitations	Maximum tenor too short for many comprehensive upgrades, cannot be used to support upgrades customers may desire such as windows and roofs as they have a B/C ratio less than 1.0
More information	RI Energy's most recent Small Business revolving loan fund projections are illustrated in Attachment 5, Table E-10.

7.3. On Bill Repayment (OBR) – Gas

Customer type	All commercial gas customers
Max loan size	$1,000 to ~$100,000 (may be larger for SEMPs or special projects)
Maximum Tenor	3 years for commercial accounts, 5 years for State facilities
Loan Volume	Variable, between $1MM and 1.5MM per year
Benefits to customer	No formal credit check/ rapid approval, on bill repayment, zero interest
Limitations	Maximum tenor too short for many comprehensive upgrades, cannot be used to support upgrades customers may desire such as windows and roofs as they have a B/C ratio less than 1.0
More information	RI Energy's most recent Gas revolving loan fund projections for 2021 are illustrated in Attachment 6, Table E-10.
Notes	

7.4. Efficient Buildings Fund (EBF)

Customer type	State agencies, quasi-state agencies, and municipalities
Max loan size	More than $5MM
Maximum Tenor	Up to 20 years
Loan Volume	Variable, over $60MM in loans closed to date
Benefits to customer	Below market rate interest, long tenor, loan amounts can be large enough to make comprehensive building wide improvements
Limitations	Appropriate customers must file applications and be ranked against other potential loan applicants
More information	More detail on this program can be found at the RI Infrastructure Bank webpage (https://www.riib.org/ebf) and the RI Office of Energy Resources webpage (http://www.energy.ri.gov/RIEBF/)
Description	The Efficient Buildings Fund (EBF) is a long-term, below-market financing option for municipalities and quasi-public agencies to complete energy efficiency and renewable energy projects. EBF is administered in partnership with RI Office of Energy Resources (OER) and the Rhode Island Infrastructure Bank (The Bank, Infrastructure Bank, or RIIB). OER is responsible for determining project eligibility, reviewing project applications, and producing a Project Priority List (PPL). The Infrastructure Bank only finances projects that are listed on the PPL.

2023 Actions	The Infrastructure Bank and OER will administer the program and RI Energy will continue to provide technical, logistical, incentive support to municipal customers.
Notes	

7.5. Public Sector Revolving Loan Fund

The Public Sector Revolving Loan fund was a predecessor of the Efficient Buildings Fund. It was funded by Regional Greenhouse Gas Initiative (RGGI) funds controlled by the RI OER. This fund no longer makes loans. As funds are repaid from previous disbursements, they are periodically transferred back to RI OER to be used at their discretion. More detail on this fund can be found in Attachment 5, Table E-9.

7.6. Commercial Property Assessed Energy (C-PACE)

Customer type	Owners of non-residential property
Max loan size	Limited only by the financial health of the building
Maximum Tenor	Average measure life of all upgrades, can exceed 15 years
Loan Volume	Variable
Benefits to customer	Can be structured to be cash flow positive, no personal guarantees, financing can be used to finance a wide variety of improvements related to energy, may be considered an operating expense.
Limitations	Minimum transaction value of ~$50,000, preferred $100,000+

7.7. Ascentium Rental Agreement

Customer type	Owners of non-residential property
Max loan size	No stated limit
Maximum Tenor	Variable
Loan Volume	Variable
Benefits to customer	Rapid preliminary approval, rental product is considered an operating cost
Limitations	Specific terms of the agreement may not work for all customer types

8. Marketing to C&I Customers

Beginning in the second half of 2022 and continuing in 2023, RI Energy is launching a new creative theme for all commercial customers, with messaging that will focus on helping customers get back to business after COVID-19 with the resources, financing, and expertise they need.

For customer targeting and media planning, the Company continues to utilize its existing market research insights data and customer personas (see Figure 9) for business customers. The Company aims to represent the voice of the customer in all campaign planning. The Company will continue to utilize commercial customer persona research to inform our key messages and marketing channel selection. RI Energy will pay close attention to how economic conditions impact customers and maintain a nimble approach. These conditions include inflation, labor market shortages, long-term market changes resulting from COVID-19, and a potential recession.

Figure 4. Commercial Customer Persona Research

★Lean & Green	Small & Seamless	★Seeking Solutions
• Smallest customers based on usage • Most environmentally conscious, interested in green-related products • Among the most open to purchasing from NG	• Small customers • Interested in tools to manage accounts • Skew to Real Estate • The least open to purchasing from NG	• Medium customers • Interested in bill and usage information, financing options • Skews to Retail/Food • The most open to purchasing from NG

No Frills	★Big Business
• Medium customers • Most interested in the basics of customer service and emergency response • Among least open to purchasing from NG	• Largest customers • More interested in advice, tools to track usage and savings • Lowest level of barriers to energy improvements • Skews to Industrial, Public Sector

In 2023, the Company will continue to leverage digital marketing, paid search and social media marketing, print advertising, email campaigns as well as public relations. Earned media/PR is an integrated component of the marketing strategy, including media relations and influencer engagement.

RI Energy's paid media primarily targets direct decision-makers for capital budgets and facilities projects, C-suite executives, facility managers, and small business owners. A portion of

advertising and communications are also dedicated to targeting other key influencers who influence energy project go-forward decisions, such as distributors, PEX's, engineers, and architects who may have existing relationships with customers.

In 2023, the Company will continue to focus on the key strategies that have proven successful in the past. It will continue to evolve and adjust tone and messaging as appropriate to remain sensitive to our customers' needs. RI Energy has continued to work to update our website and campaign landing pages to reflect key messages, strategies, and general core values and has also increased focus on providing industry specific messaging and information wherever possible.

Finally, the Company will tie its marketing activities to the energy efficiency program priorities described elsewhere in this plan. This includes:

- Promoting planned Workforce Development activities, potentially via social media.
- Developing fact sheets to explain program focus areas such as Building Analytics, ESPO, or lighting controls.
- Developing case studies to highlight efficiency opportunities in specific market sectors.

9. Commercial and Industrial Measures and Incentives

These tables have not been updated in the Draft Plan but will be updated in the Final version.

Table 4. Electric Programs

Electric Programs					
Program	**Subprogram**	**Net Annual kWh Tracker by Subprogram**	**Incentive / Net Annual kwh**	**Total Incentives**	**Shared Costs**
Large Commercial and Industrial New Construction	D2 CAIR	272,520	$0.22	$60,000	
	C&I Codes	274,550	$0.00	$0	
	D2 Upstream Food Service	605,600	$0.66	$400,000	
	D2 HVAC Prescriptive	596,266	$0.28	$167,900	
	Upstream Heat Pump - Ductless	75,053	$1.11	$83,189	
	Upstream Heat Pump - Packaged	104,240	$1.73	$180,502	

	Upstream HVAC Air Conditioners	823,994	$0.39	$319,585	
	Upstream HVAC Controls	40,992	$0.16	$6,413	
	Upstream HVAC ECM Pump	40,992	$0.45	$18,374	
	Upstream HVAC VRF	278,606	$0.87	$241,937	
	D2 Lights	2,439,962	$0.27	$663,000	
	Motors and VFD	124,527	$0.35	$43,750	
	Upstream HVAC Refrigeration	8,935	$1.17	$10,450	
	Comprehensive Design - Custom	527,245	$1.06	$559,550	
	Compressed Air - Custom	1,225,921	$0.55	$678,930	
	HVAC - Custom	2,937,300	$0.75	$2,200,845	
	Lighting - Custom	397,198	$0.42	$165,000	
	Motors & VFD - Custom	247,873	$0.31	$76,713	
	Process - Custom	1,127,686	$0.46	$514,315	
	Refrigeration - Custom	323,054	$0.62	$199,959	
	Other - Custom	116,277	$0.55	$64,396	
	Program Planning & Administration				$291,923
	Marketing				$306,751
	Sales, Technical Assistance & Training				$1,546,086
	Evaluation & Market Research				$432,863

Electric Programs					
Program	**Subprogram**	**Net Annual kWh Tracker by Subprogram**	**Incentive / Net Annual kwh**	**Total Incentives**	**Shared Costs**
Large Commercial and Industrial Retrofit	CHP	-	-		
	Custom: SEM	459,260	$0.03	$13,778	
	EI HVAC	1,144,586	$0.37	$426,419	
	Custom: Street Lighting	717,503	$0.34	$241,500	
	EI Light: Prescriptive	17,181,203	$0.43	$7,354,458	
	EI Light: Upstream A-lines and Decoratives	340,875	$0.15	$49,500	
	EI Light: Upstream Exterior	403,750	$0.71	$287,500	
	EI Light: Upstream G24 G23, MR Lamps, PAR	204,525	$0.44	$90,000	
	EI Light: Upstream High/Low Bay	3,962,560	$0.20	$805,000	
	EI Light: Upstream Linear Fixture w/Controls	794,682	$1.28	$1,020,000	
	EI Light: Upstream Linear Luminaires	861,520	$0.57	$488,400	
	EI Light: Upstream Retrofit Kits	739,704	$0.24	$178,000	
	EI Light: Upstream Stairwell	10,562	$1.16	$12,200	
	EI Light: Upstream TLEDs	587,400	$0.11	$63,000	
	Motors and VFD	2,089,620	$0.37	$780,000	
	Compressed Air - Custom	513,284	$0.25	$125,806	
	HVAC - Custom	2,016,016	$0.87	$1,748,450	
	Lighting - Custom	7,865,709	$0.50	$3,908,170	
	Motors & VFD - Custom	184,651	$0.53	$97,479	
	Process - Custom	425,109	$0.40	$168,314	
	Refrigeration - Custom	527,918	$0.83	$437,946	
	Other - Custom	101,518	$0.57	$57,420	
	Program Planning & Administration				$732,937
	Marketing				$239,517
	Sales, Technical Assistance & Training				$4,814,148
	Evaluation & Market Research				$816,261
Small Business	Lighting	8,305,575	$0.76	$6,343,353	
	Lighting controls	762,234	$1.28	$974,586	

Direct Install	Non-Lighting	907,885	$0.68	$619,239	
	Program Planning & Administration				$226,132
	Marketing				$244,014
	Sales, Technical Assistance & Training				$306,009
	Evaluation & Market Research				$256,040

Program	Subprogram	Demand Response kW Goal	Incentive / Net Annual kW	Total Incentives	Shared Costs
Commercial Connected Solutions	Daily DR Resources	-	-		
	Peak Shaving DR (MW)	459,260	$0.03	$13,778	
	Program Planning & Administration	1,144,586	$0.37	$426,419	
	Marketing	717,503	$0.34	$241,500	
	Sales, Technical Assistance & Training	17,181,203	$0.43	$7,354,458	
	Evaluation & Market Research	340,875	$0.15	$49,500	

Table 5. Natural Gas Programs

Gas Programs					
Program	Measure Groups	Net Annual MMBtu Tracker by Subprogram	Incentive / Net Annual MMBtu	Total Incentives	Shared Costs
Large Commercial and Industrial New Construction	Boilers	2,859	$71	$203,406	
	CODES AND STANDARDS	358	$0	$0	
	Combo Boiler/DHW	864	$135	$116,670	
	Non Boiler Heating	529	$72	$38,270	
	COND WATER HEATER 94%MIN 75-300 and above	575	$76	$43,607	
	COOKING-COMBO OVEN 1				
	COOKING-CONVECTION OVEN 1				
	COOKING-CONVEYOR OVEN 1				
	COOKING-FRYER-1000				

	COOKING-COMBO OVEN 1 - Upstream	610	$17	$10,589	
	COOKING-CONVECTION OVEN 1- Upstream	1,658	$42	$69,092	
	COOKING-CONVEYOR OVEN 1- Upstream	244	$17	$4,243	
	COOKING-FRYER-1000- Upstream	13,676	$24	$332,412	
	COOKING-GRIDDLE 1- Upstream	105	$17	$1,819	
	COOKING-RACK OVEN 1- Upstream	1,753	$17	$30,427	
	COOKING-STEAMER-1000- Upstream	387	$17	$6,726	
	WATER HEATER - Indirect Upstream	82	$44	$3,648	
	Water Heaters 94 and above	435	$57	$24,724	
	Custom	25,557	$25	$650,997	
	Water Heating Boiler - 94% TE	3,263	Up to 75% of Total Resource Cost	$59,330	
	Program Planning & Administration				$118,453
	Marketing				$152,115
	Sales, Technical Assistance & Training				$1,063,545
	Evaluation & Market Research				$216,512
Large Commercial and Industrial Retrofit	Controls	18,868	$20	$381,524	
	Custom: RCx	3,962	$16	$63,000	
	Behavior / Training	2,778	$0	$0	
	DHW	667	$15	$9,706	
	HVAC	17,224	$17	$296,193	
	Prescriptive Steam Traps	9,652	$10	$93,149	
	Custom: General	81,123	$17	$1,385,555	
	Custom: SEM	4,133	$30	$124,051	
	Program Planning & Administration				$199,241

	Marketing				$334,243
	Sales, Technical Assistance & Training				$1,590,552
	Evaluation & Market Research				$165,605

Gas Programs					
Program	**Measure**	**Net Annual MMBtu Tracker by Subprogram**	**Incentive / Net Annual MMBtu**	**Total Incentives**	**Shared Costs**
Small Business Direct Install	Small Business Gas	4,886	$49	$239,274	
	Program Planning & Administration				$6,873
	Marketing				$40,360
	Sales, Technical Assistance & Training				$32,885
	Evaluation & Market Research				$758
C&I Multifamily	Air Sealing_MF	1,020	Average Incentive based on measure mix		
	CUST NON-LGT_MF	7,669			
	Faucet Aerator_MF	56			
	Insulation_MF	10			
	Pipe Wrap (Water Heating)_MF	42			
	Programmable Thermostat_MF	437			
	TSV Showerhead_MF	149			
	WiFi thermostat gas_MF	61			
	Participant_C&I	729	$1,037	$756,000	
	Program Planning & Administration				$28,085
	Marketing				$22,416
	Sales, Technical Assistance & Training				$144,241
	Evaluation & Market Research				$2,476

2023 Evaluation, Measurement, and Verification Plan

Table of Contents

1. Introduction

Evaluation, Measurement, and Verification (EM&V) is an integral and required part of Rhode Island Energy's energy efficiency program planning process. 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. EM&V also provides insight into market characteristics and guidance on energy efficiency program design to improve the delivery of cost-effective programs.

The Company's EM&V Plan continues to focus on evaluating Rhode Island projects, markets, and energy efficiency programs while leveraging as many resources as possible from evaluation studies in other jurisdictions in order to maximize value for ratepayers while minimizing costs. These studies are commissioned by the Company. They are conducted by independent evaluation firms, whose goal is to produce an accurate, complete, and transparent review of Rhode Island's energy efficiency programs and markets. 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 study methodologies and savings assumptions from evaluation studies are documented in the Rhode Island Technical Reference Manual (TRM). The TRM is reviewed and updated annually to reflect changes in technology, baselines, and evaluation results.

The entire evaluation process is managed by the Company in consultation with the Rhode Island Energy Efficiency & Resource Management Council (EERMC) and the Office of Energy Resources (OER). The EERMC and OER follows each study closely and is involved in planning, work plan development, and review of interim work products and study results.

The Company's EM&V framework provides confidence among ratepayers and stakeholders that programs are effective and EM&V activities are independent and objective.

2. Evaluation Studies Applicable to 2023

2.1. Overview

The Company, with input from EERMC and OER, expects to complete seven Rhode Island-specific evaluation studies in 2022 that will be applied beginning in 2023 (see Section 2.2 below). The research studies include impact evaluations, process evaluation, and market studies in the residential and commercial and industrial (C&I) sectors, as well as studies that are considered cross-cutting.

A complete list of historical research studies is provided in Section 4 along with a brief summary of the impact of those results in planning the Company's programs. Prior year studies that have been superseded by studies completed since the filing of the 2022 Energy Efficiency Plan have been removed from this list. These studies are available through a request of the EERMC, the Rhode Island Public Utilities Commission (PUC), or Rhode Island Energy.

Section 5 provides detailed descriptions, findings, and recommendations of each of the Rhode Island-specific studies listed in the next section, along with selected research studies completed in other regions and/or other jurisdictions. The results of the evaluations from other regions and jurisdictions, most commonly Massachusetts,[1] have been judged by the Company, in consultation with EERMC and OER, to be applicable to Rhode Island's energy efficiency programs. The Company is adopting the results of these studies in 2023 program planning due to similarity, either in the measures offered, or program structure or delivery.

2.2. Recent Rhode Island-Specific studies

Commercial

- C&I Lighting Market Characterization Study (RI-21-CE-LightMar; In progress)
- Impact Evaluation of PY2020 Custom Gas Installations (RI-21-CG-CustGasPY20; In progress)
- Impact Evaluation of PY2020 Custom Electric Installations (RI-21-CE-CustElecPY20; In progress)
- Rhode Island Cannabis Industry Standard Practice (RI-21-CX-ISPBaseline; In progress)

[1] Prior to May 2022, Narragansett Electric Company was part of National Grid, which has affiliates in Massachusetts and which facilitated the leveraging of evaluation studies.

Residential and Income-Eligible

- Nonparticipant Market Barriers Study (RI-21-RX-NPStudy)
- Participation and Multifamily Census Study (RI-21-RX-Participation)

Cross-cutting

- Rhode Island 2021 Energy Efficiency Workforce Analysis – Final Report

2.3. Recent Studies Adopted from Other Jurisdictions

THIS SECTION IS PRELIMINARY AND WILL BE UPDATED IN FINAL PLAN

Commercial

- C&I O&M and non-O&M NEI with Small Business Focus (MA20X10-B-CIOMNEI)
- C2
- C3

Residential and Income-Eligible

- Solar Inverter Power Factor Correction Demonstration (MA21DR03) Evaluation Memorandum
- R2
- R3

Cross-cutting

- X1
- X2
- X3

3. 2023 Planned Evaluation Studies

3.1. Overview

This section describes planned studies that focus on areas of interest to the Rhode Island energy efficiency programs and build on the deep history of evaluation studies commissioned by the Company over numerous years. To optimize the use of evaluation resources, where programs are considered to

be similar in program delivery and population served with those offered in Massachusetts, the Company will consider avenues to participate in Massachusetts studies.[2]

3.2. Summary

Table 2 lists evaluation studies that the Company plans to conduct in 2023 to inform the 2024 Annual Plan and future planning cycles. Barring changes to the 2024 Annual Plan schedule, studies that will be incorporated into the Annual Plan must be completed by August 2023. The proposed budget for evaluation study expenditures in 2023 is approximately $2.3 million ($1.7 million for electric and $0.6 million for gas), excluding staffing costs. The proposed budget for EM&V comprises approximately 1.5% of the total portfolio budget in 2023.

Study labeling codes take the general form shown in Table 1. For example, RI-17-CG-CustGas refers to the Custom Gas Evaluation Study that started in 2017 in the commercial sector for gas, while RI-18-RX-IESF refers to evaluation study started in 2018 of the income eligible single-family program for electric and gas.

Table 1. Study Labeling Code Format

[State] –	[Year Study Conducted] –	[Sector]	[Fuel] –	[Keyword]
RI	19	R = residential	E = electric	
	20	C = commercial	G = gas	
	21	X = cross sector	X = electric & gas	

Table 2. Planned Evaluation Studies in 2023

Sector	Study Code	Type	Affected Programs	Study Name	State Lead
C&I	RI-22-CX-Proc	Process	C&I	Small Business Process Evaluation (continued from 2022)	RI
C&I	RI-22-CX-Codes	Codes	C&I	C&I New Construction Baseline Study (continued from 2022)	RI
C&I	RI-22-CX-RTUOpt	Impact	C&I	Automated RTU Optimization Demonstration Evaluation (continued from 2022)	RI
C&I	RI-22-CG-CustGasPY21	Impact	C&I Gas	Impact Evaluation of PY2021 Custom Gas Installations (continued from 2022)	RI

[2] Despite no longer being part of National Grid, the Company plans to stay abreast of the voluminous Massachusetts evaluation activities that may be beneficial and applicable in Rhode Island and follow through as appropriate.

Sector	Study Code	Type	Affected Programs	Study Name	State Lead
C&I	RI-22-CE-CustElecPY21	Impact	C&I Elec	Impact Evaluation of PY2021 Custom Electric Installations (continued from 2022)	RI
C&I	RI-23-CG-CustGasPY22	Impact	C&I Gas	Impact Evaluation of PY2022 Custom Gas Installations	RI
C&I	RI-23-CE-CustElecPY22	Impact	C&I Elec	Impact Evaluation of PY2022 Custom Electric Installations	RI
C&I	RI-23-CX-FRSO	NTG	C&I	C&I Free-Ridership and Spillover Study	RI
C&I	RI-23-CE-LightingMM	Market	C&I	C&I Lighting 2023 Market Characterization Study	RI
C&I	RI-23-CX-Cook	Impact	C&I	Commercial Cooking Gas and Electric Impact Evaluation	RI
Residential	RI-23-RX-OutreachPilots	Market	Residential	Experimental Outreach Pilots	RI
Residential	RI-23-RX-NPSegmentation	Market	Residential	Nonparticipant Characterization and Segmentation Research	RI
Residential	RI-23-RX-OutreachCBO	Market	Residential	Community-Based Organization Outreach Workshops	RI
Residential	RI-23-RX-CentralHVAC	Impact	HVAC	Residential Central HVAC Impact Evaluation Study	RI
Residential	RI-23-RX-Dashboard	Market	Residential	Participation Study Dashboard Update	RI
Residential	RI-22-RE-HPMeter	Impact	HVAC Elec	Electric Heat Pump Metering Study (Continuation from 2022)	MA
Residential	RI-23-RX-EWisePY22	Impact	EnergyWise SF	Energy Wise PY2022 Impact Evaluation Study	RI
Cross-cutting	RI-23-XX-EcImpacts23	Policy	Multiple	Economic Impact Study	RI
Cross-cutting	RI-23-XX-Lifetime	Impact	Multiple	Comprehensive Measure Life Review	RI

The evaluation pathway for pilots, demonstrations, and assessments is based on each effort's scale, budget, scope, and the availability of external data. 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. In cases where an independent evaluation is appropriate, the EM&V team will run the evaluation. For guidelines on the stakeholder review process and which pilots, demonstrations, and assessments will receive an independent evaluation, please see Attachment 8. The evaluation will follow the same established evaluation framework used in evaluations

of established programs. This includes management of the independent evaluation vendor by the Company's EM&V team in consultation with the EERMC and OER. See Attachment 8 for further details on pilots, demonstrations, and assessments.

The EM&V team will follow the Company's standard procurement policy that cuts across programs in order to achieve the lowest cost procurement of required external services while enabling the Company to minimize administrative costs, deliver on program commitments, and meet time-sensitive regulatory deadlines. The Company's standard procurement policy is supported and enforced by stand-alone internal procurement function. Contract characteristics below certain thresholds are eligible for sole-sourcing while contract characteristics above thresholds require competitive procurement unless it can be demonstrated to the procurement organization that securing multiple bids is not possible or practical.

Final reports along with graphical executive summaries will be made publicly available upon completion of the evaluation studies. All complete graphical executive summaries will be provided as a handout at EERMC meetings and posted on the EERMC website.[3]

3.3. Commercial and Industrial Planned Studies

RI-22-CX-Proc – Small Business Process Evaluation (continued from 2022)

The objective of this study is to assess the overall delivery of the Small Business Direct Install program. The study will assess the effectiveness of program delivery procedures. This evaluation will identify practical approaches to improve the overall effectiveness of the program in order to reach higher participation rates and deeper savings.

RI-22-CX-Codes – C&I New Construction Baseline Study (continued from 2022)

The objective of this study is to gather market data on new construction practices in Rhode Island. This data will be used to inform industry standard practice development and/or adoption and develop new construction baselines.

RI-22-CX-RTUOpt – Automated RTU Optimization Demonstration Evaluation (continued from 2022)

The objective of this demonstration project is to verify savings for the automated RTU optimization product described in Attachment 8, section 4.2. The demonstration will install new smart thermostats and provide the software integration for 10-15 sites. The evaluation will collect data provided by the software, billing data, and potentially on-site metering for an independent assessment of the savings

[3] https://rieermc.ri.gov/plans-reports/evaluation-studies/

above and beyond the thermostat savings. The results of the study will be used to develop deemed savings, if possible. This study began in spring 2022 and will conclude in 2023 to allow for assessment of heating savings.

RI-22-CG-CustGasPY21 – Impact Evaluation of PY2021 Custom Gas Installations (continued from 2022)

The objective of this impact evaluation is to provide verification of natural gas energy savings estimates for a sample of custom gas projects through site-specific inspection, metering, and analysis. The results of this study will be used to determine the realization rates for custom gas energy efficiency offerings based on installations from 2021. This will continue 'rolling' evaluation efforts, where each year will evaluate roughly 1/3 of the number of sites needed for a full sample and results will be combined with results from the previous two years, which will keep the realization rates updated yearly. This study is scheduled to begin in late 2022 and continue into 2023.

RI-22-CE-CustElecPY21 – Impact Evaluation of PY2021 Custom Electric Installations (continued from 2022)

The objective of this impact evaluation is to provide verification of electric energy savings estimates for a sample of non-lighting custom electric projects through site-specific inspection, metering, and analysis. The results of this study will be used to determine the realization rates for custom electric energy efficiency offerings based on installations from 2021. This will continue 'rolling' evaluation efforts, where each year will evaluate roughly 1/3 of the number of sites needed for a full sample and results will be combined with results from the previous two years, which will keep the realization rates updated yearly. This study is scheduled to begin in spring 2021.

RI-23-CG-CustGasPY22 – Impact Evaluation of PY2022 Custom Gas Installations

The objective of this impact evaluation is to provide verification of natural gas energy savings estimates for a sample of custom gas projects through site-specific inspection, metering, and analysis. The results of this study will be used to determine the realization rates for custom gas energy efficiency offerings based on installations from 2022. This will continue 'rolling' evaluation efforts, where each year will evaluate roughly 1/3 of the number of sites needed for a full sample and results will be combined with results from the previous two years, which will keep the realization rates updated yearly. This study is scheduled to begin in summer 2023 and continue into 2024.

RI-23-CE-CustElecPY22 – Impact Evaluation of PY2022 Custom Electric Installations

The objective of this impact evaluation is to provide verification of electric energy 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 realization rates for custom electric energy efficiency offerings based on installations from 2022. This will continue 'rolling'

evaluation efforts, where each year will evaluate roughly 1/3 of the number of sites needed for a full sample and results will be combined with results from the previous two years, which will keep the realization rates updated yearly. This study is scheduled to begin in spring 2023.

RI-23-CX-FRSO – C&I Free-Ridership and Spillover Study

C&I free-ridership and spillover values will be updated based on an assessment of the behavior of both participants and nonparticipants of C&I energy efficiency programs. The results will assist in quantifying 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. The study will begin in early 2023.

RI-23-CE-LightMar – C&I Lighting 2023 Market Characterization Study

The primary objective of this study is to calculate the adjusted measure lives (AML) for C&I custom and prescriptive lighting measures. To understand the future baselines needed to calculate the AMLs, this study will convert an existing stock turnover model, utilized in Massachusetts and Connecticut, with Rhode Island specific inputs. The model will be calibrated using annual market share (percent of sales) estimates. Rather than collecting primary sales data from distributors, this study will seek to collect primary interviews to determine market share estimates in Rhode Island. In addition to producing future baselines for AMLs, the model results will help the study team understand the current and historical Rhode Island lighting saturation by submarket and technology, forecast the Rhode Island C&I lighting market trajectory, and estimate the remaining opportunities to generate program savings.

RI-23-CX-CommCook – Commercial Cooking Gas and Electric Impact Evaluation

Savings for many commercial cooking measures are currently calculated using EnergyStar calculators and assigned a realization rate of 100%. This subprogram has not been studied previously. This study will draw a sample of both electric and commercial equipment and develop a realization rate. It is anticipated that site surveys, runtime, and spot consumption metering will be used.

3.4. Residential and Income-Eligible Planned Studies

RI-23-RX-OutreachPilots – Experimental Outreach Pilots

In response to lower response rates in recent evaluations, the Participation Study completed in 2022 generated a list of less traditional research outreach approaches to engage customers/participants in evaluations and market research. In this study, Rhode Island Energy will leverage the prior study and, in conjunction with the propensity score from the Participation Study, test the efficacy of different approaches at reaching select historically hard-to-reach groups. Including these customer segments in future research will lead to better customer representation.

RI-23-RX-NPSegmentation – Nonparticipant Characterization and Segmentation Research

The Nonparticipant Market Barriers Study completed in 2022 included a survey with over 1,000 respondents. In this study, RI Energy will use survey responses and other demographic data to: (1) explore the characteristics of nonparticipants (both survey respondents and overall population) further; (2) analyze differences in preferences and barriers of survey respondents by demographics (age, income, home type); and (3) use cluster analysis to uncover structure and patterns in nonparticipant responses to identify natural, common groupings of customers; develop personas; and make recommendations for communication and outreach.

RI-23-RX-OutreachCBO – Community-Based Organization Outreach workshops

The Nonparticipant Market Barriers Study included interviews with Community-Based organizations. Some organizations were unfamiliar with energy efficiency programs, while several expressed keen interest in working with the utility to help their communities access utility programs. Through participatory focus group/design thinking workshops with community-based organizations (CBOs), the RI Energy team will facilitate co-creating a communication and outreach model to use to engage CBOs.

RI-23-RX-CentralHVAC – Residential Central HVAC Impact Evaluation Study

The objective of this study is to perform an impact evaluation of central heating and cooling equipment in order to update results that are currently over 5 years old. The study may include detailed metering of participating customers. The goals for this study would be to update the savings estimates for the current rebate offerings for central heating and cooling systems (excluding heat pumps which have been studied extensively in recent years). The heating equipment evaluation will involve a representative sample of different fuels. Heating and cooling were last studied in 2016 with a study of equivalent full load hours.

RI-23-RX-Dashboard – Participation Study Dashboard Update

The dashboard created as part of the recent Participation and Multifamily Census study included program data through 2020. The dashboard has already shown itself to be useful in planning. Adding 2021 and 2022 data will keep the dashboard relevant and can extend the life of Rhode Island Energy's investment in the tool at a relatively low incremental cost.

RI-22-RE-HPMeter – Electric Heat Pump Metering Study (Continuation from 2022)

The goals for this study would be to update the savings estimates for the current rebate offerings for heat pumps. The study would include detailed metering of participating customers in order to update results that are currently over 5 years old. This study would be in collaboration with MA and possible other states in the New England area. The study goal would be looking to update the savings for mini-split heat pumps, both going from standard heat pumps to high efficiency heat pumps and electric resistance to heat pumps, and ducted heat pumps going from standard heat pumps to high efficiency

heat pumps in RI. The study is being led by Massachusetts Program Administrators and will include Connecticut in addition to Rhode Island.

RI-23-RX-EWisePY22 – EnergyWise PY 2022 Impact Evaluation Study

This study will be an impact-only study to update values from the PY2019 single-family impact and process evaluation completed in 2020. Given the importance of residential weatherization in meeting state and Company climate objectives, an update of the PY2019 study is warranted. This study will be completed in time to inform the 2024 planning process assuming timely/complete data and a minimized reporting process. This study may include the impact of secondary heat sources on evaluated savings in the EnergyWise Single Family Program. This study may include literature review, analysis of program data and participant surveys to understand the prevalence of secondary heating in participating homes and to assess any impacts that may not be accounted for in the previous EnergyWise impact evaluation.

3.5. Cross-sector or Other Planned Studies

RI-23-XX-Lifetime – Comprehensive Measure Life Review

Measure life assumptions used in calculating lifetime savings are critical with Rhode Island's focus on lifetime savings. This study would include a comprehensive literature review of Technical Reference Manuals and research in other jurisdictions to identify potential updates to effective useful lifetime assumptions

RI-23-XX-EcImpacts23 – Economic Impact Study

The objective of this study will be to update the multipliers used to estimate the economic impacts – chiefly job-years and state GDP – resulting from investments in energy efficiency. The multipliers were last updated in "Review of RI Test and Proposed Methodology" prepared for the Company by the Brattle Group, January 31, 2019. An updated study is planned to begin in late 2022 and be completed for use in 2024-2026 planning.

4. Historic Evaluation Studies

This section contains a list of all historic studies still being used by the Company as the basis of claimed savings in the 2023 Program Plan and in the Technical Reference Manual. An at-a-glance summary shows the studies by program, followed by a more detailed table summarizing the relevant studies.

THIS TABLE WILL BE UPDATED IN FINAL PLAN

Sector	Program	Study type	2014	2015	2016	2017	2018	2019	2020	2021	2022 Plan
Residential	EnergyWise SF	Impact									
	EnergyWise SF	Process					HEAT Loan				
	Income Eligible SF	Impact									
	Income Eligible SF	Process									
	EnergyWise MF	Impact									
	EnergyWise MF	Process									
	Income Eligible MF	Impact									
	Income Eligible MF	Process									
	Home Energy Reports	Impact									
	Home Energy Reports	Process									
	EnergyStar Lighting	Impact/Market									
	EnergyStar Products	Impact									
	HVAC	Impact								Demo	
	HVAC	Process/Market									
	Connected Solutions	Impact/Process									
Cross-cutting/ Special	Potential study	Market									
	Workforce	Impact/Market									
	Avoided Cost	Benefits									
	REMI	Benefits									
	Participation	Market									
	Non-Participant	Market									
	RASS	Market									
	Gas Peak Demand	Impact									
	Piggybacking Study	Process									
	Heat Pumps Study	Market									
	ES Homes/Codes&Standards	Impact/Market									
	Legislated M&V Study	Market									
C&I Electric	Custom	Impact									
	HVAC	Impact									
	Industrial Process	Impact									
	CAIR	Impact									
	Refrigeration, Motors, Other	Impact									
	Custom Lighting	Impact									
	Street Lighting	Impact									
	CDA	Impact									
	CHP	Impact									
	Prescriptive Lighting	Impact									
	Upstream Lighting	Impact									
	Upstream Lighting	Process									
	Prescriptive HVAC	Impact			chillers						
	Prescriptive VSD	Impact									
	Prescriptive CAIR	Impact									
	Connected Solutions	Impact									
	All	NTG									
C&I Gas	Custom	Impact									
	Prescriptive	Impact		steam trap		steam trap	steam trap				
	All	NTG									
Small Business	Lighting	Impact		presc.							
	Non-Lighting Electric	Impact									
	All	Process									
	All	NTG									

These studies are available through the EERMC , the PUC , and Rhode Island Energy.

Table 3: Completed Evaluation Studies Applicable in 2023

THIS TABLE WILL BE UPDATED IN FINAL PLAN, adding 2022 studies and dropping superseded studies

2021	
Study	**Impact Descriptions**
DNV, Impact Evaluation of PY2019 Upstream Lighting Program, July, 2021	This study updated prospective realization rates and impact factors for the C&I Upstream lighting program. The values reflect decreasing ISR values for Screw-in products and increasing ISRs for linear products. These will be applicable for 2022, 2023, and beyond.
DNV, Impact Evaluation of PY2019 Custom Gas Installations, September 2021	The study updated realization rates for custom gas projects, as part of a rolling effort that incorporated results from PY2017, PY2018, and PY2019.
DNV, Impact Evaluation of PY2018 Custom Electric Installations, September 2021	The study updated realization rates for custom electric projects, as part of a rolling effort that incorporated results from PY2016, MA PY2017/18, and PY2018.
DNV, Impact Evaluation of PY2019 Custom Electric Installations, September 2021	The study updated realization rates for custom electric projects, as part of a rolling effort that incorporated results from PY2016, PY2018, and PY2019.
Cadeo, Appliance Recycling Impact Factor Update, June 2021	This study updated the gross kWh savings, realization rates and NTG factors for refrigerator and freezer recycling measures.
DNV, Franchise Controls Deemed Savings Study, March 2021 (Leveraged study from MA)	This study recommended a deemed savings value of 5,344 kWh for a building automation system (BAS) measure that controls small individual food service appliances.
DNV, Lifetime Gross AML Adjustment Analyses, July, 2021 (Leveraged study from MA)	This study updated Adjusted Measure Lives (AML) for lighting applications, excluding New Construction and stand-alone controls. Overall the programs are seeing decreased AMLs as market adoption accelerates.
DNV, Upstream Lighting NTG, June, 2021 (Leveraged study from MA)	This study updated NTG values for upstream lighting technologies, and adjusted the values down significantly due to heavy free-ridership.

DNV, Ground Source Heat Pump eTRM Measure Review, March 2021 (Leveraged study from MA)	This study recommended that GSHPs be broken out from ASHPs into their own category offering in order to allow the program to attribute savings, baselines, and lifetimes in a more defensible way. It also recommended the GSHP lifetime be updated to 25 years.
DNV, NRNC Market Characterization Study, June 2021 (Leveraged study from MA)	This study produced factors to be applied to IECC 2015-based code LPD to determine baseline LPD requirements.
DNV, Energy Management System ISP Study, 2021 (Leveraged study from MA)	This study identified industry standard practices for energy management systems, with a particular focus on criteria for determining when an existing system should be considered failed.
DNV, C&I HVAC NTG & Market Effects Measurement, 2021 (Leveraged study from MA)	This study established Net to Gross Ratios for six technologies supported by the Upstream HVAC Initiative.
Guidehouse, RCD Virtual Assessment Study, March 2021 (Leveraged study from MA)	This study found that in-service rates are lower for self-installed measures. Rhode Island leveraged results from this study to update the in-service rates for instant savings measures in the EnergyWise Single Family program.
Guidehouse, Comprehensive TRM Review, April 2021 (Leveraged study from MA)	This study updated savings assumptions and effective useful lives (EUL) of several residential measures in MA. Rhode Island adopted the results from this study to update savings and EUL assumptions for several measures in the residential programs.
NMR, Low Income Multifamily Health NEI (TXC 50), July 2021 (Leveraged study from MA)	This study produced NEI values associated with energy efficiency programs in Income Eligible, Multifamily buildings. A total of 4 health and safety NEIs were monetized as part of this study. Arthritis, Thermal Stress (cold), Home Productivity, and reduced fire risk were all found to have Annual Per unit values of $49, $1,426, $49, and $13, respectively, totaling $1536. These values are allocated to all applicable air sealing, insulation, and heating measures.
NMR, Residential New Construction Quick Hit NEI Study (MA20X14-RNCNEI), September 2021 (Leveraged study from MA)	The study produced updated NEI values for heating related measures offered through the Residential New Construction program. The total Heating NEIs for RNC went from an Annual Per Unit value of $117 to $142.33 due to increases in thermal comfort and noise reduction related impacts.

NMR, Residential Downstream/Upstream Products Net-to-Gross Study, June 2021 (Leveraged study from MA)	This study yielded prospective net-to-gross ratios and retrospective and prospective in-service rates for products supported by the Residential Retail or Residential Coordinated Delivery Initiatives. Rhode Island adopted the results from this study to update 2022 planning assumptions for ENERGY STAR Products program.
NMR, Low-rise Residential New Construction Net-to-Gross Study, July 2021 (Leveraged study from MA)	This study yielded prospective and retrospective net-to-gross ratios for measures supported by the Low Rise Residential New Construction offering. Rhode Island adopted the results from this study to update 2022 planning assumptions.
NMR, Renovations and Additions Net-to-Gross Study, July 2021 (Leveraged study from MA)	This study yielded prospective and retrospective net-to-gross ratios for measures supported by the Renovations and Additions Residential New Construction offering. Rhode Island adopted the results from this study to update 2022 planning assumptions.
Guidehouse, Impact Analysis of Residential Wi-Fi Thermostats, Jun 2021 Results Presentation (Leveraged study from MA)	This study updated savings assumptions for programmable and Wi-Fi thermostats delivered through retail and direct install channels. Rhode Island adopted the draft results from this study to update savings for programmable and Wi-Fi thermostat measures in the residential HVAC and retrofit programs.
RI-20-XG-GasPeak – C&I Gas Peak Demand Savings	This study supplied peak gas demand daily percentages of energy consumption by end use and building type for the C&I sector. These results could be used to calculate the gas daily energy savings that have occurred as a result of C&I program activity.
RI-20-XG-GasPeak – Residential Gas Peak Demand Savings	This study supplied peak gas demand daily percentages of energy consumption by end use for the residential sector. These results could be used to calculate the gas daily energy savings that have occurred as a result of residential program activity.
Net-to-Gross Research of RCD and Select Products Measures (MA20R28)	For RI, the study applied new NTG results for the residential gas and electric HVAC programs.
Synapse Energy Economics, Avoided Energy Supply Components in New England 2021 Report. May 2021.	This study developed new estimates of avoided costs associated with energy efficiency measures for program administrators throughout New England States. Rhode Island used the avoided costs of energy, capacity, natural gas, fuel oil, environmental costs and demand reduction induced price effects resulting from this study for 2022 program planning.

2020	
Study	**Impact Descriptions**
Cadeo, Impact and Process Evaluation of EnergyWise Single Family Program, September 2020.	This study updated gross savings, in-service rates and net-to-gross ratios for the EnergyWise Single Family program.
Cadeo, Impact and Process Evaluation of EnergyWise Multi Family Program, September 2020.	This study updated gross savings, realization rates, in-service rates and net-to-gross ratios for the EnergyWise Multi Family program.
Cadeo, Impact and Process Evaluation of Income Eligible Multi Family Program, September 2020.	This study updated gross savings, realization rates and in-service rates for the Income-Eligible Multi Family program.
Cadeo, Impact Evaluation of Home Energy Reports Program 2017-2019, September 2020.	This study updated realization rates for the Home Energy Reports program.
NMR, Lighting Hours of Use Study, March 2020. (Leveraged study from MA)	This study reviewed and updated the HOU used to calculate the lighting savings measures in MA. Rhode Island adopted the results to update savings assumptions for the lighting measures in RI.
NMR, LED Delta Watts Update, March 2020. (Leveraged study from MA)	This MA study updated delta watts for lighting measures. Rhode Island adopted the results to update gross savings calculation for its Residential Lighting measures.
Guidehouse, Residential Wi-Fi Thermostat DR Evaluation, April 2020. (Leveraged study from MA)	This study reviewed and updated the savings being used In MA for the Wi-Fi DLC program offering. Rhode Island adopted the results to update savings for Wi-Fi DLC offering in RI.
Guidehouse, 2019/2020 Residential Energy Storage Demonstration, February 2020. (Leveraged study from MA)	This study reviewed and verified the savings being used In MA were accurate for the Residential demand response battery storage offering. Rhode Island adopted the results for residential battery storage demand response offering in RI.

ERS, Evaluation of 2019-2020 Cross-State DR Program, February 2020. (Leveraged study from MA)	This study reviewed and updated the summer demand realization rate being used In MA for the C&I targeted dispatch program offering. Rhode Island adopted the results for the C&I targeted dispatch demand response offering in RI.
DNV GL, Impact Evaluation of PY2017 Custom Gas Installations. May 2020.	The study updated realization rates for custom gas projects, as part of a rolling effort that incorporated results from PY2016 and PY2017.
DNV GL, Impact Evaluation of PY2018 Custom Gas Installations. September 2020.	The study updated realization rates for custom gas projects, as part of a rolling effort that incorporated results from PY2016, PY2017, and PY2018.
DNV GL, Impact Evaluation of PY2018 Custom Electric Installations. Interim Findings August 2020.	The study updated realization rates for custom electric projects, as part of a rolling effort that incorporated results from RI PY2016, MA PY2017-18, and RI PY2018.
DNV GL, Impact Evaluation of 2017 Small Business Electric Installations. March 2020.	The study updated electric non-lighting impact factors for the Small Business initiative. RI leveraged the MA study of this initiative.
DNV GL, C&I Measure Life Study. March 2020.	This study informed Effective Useful Lives and Remaining Useful Lives for key C&I energy efficiency measures, updating the commercial boiler EUL. RI leveraged the MA study of this initiative.
Tetra Tech, C&I Free-Ridership and Spillover Study. Anticipated September 2020.	This study updated free-ridership and spillover rates for the C&I program
2019	
Study	**Impact Descriptions**
NMR, RLPNC 17-9 2019-21 Planning Assumptions: Lighting Hours-of-Use and In-Service Rate. July 2018. (Leveraged study from MA)	This study recommended planning values for hours of use and in-service rates for general service lamps, specialty and reflectors. Rhode Island adopted the results to update impacts for its Residential Upstream Lighting program.

NMR, RLPNC 17-3 Advanced Power Strip Metering Study (Revised). March 2019. (Leveraged study from MA)	This study yielded recommended gross electric savings and realization rates from advanced power strips offered through the Home Energy Services and upstream programs. Rhode Island adopted the result from this study to inform savings for Tier 1 and Tier 2 advanced power strips offered through its Retail Products program.
Navigant, Wi-Fi Thermostat Impact Evaluation Secondary Research Study. September 2018. (Leveraged study from MA)	This study recommended annual savings values of 31 therms for combustion heating, 97 kWh for electric resistance heating, and 64 kWh for central air conditioning for Wi-Fi thermostats. Rhode Island adopted these results to update savings assumptions for Wi-Fi thermostats in HVAC and residential retrofit programs.
DNV GL, Impact Evaluation of PY2016 Custom Electric Installations. January 2020.	The study updated realization rates for custom electric projects, as part of a study leveraging the MA study of the same program element.
2018	
Study	**Impact Descriptions**
Energy & Resource Solutions, Two-Tier Steam Trap Savings Study. April 2018.	This MA study recommends a two-tier approach for prescriptive steam traps. It calculates deemed savings to be 8.4 MMBtu/yr for system operating pressure ≤15 psig, and 35.6 MMBtu/yr for system operating pressure is >15 psig.
DNV GL, Impact Evaluation of PY 2015 Rhode Island Commercial and Industrial Upstream Lighting Initiative. September 2018.	The study updated impact factors for the Upstream Lighting initiative. The RI study leveraged the MA study of the same initiative.
DNV GL, Rhode Island Commercial & Industrial Impact Evaluation of 2013-2015 Custom Comprehensive Design Approach. October 2018.	The study updated the realization rate for the CDA initiative. The RI study leveraged the MA study of the same initiative.
DNV GL, Impact Evaluation of PY2016 RI C&I Small Business Initiative: Phase I. June 2019.	The study updated impact factors for the Small Business initiative. The RI study leveraged the MA study of the same initiative.
DNV GL, Prescriptive C&I Loadshapes of Savings. March 2018.	This MA study pooled known sources of 8,760 savings loadshapes in an interactive tool to estimate general prescriptive measure loadshapes over customizable time periods.

DNV GL, P78 Upstream LED Net-to-gross Analysis. August 2018.	This MA study updated net-to-gross values for the C&I Upstream Lighting initiative for 2019, 2020, and 2022.
DNV GL, P86 Lighting Hours of Use Study. April 2019.	This MA study used lighting hours of use data from several previous studies to determine hours of use by building type for the C&I Upstream Lighting program.
DNV GL, P81 Process Evaluation of C&I Upstream Lighting Initiative. September 2018.	The MA study updated in-service rates for the C&I Upstream Lighting initiative.
Synapse Energy Economics, Avoided Energy Supply Components in New England 2018 Report. March 2018.	This study developed new estimates of avoided costs associated with energy efficiency measures for program administrators throughout New England States. Rhode Island used the avoided costs of energy, capacity, natural gas, fuel oil, environmental costs and demand reduction induced price effects resulting from this study for 2019 program planning.
Navigant, 2017 Residential Wi-Fi Thermostat Demand Response. April 2018.	This study evaluated the controllable thermostats as a demand response technology offered through Massachusetts and Rhode Island ConnectedSolutions programs. The study found average demand savings of 0.44 kW per thermostat in Massachusetts and 0.52 kW per thermostat in Rhode Island.
NMR, Rhode Island Residential Appliance Saturation Survey. October 2018	This study developed an inventory of residential end-uses, including appliances, consumer electronics, heating and cooling equipment, thermostats, water heating, and building characteristics. Findings from this study will be used to inform program planning and support future potential studies in Rhode Island.
Cadeo, Rhode Island Impact Evaluation of Income Eligible Services Single Family Program, August 2018	This study deemed savings values and realization rates for electric and gas participants using billing and engineering analysis. The Company adopted the deemed savings values in the 2019 program plan.
Navigant, MA Residential Electric Loadshape and Baseline Study (Heating and Cooling Season report). July 2018. (Leveraged study from MA)	This study collected saturation, penetration and usage behavior data for all major electric and gas appliances in Massachusetts. Rhode Island adopted the end use load shapes determined by this study.

NMR, RLPNC 17-4/17-5 Products Impact Evaluation of In-service and Short-term Retention Rates Study. March 2018. (Leveraged study from MA)	This study yielded estimates of in-service rates (ISRs) and short-term retention rates for products currently offered through the Residential Consumer Products Core Initiative or the Mass Save® Home Energy Assessment (HEA) Programs. Rhode Island adopted the result from this study to inform savings for measures offered through Residential Products program.
NMR/Tetra Tech, TXC34 Massachusetts Residential HVAC Net-to-Gross and Market Effects Study. July 2018. (Leveraged study from MA)	This study yielded recommended net-to-gross ratios for selected heating, cooling, and water heating measures that will receive Mass Save® Standard rebates in 2019-2022. Rhode Island adopted the result from this study to inform savings for measures offered through Residential HVAC/HEHE programs.
Tetra Tech, Market-Rate Multifamily NEI – Phase I Final Memo. March 2018.	This MA study reviewed non-energy impacts associated with market-rate multifamily properties, including whether or not any additional NEIs should be applied, whether NEI values differ based on type and ownership of building, and whether there is double counting of NEIs.
Tetra Tech, Non-Energy Impact Framework Study Report. January 2018.	This MA study reviewed the current status of NEIs and had the following recommendations: do not count existing property value NEIs, review the BCR-model-related differences highlighted in the study and determine whether there is a reason for each, and, in cases where an NEI for one initiative or measure is applied to a different initiative or measure, provide clear public documentation of how the decision was made.
DNV GL, Evaluation of 2017 Demand Response Demonstration: C&I ConnectedSolutions. February 2018.	This MA study reviewed the baseline application and impacts calculated by the AutoGrid system, examine the effectiveness of the Connected Solution baseline, and assess ex-post impacts. It was also designed to understand customer acceptance and experience with the intervention, readiness of systems for larger deployment, and PA and vendor success in delivery.
2017	
Study	**Impact Descriptions**
NMR, 2017 Rhode Island Single-Family Code Compliance/Baseline Study, July 2017	This study yielded the final agreed upon baseline values to update the User Defined Reference Home (UDRH) in Rhode Island

ICF, 2017 Rhode Island Residential Code Savings Analysis	This study found that the average Rhode Island home could attain annual electric savings of 3,690 kWh and gas savings of 10 MMBtu if it fully complied with the state's building energy code.
NBI, 2017 Rhode Island Commercial Code Savings Analysis	This study found that the average Rhode Island commercial building could attain annual electric savings of 0.73 kWh/sf and gas savings of 0.90 MMBtu/sf if it fully complied with the state's building energy code.
NMR, 2017 Rhode Island Code Compliance Enhancement Initiative Attribution and Savings Study	The study found residential and commercial attribution factors of 23% and 46, respectively, which were used along with study results on average savings as well as construction activity projections to calculate the CCEI's projected savings from 2018-2020.
New Buildings Institute, Energy Impacts of Commercial Building Code Compliance in Rhode Island, July 2017	This study quantified the energy impacts of energy code compliance patterns from field data collection and analysis of building characteristics.
The Cadmus Group, Inc., Ductless Mini-Split Heat Pump Impact Evaluation, 2016	This study estimated savings from various types of heat pumps.
DNV-GL, Impact Evaluation of 2014 Custom HVAC Installations, September 2017	The study updated realization rates for custom electric HVAC projects, as part of a study leveraging the MA study of the same program element.
DNV-GL, 2014 RI Custom Process Impact Evaluation, December 2017	The study updated realization rates for custom process projects, as part of a study leveraging the MA study of the same program element.
TetraTech, C&I Programs Freeridership & Spillover Study, September 2017	This study updated free-ridership and spillover values for the C&I electric and gas programs.
DNV-GL, MA C&I Steam Trap Evaluation Phase 2, Feb, 2017	This study updated steam trap savings estimates.
DNV-GL, Gas Boiler Market Characterization Study Phase II: Final Report, March 2017	This study updated C&I condensing boiler savings estimates.
DNV-GL, MA45 Prescriptive Programmable Thermostats, March 2017	This study updated programmable thermostat deemed gas savings for C&I programs.

2016	
Study	**Impact Descriptions**
DNV-GL, Impact Evaluation of 2014 RI Prescriptive Compressed Air Installations Final Report, July 2016	This study yielded an energy realization rate for prescriptive compressed air compressors, dryers, and EE accessories.
DNV-GL, Impact Evaluation of 2012 National Grid-Rhode Island Prescriptive Chiller Program Final Report, July 2016	This study yielded an energy realization rate for prescriptive chillers.
Massachusetts Special and Cross-Cutting Research Area: Low-Income Single-Family Health- and Safety-Related Non-Energy Impacts (NEIs) Study. Prepared by the NMR Group and Three3, Inc. for the Massachusetts Program Administrators. August 5, 2016.	This study developed Non Energy Impacts for low income programs, based on USODE's Weatherization Assistance Program tailored to MA context. Dollar benefits rose substantially over prior values primarily based on avoidance of deaths due to thermal stress.
Cadmus Group; Large Commercial and Industrial On-Bill Repayment Program Evaluation, September, 2016	National Grid commissioned this study to evaluate the financing component of the large commercial and industrial (LCI) energy efficiency program. Cadmus evaluated the program design, performance, and sustainability; the overall market for the program; and the program's penetration of that market to date.
Ductless Mini-Split Heat Pump (DMSHP) Final Heating Season Results; Ductless Mini-Split Heat Pump (DMSHP) Cooling Season Results, COOL SMART Impact Evaluation Team, 2015 / 2016	Heating and cooling memos that describe the number of full load hours found with field installed systems in MA and RI; these hours were used with historic data on incentivized systems to come up with average savings per unit.

DNV GL, Stage 2 Results—Commercial and Industrial New Construction Non-Energy Impacts Study—Final Report, prepared for the Massachusetts Program Administrators, March 2016	The purpose of this study was to quantify the dollar value of participant NEIs for C&I NC projects completed in 2013, and to estimate gross NEIs per unit of energy savings resulting from NC electric and gas measures separately.
2015	
Study	**Impact Descriptions**
Cadmus, Inc., High Efficiency Heating Equipment Impact Evaluation: Final Report, March 2015	The study determined revised deemed savings values for each furnace and boiler measure, including condensing boilers and early replacement of heating equipment. The study also reflected the increasing baseline for standard efficiency heating equipment.
DNV-GL, Retrofit Lighting Controls Measure Summary of Findings: Final Report (MA), October 2014	The study examined trends in lighting control savings and noted a decrease in savings over previous program years. It recommended updated coincidence factors as well as potential program and technology areas that may yield higher savings. Finally, the study recommended a change in the savings calculation algorithm for lighting controls.
DNV-GL, Massachusetts 2013 Prescriptive Gas Impact Evaluation; Steam Trap Evaluation Phase 1, March 2015	The study concluded that there should continue to be both prescriptive and custom pathways for steam trap retrofit incentives, and further recommended that a group convene to review and revise the deemed savings estimate for steam traps. The study also recommended the use of a six year lifetime for steam traps.
Cadmus, Inc., Cool Smart Incremental Cost Study: Final Report, July 2015	This incremental cost study estimates how manufacturing production costs (MPCs) and purchase prices of residential air conditioning (AC) and heat pump (HP) equipment change as equipment efficiency increases. The results support Cool Smart program enhancements and cost-effectiveness analysis, as well as potential upstream residential upstream heating, ventilation and air conditioning (HVAC) incentive programs.

Cadmus, Inc., Lighting Interactive Effects Study Preliminary Results – Draft, April 2015	This memo details the preliminary findings of the Lighting Interactive Effects study evaluated for the Massachusetts (MA) Program Administrators to better understand and report the true impact of energy efficient lighting retrofits. It recommended factors for electric and gas energy to be applied to residential program savings.
2014	
Study	**Impact Descriptions**
DNV GL, 2014 , Impact Evaluation of National Grid Rhode Island C&I Prescriptive Gas Pre-Rinse Spray Valve Measure	The evaluation examined the gas and water savings associated with the installation of reduced-flow pre-rinse spray valves. The results are based on site measurements from MA and RI facilities. The final gross gas and water savings are 11.4 MMBtu and 6,410 gallons per spray valve respectively.
National Grid, Macroeconomic Impacts of Rhode Island Energy Efficiency Investments REMI Analysis of National Grid's Energy Efficiency Programs	This study quantifies the macroeconomic impacts of National Grid's 2014 EE Program Plan for Rhode Island and provides updated economic impact multipliers to quantify the benefits of future EE programs in the Rhode Island economy. This updates the multipliers from an economic impact study conducted by Environment Northeast (ENE) in 2009. Superseded by 2020 Brattle Group study that revised methods.
2013	
Study	**Impact Descriptions**
KEMA, Inc., Impact Evaluation of 2011 Rhode Island Prescriptive Lighting Installations KEMA, Inc., Impact Evaluation of 2011 Rhode Island Custom Lighting Installations	The Custom and Prescriptive Lighting studies involved the impact evaluation of components of the Large Commercial and Industrial electric efficiency programs. The studies included on-site engineering and end-use metering of a statistically drawn random sample of participants. The custom portion of the study was coupled with the results of the 2013 Massachusetts Custom Lighting study.

KEMA, Inc., Impact Evaluation of 2011 Prescriptive Gas Measures	On-site monitoring and verification of installation provided updated impacts for four major prescriptive gas measures. Programs and measures are similar between National Grid affiliates in MA and RI, and results are applied to RI. The overall realization rate for the four measures was approximately 102% and the relative precision was about ±15%.
KEMA, Inc., and DMI, Inc., Impact Evaluation of 2011-2012 Prescriptive VSDs	This evaluation provided a new estimate of the impacts of prescriptive variable speed drives, based on pre-post metering of measures installed in 2011 and 2012. Programs and measures are similar between National Grid affiliates in MA and RI, and results are applied to RI. Key findings include an annual kWh realization rate was 94% with a relative precision of +/- 23%, and identification of factors that influenced the realization rate.
KEMA, Inc., Impact Evaluation of 2010 Prescriptive Lighting Installations	The RI Prescriptive lighting study listed above did not examine case lighting separately from other lighting systems. To complement the RI-specific results, this MA study provided impact updates on case lighting.
2012	
Study	**Impact Descriptions**
TetraTech, Final Report – Commercial and Industrial Non-Energy Impacts Study, (prepared for Massachusetts Program Administrators), June 29, 2012	This report provides a comprehensive set of statistically reliable Non-energy impact (NEI) estimates across the range of C&I prescriptive and custom retrofit programs offered by the MA electric and gas Program Administrators (Pas). The analytical methods used allow this report‘s findings to be applicable to RI.
2011	
Study	**Impact Descriptions**

KEMA, Inc., C&I Lighting Loadshape Project, Prepared for the Regional Evaluation, Measurement, and Verification Forum, June 2011.	A compilation of lighting loadshape data from the Northeast. The study provided updated coincidence factors for the Energy Initiative and Small Business Lighting programs. The Small Business program summer coincidence factor went from 0.80 to 0.79, while the Energy Initiative summer coincidence went from 0.88 to 0.89
KEMA, Inc., C&I Unitary HVAC Loadshape Project Final Report, Prepared for the Regional Evaluation, Measurement, and Verification Forum, June 2011.	From end use metering, the study produced updated diversity and equivalent full load hours for unitary HVAC measures
2010	
Study	**Impact Descriptions**
ADM Associates, Inc., Residential Central AC Regional Evaluation, Final Report, October 2009	kWh and kW savings figures for the installation of efficient residential CAC systems

5. 2022 Evaluation Study Findings

THIS SECTION WILL BE UPDATED IN FINAL PLAN; section below is example retained from 2022 Plan

5.1. Rhode Island Specific studies

Example: Impact Evaluation of PY2019 Rhode Island C&I Upstream Lighting Initiative

Type of Study: Impact
Evaluation Conducted by: DNV
Date Evaluation Conducted: 7/15/21

Evaluation Objective and High-Level Findings:

DNV carried out the Impact Evaluation of the Project Year 2019 Rhode Island C&I Upstream Lighting Initiative for Narragansett Electric from December 2020 to June 2021. The study's overall purpose was

to build on prior research to understand the extent to which program performance is meeting program and policy goals and objectives.
The study was designed to answer the following research questions in three categories:
Baseline information:

- Was the site new construction or a major renovation event?
- What type, wattage, and count of lamps/fixtures were replaced by measures supported by the initiative? This question includes the proportion of T12 systems or lamps replaced by program measures

Savings factor results and their application:

- What are the updated savings factors for Narragansett Electric to use prospectively?
- How much savings can be attributed to controls induced by the initiative?
- How has the quantity of light fixtures/lamps increased or decreased since participating in the program? For example, where TLEDs were installed, were extra linear T8s installed to make up for the less than expected light output?
- Update the building type HOU values

Programs to which the Results of the Study Apply:
The results of this study are applicable to the Upstream Lighting measures alone.

Evaluation Recommendations included in the Study:
The study team proposed updated ISR, and kW saved per unit. When applied and combined with existing and unchanging HVAC interactive effects, and Delta Watts adjustment factors, the new RR values are show in the following table:

Category	kWh RR	Summer kW RR	Winter kW RR	Non Electric RR
Screw-In LEDs	50.47%	57.82%	46.06%	50.47%
LED Stairwell Kits	86.00%	86.00%	86.00%	86.00%
Linear LEDs	97.92%	110.40%	95.04%	97.92%
Linear LEDs w/ Controls	98.94%	111.55%	96.03%	98.94%
Linear Fixtures LEDs	99.96%	112.70%	97.02%	99.96%
Linear Fixture LEDs w Controls	99.96%	112.70%	97.02%	99.96%
High Bay / Low Bay	92.82%	104.65%	90.09%	92.82%
Exterior LEDs	95.00%	95.00%	95.00%	95.00%
High Bay / Low Bay w Controls	92.82%	104.65%	90.09%	92.82%
Exterior LEDs w Controls	95.00%	95.00%	95.00%	95.00%

Explain Whether or Not Narragansett Electric Decided to Adopt Recommendations from the Study:
Narragansett Electric is adopting these results.

Savings Impact:
These realization rates are broadly an increase across all categories, hold screw-in lighting applications.

Name 2

Name 3

Etc.

5.2. Studies Adopted from Other Jurisdictions

Name 1

Name 2

Name 3

ETC.

6.

2023 Rhode Island Test Description

Table of Contents

1 Introduction

This section has been prepared pursuant to Section 1.3(C) and 3.2(N) of the Least Cost Procurement Standards as approved and adopted pursuant to Order No. 23890 in Docket No. 5015 [1] (referred to herein as the "LCP Standards"), and in alignment with the Rhode Island Benefit Cost Test (RI Test) as defined by the Standards and the Docket 4600A Benefit-Cost Framework and associated Guidance. The methods identified herein will be used for the calculation of benefits and costs associated with the 2023 Annual Energy Efficiency Plan.

Two key supporting documents for cost effectiveness are the Technical Reference Manual (TRM) and the Avoided Cost Study. For the Annual Plan, the Company developed the 2023 Rhode Island Technical Reference Manual, which documents the savings or savings algorithms and costs for measures proposed to be offered through its programs in 2023. The TRM identifies the sources for the savings estimates. Sources can be evaluation studies, engineering analyses, and/or other research or analysis. This TRM is a public document and was provided to the EERMC and its consultants to support and facilitate the determination of the Plan's cost-effectiveness. The TRM is reviewed and updated annually to reflect changes in technology, baselines, and evaluation results.

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: 2021 Report" (2021 AESC Study) sponsored by the New England electric and gas efficiency program administrators to be used for cost effectiveness screening in 2021 or later. The avoided costs reflect a view of market conditions over the full study horizon, 2021-2036, at the time of the study [2] and are highly influenced by the cost of fossil fuels and expectations about ISO-NE's forward capacity market. Company-specific transmission and distribution capacity values are also included. The 2021 AESC Study introduced four counterfactual scenarios representing variations in demand-side measures offered in the future. For cost-effectiveness screening of the 2023 Rhode Island energy efficiency portfolio the Company used Counterfactual #4 as the best representative scenario for the DSM portfolios in the near future. Counterfactual #4 models a future in which program administrators install no new energy efficiency resources in 2021 or later years. This future does model some amount of building

[1] RI PUC Docket 5015, Least Cost Procurement Standards
http://www.ripuc.ri.gov/eventsactions/docket/5015_LCP_Standards_05_28_2020_8.21.2020%20Clean%20Copy%20FINAL.pdf

[2] The long term view is appropriate for energy efficiency planning, as most measures have expected useful lifetimes in excess of 10 years. Fuel cost increases experienced thus far in 2022 are not reflected in the avoided costs but such price spikes have tended to dissipate over time in the past.

electrification installed by the program administrators but does not include any active demand management resources installed by the program administrators. [3]

2 The RI Test Overview and Docket 4600 Benefit Cost Framework

The RI Test compares the present value of a stream of net benefits associated with the net savings of an energy efficiency measure or program over the life of that measure or program to the total costs necessary to implement the measure or program. The RI Test may be applied to any energy efficiency program independent of the primary fuel or resource the effort focuses on.

The RI Test captures the value created by efficiency measures installed in a particular program year over the useful life of the measure. The measure life is based on the technical life of the measure modified to reflect expected measure persistence. Because the RI Test captures the value associated with a stream of benefits over a period of time, the benefits from a measure are present valued so that costs and benefits may be compared.

The benefits calculated in the RI Test are the avoided resource supply and delivery costs, valued at marginal cost for the periods when there is a load reduction, as well as the monetized value of non-resource savings.

The program costs are those paid by both the utility and by participants plus the increase in supply costs for any period when load is increased. All equipment, installation, O&M, removal, evaluation, and administration costs are included.

All savings included in the value calculations are net savings. The expected net savings are typically an engineering estimate of savings modified to reflect the actual realization of savings based on evaluation studies. The expected net savings also reflect market effects due to the program. The RI Test captures the combined effects of a program on both the participating customers and those not participating in a program. From a resource acquisition perspective, if the program induces participants or non-participants to acquire energy efficiency devices without program expenditures (i.e., outside of the program), these effects—known as spillover—should be attributed as program benefits in the RI Test.

[3] Refer to the 2021 AESC Executive Summary for a descriptions of Counterfactuals #1 – 4 https://www.synapse-energy.com/sites/default/files/AESC%202021_20-068.pdf

The costs incurred by customers to acquire equipment on their own are also counted as costs in the RI Test.

On the other hand, if a customer accepts program funds to implement an energy efficiency measure, they would have done anyway, the savings associated with this practice is known as "free-ridership." From the perspective of resource acquisition through utility programs, it is important to distinguish whether the customer would have implemented the efficiency measure without the program. Therefore, savings associated with free ridership are deducted from program savings.[4] The cumulative impact of realization rates and market effects on gross savings is known as net savings.

The benefits and costs considered in the RI Test as applied to Energy Efficiency and Active Demand Response are detailed in the next section.

3 Description of Program Benefits and Costs

The following benefits and costs are included as quantified and monetized in the RI Test. They are listed here with details after. Section 5 of this document shows the alignment of each of these benefit and cost categories to the Docket 4600 Benefit-Cost Matrix for the electric portfolio.

- Electric Energy Benefits
- Electric Generation Capacity Benefits
- Electric Transmission Capacity and Distribution Capacity Benefits
- Natural Gas Benefits
- Fuel Benefits (including the value of delivered fuel savings from programs that influence delivered fuel consumption)
- Water and Sewer Benefits
- Non-Energy impacts
- Demand Reduction Induced Price Effects (DRIPE)
- Non-embedded Greenhouse Gas Reduction Benefits
- Economic Development Benefits
- Non-embedded NOx Reduction Benefits
- Value of Improved Reliability
- Combined Heat and Power Benefits
- Utility Costs
- Participant Costs

[4] Both free-ridership and spillover have been determined from evaluation, measurement, and verification studies of program participants, non-participants, and other market actors, such as developers and vendors.

3.1 Electric Energy Benefits

Avoided electric energy costs are appropriate benefits for inclusion in the RI Test. When consumers do not have to purchase electric energy because of their investment in energy efficiency, an avoided resource benefit is created.

Electric energy savings are valued using the avoided electric energy costs developed in the 2021 AESC Study, Appendix B. The values in the 2021 AESC Study represent wholesale electric energy commodity costs that are avoided when generators produce less electricity because of energy efficiency.[5] They include pool transmission losses incurred from the generator to the point of delivery to the distribution companies, and the costs of renewable energy credits borne by generators. The avoided energy costs also internalize the expected cost of complying with current or reasonably anticipated future regional or federal greenhouse gas reduction requirements which are borne by generators and passed through in wholesale costs.

The avoided energy costs in the 2021 AESC Study are provided in four different costing periods consistent with ISO-NE definitions. Net energy savings are split up into these periods in the value calculation. The time periods are defined as follows:

- Winter Peak: October – May, 7:00 a.m. – 11:00 p.m., weekdays excluding holidays.
- Winter Off-Peak: October – May; 11:00 p.m. – 7:00 a.m., weekdays. Also including all weekends and ISO defined holidays.
- Summer Peak: June – September, 7:00 a.m. – 11:00 p.m., weekdays excluding holidays.
- Summer Off-Peak: June – September; 11:00 p.m. – 7:00 a.m., weekdays. Also including all weekends and ISO defined holidays.

In the benefits calculation, energy savings are grossed up using factors that represent transmission and distribution losses because a reduction in energy use at the customer site means that amount of energy does not have to be generated, plus the extra generation that is needed to cover the losses that occur in the delivery of that energy is not needed. A factor for wholesale risk premium is also added to capture

[5] Avoided costs may be viewed as a proxy for market costs. However, avoided costs may be different from wholesale market spot costs because avoided costs are based on simulation of market conditions, as opposed to real-time conditions. They may be different from standard offer commodity costs because of time lags and differing opinions on certain key assumptions, such as short term fuel costs.

market risk factors typically recovered by generators in their pricing, which also increases the wholesale costs.

Net energy savings for a program (or measures aggregated within a program) are allocated to each one of these time periods and multiplied by the appropriate avoided energy value.[6] The dollar benefits are then grossed up using the appropriate loss factors representing losses from the ISO delivery point to the end use customer.

- Summer Peak Energy Benefit ($) = kWh * $Energy_{SummerPk}$ * $SummerPk\$/kWh_{(@Life)}$ * (1 + $\%Losses_{SumPk\text{-}kWh}$) * (1 + Wholesale Risk Premium)
- Summer OffPeak Energy Benefit ($) = kWh * $Energy\%_{SummerOffPk}$ * $SummerOffPk\$/kWh_{(@Life)}$ * (1 + $\%Losses_{SummerOffPk\text{-}kWh}$) * (1 + Wholesale Risk Premium)
- Winter Peak Energy Benefit ($) = kWh * $Energy\%_{WinterPk}$ * $WinterPk\$/kWh_{(@Life)}$ * (1 + $\%Losses_{WinterPk\text{-}kWh}$) * (1 + Wholesale Risk Premium)
- Winter OffPeak Energy Benefit ($) = kWh * $Energy\%_{WinterOffPk}$ * $WinterOffPk\$/kWh_{(@Life)}$ * (1 + $\%Losses_{WinterOffPk\text{-}kWh}$) * (1 + Wholesale Risk Premium)

3.2 Electric Generation Capacity Benefits

Avoided electric generation capacity values are appropriate for inclusion in the RI Test. When generators do not have to build new generation facilities or when construction can be deferred because of consumers' investments in energy efficiency, an avoided resource benefit is created. In the New England capacity market, capacity benefits accrue because demand reduction reduces ISO-NE's installed capacity requirement. The capacity requirement is based on load's contribution to the system peak, which, for ISO-NE, is the summer peak. Therefore, capacity benefits accrue only from summer peak demand reduction; there is currently no winter generation capacity benefit.

Demand savings created through program efforts are valued using the avoided capacity values from the 2021 AESC Study, Appendix B. The values contained in the study reflect the avoided cost of peaking capacity and incorporate a reserve margin and losses incurred from the generator to the point of delivery to the distribution companies. ISO-NE reserve margins are incorporated into the capacity values, since

[6] The notation "@Life" in the equation for value for this and other value components is an indication that the avoided value component for each benefit (e.g., electric energy, capacity, natural gas, etc.) is the cumulative net present value (in 2023 dollars) of avoided costs for each year of the planning horizon from the base year over the life of the measure. For example, the avoided value component for a measure with an expected life of ten years for any given benefit component is the sum of the net present value of the annual avoided costs for that component in Year 1, Year 2, Year 3, etc., through Year 10.

energy efficiency avoids the back-up reserves for that generation as well as the generation itself. A loss factor representing losses from the ISO delivery point to the end-use customer is used as a multiplier, since those losses are not included in the avoided costs. Demand savings are calculated to be coincident with the ISO-NE definition of peak.

The dollar value of benefits is therefore calculated as:

- Generation Capacity Benefit($) = kW_{Summer}*GenerationCapValue$/$kW_{(@Life)}$ * (1 + %$Losses_{SummerkW}$)

In addition to the traditional valuation of electric generation capacity, for which results are provided in Appendix B, the 2021 AESC study continued the methodology introduced in 2018 AESC for valuing the capacity of short duration measures that are not actively bid in the ISO-NE Forward Capacity Market (FCM). The AESC study has always provided avoided electric generation capacity values that are differentiated based on whether a measure is bid in the FCM (cleared capacity) or is not bid in the FCM and passively reduces system load and, as a result, reduces the ISO-NE load forecast and the resulting amount of capacity that is procured through the FCM (uncleared capacity). Given the three year forward nature of the FCM and the timing of the ISO-NE load forecast, it takes five years from the time of load reduction for uncleared capacity to begin impacting the FCM procurements. As a result, measures with a useful life less than five years (e.g., demand response) would not produce any generation capacity benefits in years 1-5 under the traditional capacity modeling methodology.

The 2021 AESC study conducted a detailed analysis of the ISO-NE load forecast methodology and determined that there are deferred capacity benefits for short duration measures that are not bid in the FCM which persist beyond the useful measure life of the measure. The logic behind this analysis is that the ISO-NE load forecast utilizes multiple years of historical load data and that even a load reduction for only one year will have a lasting impact on the load forecast for several years. The deferred capacity valuation methodology for uncleared capacity is used to determine the avoided electric generation capacity value for demand response measures based on the values provided in Appendix J of the 2021 AESC study.

3.3 Electric Transmission Capacity and Distribution Capacity Benefits

Avoided transmission and distribution capacity values are appropriate for inclusion in the RI Test. When transmission and distribution facilities do not have to be built or can be deferred because of lower loads because of consumers' investments in energy efficiency, an avoided resource benefit is created.

Electric distribution capacity benefits are valued in the RI Test using avoided distribution capacity values calculated in a spreadsheet tool that was developed in 2005 by ICF International, Inc., updated with

recommendations from the 2018 AESC Study, and carried forward to the 2021 AESC Study. The tool calculates an annualized value of statewide avoided distribution capacity values from company-specific inputs of historic and projected capital expenditures and loads, as well as a carrying charge calculated from applicable tax rates and Federal Energy Regulatory Commission (FERC) Form 1 accounting data. The calculations of the electric distribution capacity benefits were updated for the 2023 plan using updated inputs to this tool and results in an avoided distribution capacity cost of $121.58/kW-year in 2022 dollars.

Electric transmission capacity benefits are valued in the RI Test based on the costs of Pool Transmission Facilities (PTF). The 2021 AESC study calculates an avoided cost for PTF of $98.81/kW-year in 2022 dollars. In the 2021 AESC Study the estimation of the PTF values was revised to include transmission projects anticipated to occur through 2026, rather than the purely historical analysis of PTF investments as used in the 2018 AESC Study. The Company continues to use the avoided PTF values instead of the avoided cost of local transmission investments in screening the energy efficiency portfolios. PTF values are sourced from Appendix B.

For the 2023 Plan, the Company has also developed an estimate of non-PTF capacity value. This estimate was developed using the ICF model using company-specific information on load growth and investments in non-PTF transmission. The Company has calculated the value of the avoided cost for non-PTF of $8.20/kW-year in 2022 dollars.

Capacity loss factors are applied to the avoided T&D capacity costs to account for local transmission and distribution losses from the point of delivery to the distribution company's system to the ultimate customer's facility. Thus, losses will be accounted for from the generator to the end use customer.

T&D benefits could be allocated to summer and winter periods, depending on the relation between summer and winter peaks on the local system. However, the Company's system is summer peaking. Therefore, the T&D benefits will be exclusively associated with summer demand reduction and the dollar value will be calculated as follows:

- Transmission Benefit ($) = ($kW_{Summer}$ * $Trans\$/kW_{(@Life)}$ * [1 + ($Losses_{SumkWTrans}$)] where Trans$/kW is the sum of PTF and non-PTF transmission avoided costs.
- Distribution Benefit ($) = ($kW_{Summer}$ * $Dist\$/kW_{(@Life)}$ * [1 + ($Losses_{SumkWDist}$)]

3.4 Natural Gas Benefits

Avoided natural gas consumption is appropriate for inclusion in the RI Test. When a project in which consumers have invested saves natural gas, an avoided resource benefit is created.

Natural gas benefits in the RI Test are valued using avoided natural gas values from the 2021 AESC Study, Appendix C. These costs include commodity, pipeline transportation cost, and retail distribution margin, or delivery charges, that would be avoided by fuels not consumed by end users.

The 2021 AESC Study Report presents avoided natural gas value components into end-use categories to match with individual program characteristics. The natural gas categories are:

- Commercial and industrial, non-heating/hot water. This assumes savings are constant throughout the year and averages monthly natural gas values over 12 months.
- Commercial and industrial, heating. Averages the monthly values for the months of November through March.
- Residential heating. Averages the monthly values for the months of November through March. As these months have the highest natural gas values, by averaging over a fewer number of months, natural gas savings in this category typically have the highest value.
- Residential water heating/residential non-heating. This assumes savings are constant throughout the year and averages monthly natural gas values over 12 months.
- All commercial and industrial. Used for behavioral savings, codes and standards, and custom measures.
- All residential. This is used for behavioral programs.
- All retail end-uses

Using each of these end-use value components as appropriate, the dollar value of fuel benefits is calculated as:

- Natural Gas Benefits ($) = MMBtu Gas Savings * (Gas$/MMBTU$_{(EndUseCategory,@Life)}$)

3.5 Delivered Fuel Benefits

Avoided delivered fuel costs (fuel oil or propane) are appropriate for inclusion in the RI Test. When a project in which consumers have invested saves delivered fuel, an avoided resource benefit is created.

Fuel benefits in the RI Test are valued using avoided fuel values from the 2021 AESC Study, Appendix D. The 2021 AESC Study developed estimates of avoided fuel costs for residential distillate fuel oil, commercial distillate fuel oil, commercial residual fuel oil, industrial distillate fuel oil, and industrial residual fuel oil.

Using each of these end-use value components as appropriate, the dollar value of fuel benefits is calculated as:

- Fuel Benefits ($) = MMBTU_Fuel Savings * Fuel$/MMBTU$_{(EndUseCategory,@Life)}$

3.6 Water and Sewer Benefits

Water savings created from program efforts should be valued and included in the RI Test. Water savings can be valued using avoided water and sewer values that are based on average water and sewer rates in Rhode Island. While there are no specific water efficiency measures, when a project in which consumers have invested to save electricity or fuel also affects water consumption—for example, a cooling tower project that reduces makeup water needed—a resource benefit is created. Depending on the project and metering configuration, changes in water consumption may also affect sewerage billings.

Water and sewerage rates were determined from a May 2021 internet survey of rates posted to the Rhode Island PUC website, updated as of September 3, 2020. Average rates were calculated for both residential and commercial and industrial customers and applied as appropriate to the water savings generated by measures. [7]

Water and sewer benefits are counted for all projects, where appropriate, and calculated as follows:

- Water and Sewerage Benefits ($) = Water and/or Sewerage Savings * Water and/or Sewer $/Gal$_{(@Life)}$

3.7 Non-Energy Impacts

Other quantifiable non-resource or non-energy impacts may be created as a direct result of Least Cost Procurement efforts and, are therefore appropriate for inclusion in the RI Test. Non-energy impacts are typically associated with the number of measures installed, rather than the energy consumption of the equipment, however in some cases they are applied on an annual or one-time basis based on energy saved. They may be positive or negative. They may be one-time benefits or recur annually. These effects will be included when they are a direct result of the measure and when they are quantifiable and avoidable.

The specific values of non-energy impacts used in the 2023 Annual Plan for prescriptive measures are documented in the 2023 RI Technical Reference Manual. Non-energy impacts may include – but are not limited to – labor, material, facility use, health and safety, materials handling, property values, and

[7] RI Regulated Water Suppliers – Rates Updated September 3, 2020, http://www.ripuc.ri.gov/utilityinfo/water/residentialgri.html

transportation. For income-eligible measures, non-energy impacts also include the impacts of having lower energy bills to pay, such as reduced arrearages or avoided utility shut off costs. Non-energy impacts for Commercial and Industrial custom measures are counted when supported by site specific engineering calculations or other analyses.

The dollar value of non-resource benefits will be calculated as follows

- One-time Non-energy impacts ($) = Non-energy impact ($)/unit * Number of units
- Annual Non-energy impacts ($) = Non-energy impact ($)/unit * Number of units * Present Worth Factor$_{(@Life)}$

3.8 Price Effects

The Demand-Reduction-Induced Price Effect (DRIPE) is the reduction in prices in energy and capacity markets resulting from the reduction in need for energy and/or capacity due to efficiency and/or demand response programs. Consumers' investments in energy efficiency avoid both marginal energy production and capital investments, but also lead to structural changes in the market due to lower demand. Over a period of time, the market adjusts to lower demand, but until that time the reduced demand leads to a reduction in the market price of electricity. This is observed in the New England market when ISO-NE activates its price response programs. When this price effect is a result of consumers' investments in energy efficiency, it is appropriate to include it in the RI Test.

DRIPE effects are very small when expressed in terms of an impact on market prices, i.e., reductions of a fraction of a percent. However, the DRIPE impacts are significant when expressed in absolute dollar terms over all the kWh and kW transacted in the market. Very small impacts on market prices, when applied to all energy and capacity being purchased in the market, translate into large absolute dollar amounts.

DRIPE values developed for energy efficiency installations in 2023 from the 2021 AESC Study are used in the RI Test. The price effects are expressed as $/kWh for each of the four energy costing periods, $/kW for capacity, $/MMBtu for natural gas, and $/MMBtu for oil. There are also cross fuel effects that apply when natural gas energy efficiency affects the price of electricity because residential heating and electric generation compete for natural gas supply in the winter. The resulting scarcity of natural gas for generation may drive up the cost of electricity. Therefore, reduction in natural gas consumption due to energy efficiency may cause a price effect for electricity. (Even though the price effect is in electricity, that DRIPE benefit is converted to $/MMBtu so that it can be attributed to the gas savings that create the effect.) In addition, reducing demand for petroleum and refined products leads to a reduction in oil prices. The DRIPE benefit is calculated as:

- Summer Peak Energy DRIPE Benefit ($) = kWh * $Energy\%_{SumPk}$ * ($SummerPkDRIPE\$/kWh_{(@Life}$+$ElectricGasDRIPE\$/kWh_{)}$ * (1 + $\%Losses_{SummerPk\text{-}kWh}$) * (1 + Wholesale Risk Premium)
- Summer OffPeak Energy DRIPE Benefit ($) = kWh * $Energy\%_{SumOffPk}$ * ($SumOffPkDRIPE\$/kWh_{(@Life}$ +$ElectricGasDRIPE\$/kWh_{)}$ * (1 + $\%Losses_{SummerOffPk\text{-}kWh}$) * (1 + Wholesale Risk Premium)
- Winter Peak Energy DRIPE Benefit ($) = kWh * $Energy\%_{WinterPk}$ * ($WinterPkDRIPE\$/kWh_{(@Life}$+$ElectricGasDRIPE\$/kWh_{)}$ * (1 + $\%Losses_{WinterPk\text{-}kWh}$) * (1 + Wholesale Risk Premium)
- Winter OffPeak Energy DRIPE Benefit ($) = kWh * $Energy\%_{WinOffPk}$ * ($WinterOffPkDRIPE\$/kWh_{(@Life}$+$ElectricGasDRIPE\$/kWh_{)}$ * (1 + $\%Losses_{WinterOffPk\text{-}kWh}$) * (1 + Wholesale Risk Premium)
- Generation Capacity DRIPE Benefit($) = kW_{Summer} * $CapDRIPEValue\$/kW_{(@Life)}$ * (1 + $\%Losses_{SummerkW}$) * (1 + Wholesale Risk Premium)
- Natural Gas DRIPE Benefit ($) = MMBTU_Fuel Savings * ($GasDRIPEValue\$/MMBTU_{(@Life)}$ +GasElectricDRIPE$/MMBtu)
- Oil DRIPE Benefit ($) = MMBTU Fuel Savings * ($OilDRIPEValue\$/MMBTU_{(@Life)}$)

3.9 Non-embedded Greenhouse Gas Reduction Benefits

In accordance with Section 1.3(C)(iii) of the LCP Standards and the Docket 4600 Benefit-Cost Framework the RI Test includes the value of non-embedded greenhouse gas (GHG) reductions.

The 2021 AESC Study developed multiple approaches for calculating non-embedded cost of carbon. The four methods for calculating non-embedded cost of carbon are:

- A damage cost approximated by the social cost of carbon (SCC);
- A global marginal abatement cost approach;
- An approach based on New England marginal abatement costs, assuming a cost derived from electric sector technologies, with wind being the marginal abatement technology; and
- An approach based on New England marginal abatement costs, assuming a cost derived from multiple sectors.

Consistent with the approach in 2020, 2021 and 2022 Annual Plans, the Company proposes to apply the New England marginal abatement cost derived from electric sector as the non-embedded cost of carbon. Using the regional marginal abatement cost represents a conservative and reasonable non-embedded

carbon price that reflects the likely marginal abatement technology for Rhode Island in achieving its carbon reduction goals, including the recently-enacted Act on Climate carbon emission reduction goal of net zero by 2050.

The 2021 AESC Study found that the marginal abatement cost derived from electric sector technologies was $125/short ton, levelized over a 15-year period.

The costs of compliance with the Regional Greenhouse Gas Initiative (RGGI) are already included or "embedded" in the projected electric energy market prices. Therefore, the difference between the approximately $125 per short ton societal cost and the RGGI compliance costs already embedded in the projected energy market prices represents the value of carbon emissions not included in the avoided energy costs.

An example of this calculation using the 15-year levelized values of the Non-embedded carbon price and embedded RGGI Compliance Cost is shown below. The resulting $ non-embedded avoided cost is applied as a benefit in the RI Test in that year.

- Societal Cost ($123.85) – Embedded RGGI Compliance Cost ($8.50) = Non-Embedded Cost ($115.35)

The Company obtained the non-embedded CO_2 values from User Interface file Appendix B of the 2021 AESC Study for electric savings and User Interface file Appendix G for gas savings and oil savings.

3.10 Non-embedded NOx Reduction Benefits

In accordance with Section 1.3(C)(iii) of the Standards and the Docket 4600 Benefit-Cost Framework, the RI Test includes the value of nitrogen oxides (NO_x) emission reductions not already embedded in the avoided cost of energy.

NO_x emissions come from a variety of sources including industrial processes and the combustion of natural gas for electric generation and heating systems. NO_x contributes to the formation of fine particles (PM) and ground level ozone that are associated with adverse health effects including respiratory illness. When a consumer installs an energy efficiency measure that reduces electric generation and natural gas usage, and thus NO_x emissions, an avoided resource benefit is created.

The 2021 AESC Study utilizes published averages for the continental United States to develop a non-location specific, non-embedded NO_X emission cost. The 2021 AESC Study assumes a 90/10 mix of NO and

NO_2, which translates to a price of $14,700 per short ton of NO_x at the median value from cited studies. That translates to an avoided cost for NO_x equal to $0.77 per MWh.

The Company obtained the non-embedded NO_X values from Appendix B in the User Interface file for Counterfactual #4 for electricity and Appendix G in the User Interface file for non-electric measures.

3.11 Value of Improved Reliability

In accordance with the Docket 4600 Benefit-Cost Framework, the RI Test includes the value of improved reliability from energy efficiency investments.

The 2021 AESC Study used the following methodology to determine the value of improved reliability. As with the 2018 AESC Study, the 2021 AESC Study in part replied on the value of lost load (VoLL) from the Lawrence Berkeley National Laboratories (LBNL) assessment "Updated Value of Service Reliability Estimates for Electric Utility Customers in the United States." Berkeley: LBNL, 2015. LBNL-6941E. The VoLL describes the cost to consumers of being unable to take power from the system. New to the 2021 AESC Study, an additional study was incorporated into the calculations of lost load. Cambridge Economic Policy Associates released a study in July 2018 entitled "Study on the Estimation of the Value of Lost Load of Electricity Supply in Europe." This study assessed the VoLL in each European Union country for residential customers and 13 types of non-residential customers. The 2021 AESC Study examined the EU countries' annual average VoLL for the countries most similar to the New England region on a GDP per capita basis. To develop the estimate of the VoLL in the AESC report, Synapse averaged findings from the LBNL and Cambridge Economic Policy Associates studies together for each category of customer. Then, using share-of-sales data for the residential, small C&I, and large C&I customer segments, Synapse calculate a weighted average VoLL of $73 per kWh.

The 2021 AESC Study then examined the effect of load reduction's ability to increase reserve margins in the ISO New England (ISO-NE) Forward Capacity Market (FCM) and therefore increase reliability in the wholesale generation market.

Load reductions can improve generation reliability in the following ways:

- Some resources that do not clear ISO New England's Forward Capacity Auction (FCA) will continue to operate as energy-only resources, adding to available reserves. While not obligated to do so, these resources are likely to operate at times of tight supply and high energy prices. They may also be available to assume the capacity obligations of resources that unexpectedly retire or otherwise become unavailable.
- Not all energy efficiency load reductions will clear in the capacity market or immediately affect the load forecast used to determine the amount of capacity acquired. Those load reductions will increase reserve margins.

- The operation of the ISO New England capacity market increases the amount of capacity acquired as the price falls. To the extent that energy efficiency programs reduce the capacity clearing price, reserve margins and reliability will increase.

The 2021 AESC Study calculated cleared reliability benefits in $/kW-month by calculating the product of (a) the change in MWh of reliability benefits per megawatt of reserve, (b) the net increase in cleared supply, (c) the decay effect, and (d) the VoLL.[8] Uncleared reliability benefit in $/kW-month is calculated as the product of (a) the change in MWh of reliability benefits per megawatt of reserve, (b) one plus the reserve margin, (c) the load forecast effect, (c) the decay effect, and (e) the VoLL.

As recommended by the 2021 and 2018 AESC Studies, the Company applies different reliability values to measures that clear and don't clear the Forward Capacity Market auction. This is due to the fact that the reliability effect of cleared energy efficiency load reductions will be partially offset by reduction in the amount of other capacity cleared, while uncleared load reductions will not be subject to such offsets.

The Company applied Reliability Value of Cleared EE ($/kW-year) from the 2021 AESC Study to all summer kW savings associated with cleared measures and the Reliability Value of Uncleared EE ($/kW-year) from the 2021 AESC Study to all summer kW savings associated with uncleared measures. Reliability values are sourced from the AESC User Interface file Appendix B, Counterfactual #4.

The reliability benefit is calculated as follows with the ReliabilityValue$/kW changing whether a measure is assumed to be cleared or uncleared in the FCM auction. The 2021 AESC Study Counterfactual #4 finds that the 15-year levelized benefit of increasing generation reserves through reduced energy usage is $0.49/kW-year for cleared resources.

- Wholesale Reliability Value Benefit ($) = kWSummer * ReliabilityValue$/kW(@Life) * (1 + %LossesSummerkW)

3.12 Combined Heat and Power Benefits

R.I.Gen.Laws §39-1-27.7(c) (6) (iii) directs the Company to support the development of combined heat and power (CHP). The law requires that the following criteria be factored into the Company's CHP plan: (i) economic development benefits in Rhode Island; (ii) energy and cost savings for customers; (iii) energy supply costs; (iv) greenhouse gas emissions standards and air quality benefits; and (v) system reliability benefits.[9] Of these, energy and cost savings and energy supply costs are captured in the

[8] Refer to the 2021 AESC Study section 11.2 for additional detail on the derivation of each of these components.

[9] See R.I. Gen.Laws § 39-1-27.7(c) (6) (iii).

energy benefits described above. The other three benefits – economic development, greenhouse gas, and system reliability benefits – are described here.

Economic Development

As provide by the statute, for all CHP projects, net economic development benefits will be counted as benefits. If the CHP project is smaller than 3 MW, the gross state product multipliers for the program in which it is implemented (e.g., C&I retrofit) presented in Table 1 or Table 2 below will be used to calculate the benefits. The rate of economic development benefit of $ of lifetime gross state product increase per dollar of program investment for CHP projects less than 3 MW in size is based on the report, "Review of RI Test and Proposed Methodology" prepared for National Grid by the Brattle Group, January 31, 2019. The multiplier reflects the present value of lifetime state gross domestic product (GDP) effects of program and participant spending that creates jobs in construction and other industries as the project is planned, and equipment is purchased and installed. Therefore, the CHP Economic Development benefits will be calculated as:

- Program and participant spending($) x program multiplier

For CHP projects larger than 3 MW in size, the Company will run a REMI analysis using project-specific values in accordance with the recommended methodology from the Brattle Group study. [10] The economic benefits from this analysis are added to the economic benefits for the program derived from all other measures in this program to arrive at the total program benefits.

Greenhouse gas emissions standards and air quality benefits

For all CHP projects, greenhouse gas mitigation and air quality benefits will be counted as benefits to the extent they are not already captured in the BCR screening values and to the extent that usable emissions data is available. The emissions profile of the CHP site facility prior to the installation of the retrofit (most likely a combination of grid supplied generation for electricity and an on-site boiler for thermal needs) will be compared to the emissions post-retrofit (most likely the CHP unit alone). The change in emissions in tons will be multiplied by a value of $/ton for each pollutant and the values will be summed over all pollutants and counted as a benefit in the benefit/cost calculation. This method is contingent on having emissions data for all pollutants. This information is often difficult to come by; for example, ISO-New

[10] In the 2022 Benefit Cost Model, the Company applied a weighted average economic multiplier to the C&I Retrofit program that accounts for the economic multipliers for C&I Retrofit and CHP. CHP expenditures, besides incentives, are not disaggregated from the rest of the expenditures for the C&I Retrofit program so the multiplier cannot be applied directly to program spending for CHPs. Therefore, the Company created a multiplier applicable to both CHP and C&I Retrofit by taking a weighted average of the two multipliers, weighted by incentives to be spent on CHP and the rest of C&I Retrofit projects. The final weighted average multiplier applied to the total C&I Retrofit program, including CHP, was $5.72.

England annually publishes emissions per kWh for only SOx, NOx, and CO_2. Similarly, the amount of emissions for all pollutants associated with a particular CHP unit is not always provided. Where locational information is not available, the value of CO_2 emission reductions and NOx reductions will be calculated consistent with sections 9 and 11 above.

System Reliability

If a CHP project is proposed in a system reliability target area, the system reliability benefits from deferring a distribution system upgrade would be captured in the System Reliability Procurement report. In the context of CHP located elsewhere in the state, system reliability benefits are the local distribution benefits created by the introduction of the CHP unit in the local area. Notably, CHP projects do not produce the same level of deferred distribution investment savings described in Section (3) above, as traditional energy efficiency. [11] Accordingly, the distribution benefits are modified as follows:

- For CHP systems of less than 1 MW net capacity, the distribution deferral benefit value estimated by the Company based on system wide averages will be multiplied by 0.75 to incorporate an estimate of the reliability experience of discrete deployment of CHP units compared with end-use reduction efficiency measures which are spread across the state; [12]
- For CHP systems equal to or greater than 1 MW net capacity, the distribution benefit will consider location-specific distribution benefits, as opposed to average system-wide benefits. The results of this analysis will replace the adjusted 0.75 of average system-wide distribution benefit described for CHP projects of less than 1 MW. This may entail a detailed engineering analysis performed by the Company, and additional costs. This consideration will have two parts: 1) identification of foreseeable investments that the CHP installation could potentially help defer, and their value; and 2) whether the unit will be sufficiently reliable, or firmed through the provision of physical assurance by the customer, to enable such savings to be realized;

[11] With traditional energy efficiency projects, the installed measures permanently reduce load on the electric distribution system and, therefore, reduce the need to make distribution investments. CHP projects may not result in similar deferred distribution investment savings. A CHP unit may not be available at all peak times, and, absent any contractual or mechanical modification to ensure that the load does not reappear, the Company will still need to design and maintain the distribution system for when that unit goes off line during a peak hour on a peak day. This is particularly significant with larger CHP projects, in which a single host customer represents a significant percentage of the total load on a feeder. With multiple smaller units, some level of savings is possible, but these units are still not likely to produce distribution benefits in the same manner as traditional energy efficiency.

[12] As explained in footnote 10, *supra*, while multiple small CHP units may produce some level of savings, these units are still not likely to produce distribution benefits in the same manner as traditional energy efficiency. Therefore, the 0.75 factor is adopted as a planning assumption to represent the contingency that, when a single CHP unit on a feeder fails to perform, the load reappears on the system. As more CHP units, particularly smaller units, are deployed in the state, the diversity of operation may allow the adjustment factor to be increased. The Company intends to review this planning assumption based on actual experience for future EE Program Plan filings.

- For CHP projects of 1 net MW or greater, gas system benefits not paid out as incentives to the Customer via the AGT incentive or gas service contract terms will be counted as benefits. [13]

3.13 Utility Costs

Utility costs incurred to achieve implementation of energy efficiency measures and programs are appropriate for inclusion in the RI Test. These costs have been categorized as follows:

- Program Planning and Administration (PP&A): These costs are the administrative costs associated with the utility role in program delivery, including payroll, information technology, contract administration, and overhead expenses.
- Marketing: These are the costs of marketing and advertising to promote a program. The costs also include the payroll and expenses to manage marketing.
- Cost of services and product rebates/incentives provided to customers: These are the incentives from the programs to customers to move them to install energy efficient equipment. Incentives include, but are not limited to, rebates to customers, copayments to vendors for direct installation of measures, payments to distributors to buy down the cost of their products for sale in retail stores, payments to vendors to create and deliver information, the cost of an education course, or payments to lenders to buy down the interest in a loan. Customer incentives typically cover a portion of the equipment and installation costs directly associated with the energy efficient equipment being installed. [14] For a retrofit project, the customer incentives cover a portion of the full cost of the efficiency project, as it is assumed that the alternative to the project is no customer action. For a failed equipment replacement/renovation/new construction project, these customer incentives cover a portion of the incremental additional costs associated with moving to a higher efficiency item or practice compared to what the customer would have done otherwise.
- Sales, Technical Assistance, and Training (STAT): These costs include the training and education of the trade ally community regarding the company's current energy efficiency programs. Examples of trade allies include but are not limited to: equipment vendors, heating contractors, lead vendors, project expediters, weatherization contractors, and equipment installers. These costs also include the tasks associated with internal and contractual delivery of programs. Tasks associated with this budget category include but are not limited to: lead intake, customer service, rebate application, quality assurance, technical assessments, engineering studies, plan reviews, payroll and expenses.

[13] For example, a 3 MW installation with an additional sales volume of approximately 150,000 Dth per year would generate approximately $130,000 of marginal revenue per year under current rates. Assuming $100,000 of capital costs, the project could qualify for up to $573,000 in AGT funding, subject to budget limitations.

[14] The full cost of the efficiency project is not necessarily the same thing as the full cost of the project being undertaken by the customer. For example, a customer may be renovating an HVAC system including installation of a new chiller and chilled water distribution. While the new distribution system may be part of the construction project, if it does not contribute to energy savings, it will not be included in the efficiency project cost; only the incremental cost of the new efficient chiller will be considered.

- Evaluation: These are the costs of evaluation or market research studies to support program direction and post-installation studies to study program effectiveness or verification of savings estimates. These costs also include the payroll and expenses to manage the research.
- Performance Incentive: This is the incentive received by the Company for meeting specified savings goals and/or performance targets; because the Company would not implement energy efficiency programs to the extent it does without the incentive, the performance (shareholder) incentive is included in the cost of energy efficiency.

3.14 Customer Costs

The customer's costs include their contribution to the installation cost of the efficient measure. Typically, this is the portion of the equipment and installation cost not covered by the customer incentive. As noted above, it excludes the cost of equipment that might be part of the customer's construction project, but that is not related to the energy efficiency portion of the project.

In addition to the direct costs that customers face to purchase energy efficient equipment they may have additional costs for participating in energy efficiency programs that are not quantified and monetized. For example, a customer participating in a home energy assessment may need to spend some amount of time at home in order to facilitate the assessment, creating some time cost for the customer to participate. The magnitude and value of these additional potential time costs are unknown at this time. They would likely vary by sector, program, and possibly measure and are therefore challenging to estimate reliably.

4 Benefit Cost Calculations

The cost effectiveness of a measure, program, or portfolio is determined by calculating whether the ratio of the net present value of the benefits to the net present value of the costs is greater than or equal to 1.

For the 2023 Annual Plan, all costs and benefits will be expressed in constant 2022 dollars. Where escalation of specific avoided cost inputs is needed to produce values in 2022 dollars, appropriate inflation rates are used.

The avoided value component for each benefit (e.g., electric energy, capacity, natural gas, etc.) is the cumulative net present value (in 2022 dollars) of lifetime avoided costs for each year of the planning horizon from the base year up to the measure life of the equipment. Since all of the future year values are in constant 2022 dollars, lifetime benefits thus calculated are discounted back to mid-2022 using a real discount rate equal to [(1 + Nominal Discount Rate) / (1 + Inflation)] - 1.

As prescribed by the Standards, all values in the Plan and the benefit-cost model are stated in present value terms, "using a discount rate that appropriately reflects the risks of the investment of customer funds in Least-Cost Procurement. Energy efficiency is a low-risk resource in terms of cost of capital risk, project risk, and portfolio risk." For the 2023 Annual Plan, the Company modified the approach used to calculate the discount rate. For the 2021 Annual Plan and prior years, the real discount rate was calculated from the twelve-month average of the historic daily real yields from a ten-year United States Treasury note, using the preceding calendar year to determine the twelve-month average. During 2021, Treasury yields exhibited atypical behavior, with several daily yields being less than zero, in part due to the influence of the Covid-19 Pandemic and its prolonged economic impacts. To account for this, three years of past data (2019 – 2021) were used to calculate the discount rate and in any case when the daily yield was negative the value was set to zero for purposes of the averaging calculation. These calculations resulted in a real discount rate of 0.14% and nominal discount rate of 1.49%. If only observed real yields were used for 2021, a negative real discount rate would have resulted.

The total benefits will equal the sum of the NPV of each benefit component:

> [Energy Benefits + Generation Capacity Benefits + Avoided T&D Benefits + Natural Gas Benefits + Fuel Benefits + Water & Sewer Benefits + Non-Resource Benefits + Price Effects Benefits + Non-embedded Greenhouse Gas Reduction Benefits + Non-embedded NOx Reduction Benefits + Value of Improved Reliability + Economic Development Benefits (treatment as described above)]

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

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

The RI Test benefit cost ratio will then equal:

> Total NPV Benefits/Total NPV Costs

Per the Standards, on a program level, all benefit categories are included in the benefit/cost calculation. All cost categories, except the shareholder incentive, are included at the program level because they are tracked at that level. [15]

On a sector level, the cost of pilots, community based initiatives, sector financing, workforce development, and educational/outreach programs which are not focused on producing savings and the projected shareholder incentive, are included with the other costs in the determination of cost

[15] Commitments, if any, of customer incentives made from one year to the next are excluded from the program costs used in the benefit/cost calculation. The costs are only counted in the year in which the incentive is paid and the savings are counted.

effectiveness. The shareholder incentive is included at this level because it is designed to achieve savings targets by sector. At a portfolio level, the allocations to the Office of Energy Resources and EERMC are also included in the cost effectiveness calculation.

Separate calculations of benefits and cost-effectiveness are provided for the electric energy efficiency programs and natural gas energy efficiency programs. Some electric energy efficiency programs are expected to produce natural gas savings in addition to electricity savings while some natural gas energy efficiency programs are expected to produce electricity savings in addition to natural gas savings. All of the resource benefits produced by a program are shown with that program. For example, an HVAC project that improves air distribution incented through the electric Large C&I Retrofit Program will produce natural gas savings when natural gas is used by the participant for heating.

5 Economic Impacts (Non-CHP Measures)[16]

In 2023, the Company is modifying the presentation of economic impacts for the energy efficiency programs. Per the precedent set for the 2022 Plan and with the agreement of stakeholders, economic impacts are presented separately and not included in the estimation of the RI Test ratios. The Rhode Island PUC may consider the estimated value of these economic impacts in their determination of cost-effectiveness under the Least Cost Procurement standards.[17]

This change in presentation was motivated by the DPUC, via their consultant Synapse Energy Economics, who conducted a benefit cost analysis and assessment of the treatment of macroeconomic benefits of the RI Community Remote Net Metering (CRNM) program in early 2021.[18] This analysis recommended that, due to the challenges of fully separating all benefit streams within macroeconomic benefits from those already included in other benefit categories counted in the RI Test, the results of an economic impact assessment (EIA) should be shown separately from a BCA and that further discussion of the approach to including economic benefits in the RI Test are warranted to refine the estimation of macroeconomic benefits.

The macroeconomic multipliers for the economic growth and job creation benefits of investing in cost-effective energy efficiency are based on the report, “Review of RI Test and Proposed Methodology”

[16] This section details the methodology for applying economic benefits to non-CHP measures. Section 13 in this document refers to the application of economic benefits to CHP measures.
[17] LCP Standards, Section 3.2(N) states “qualitative benefits and costs may be considered in determining cost-effectiveness.” The exception to this would be for Combined Heat and Power facilities, since the inclusion of economic benefits is required by statute.
[18] http://www.ripuc.ri.gov/generalinfo/Synapse-CRNM-Macroeconomic-Report-2021.pdf

prepared for National Grid by the Brattle Group, January 31, 2019. An updated study is planned to be completed for use in 2024-2026 planning.

For the 2023 Annual Energy Efficiency Plan, the Company shows RI Test results without economic impacts included. Omission of the macroeconomic benefits and other economic impacts lowers benefit cost ratios for all programs and the portfolios as a whole. Because this is a conservative approach to addressing potential double counting and likely underestimates cost-effectiveness, the Company submits that the cost effectiveness of its programs and portfolios is likely greater than what is shown for the RI Test and requests that the Commission take this into consideration when assessing the cost effectiveness of the Plan.

Figure 1. Multipliers by Energy Efficiency Program Type

Program Type	GDP/$ Program Spending	Job Years/$M Program Spending
Electric Program		
Residential Programs		
Residential New Construction	$1.56	14.8
HVAC	$1.58	12.2
EnergyWise	$1.05	12.3
EnergyWise Multifamily	$1.45	14.8
Home Energy Reports	$1.65	13.6
Residential Products	$1.11	8.5
Single Family - Income Eligible Services	$0.96	10.9
Income Eligible Multifamily	$1.30	13.4
Commercial and Industrial		
Large Commercial New Construction	$2.74	19.0
Large Commercial Retrofit	$5.28	51.4
Small Business Direct Install	$1.53	12.3
Gas Program		
Residential		
Energy Star® HVAC	$0.97	6.9
EnergyWise	$1.08	11.9
EnergyWise Multifamily	$1.70	16.5
Home Energy Reports	$1.12	7.5
Residential New Construction	$0.34	2.4
Single Family - Income Eligible Services	$1.05	12.1
Income Eligible Multifamily	$1.62	16.0
Commercial and Industrial		
Large Commercial New Construction	$0.74	1.2
Large Commercial Retrofit	$2.10	16.4
Small Business Direct Install	$1.39	13.4
Commercial & Industrial Multifamily	$1.55	11.0
Demand Response		
Residential ConnectedSolutions	$0.83	6.9
Commercial ConnectedSolutions	$2.19	17.5

6 Docket 4600 Benefit Cost Framework

Table 1. Alignment of RI Test to Docket 4600 Framework for 2023 Electric Energy Efficiency and Active Demand Response Portfolio

Category Level	Cat. #	Mixed Benefit-Cost, Cost, or Benefit Category	Treatment in Benefit-Cost Analysis (Quantified, Qualified, Not Treated)	Present Value or Qualitative Description	Description and Notes	Benefit or Cost
Power System Level	1	Energy Supply & Transmission Operating Value of Energy Provided or Saved	Quantified	$17,351,678	Energy Efficiency Measures: *Winter peak electric energy (kWh) savings* are monetized for winter peak by multiplying savings during this period by the avoided retail cost of winter peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	Benefit
				$62,671	Active Demand Response Measures: *Winter peak electric energy (kWh) savings* are monetized for winter peak by multiplying savings during this period by the avoided retail cost of winter peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	No Value
			Quantified	$14,599,004	Energy Efficiency Measures: *Winter off-peak electric energy (kWh) savings* are monetized for winter peak by multiplying savings during this period by the avoided retail cost of winter off-peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	Benefit
				$72,846	Active Demand Response Measures: *Winter off-peak electric energy (kWh) savings* are monetized for winter peak by multiplying savings during this period by the avoided retail cost of winter off-peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	No Value
			Quantified	$10,038,274	Energy Efficiency Measures: *Summer peak electric energy (kWh) savings* are monetized for winter peak by multiplying savings during this period by the avoided retail cost of Summer peak energy from	Benefit

Category Level	Cat. #	Mixed Benefit-Cost, Cost, or Benefit Category	Treatment in Benefit-Cost Analysis (Quantified, Qualified, Not Treated)	Present Value or Qualitative Description	Description and Notes	Benefit or Cost
					Appendix B of the avoided cost schedules in the AESC 2021 study.	
				$24,873	Active Demand Response Measures: *Summer peak electric energy (kWh) savings* are monetized for winter peak by multiplying savings during this period by the avoided retail cost of Summer peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	
			Quantified	$6,893,637	Energy Efficiency Measures: *Summer off-peak electric energy (kWh) savings* are monetized for winter peak by multiplying savings during this period by the avoided retail cost of Summer off-peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	Benefit
				$28,866	Active Demand Response Measures: *Summer off-peak electric energy (kWh) savings* are monetized for winter peak by multiplying savings during this period by the avoided retail cost of Summer off-peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	
			Quantified	$5,350,203	Energy Efficiency Measures: Value of avoided summer generation capacity benefit is monetized by the AESC 2021 study avoided costs	Benefit
				$1,164,627	Active Demand Response Measures: Value of avoided summer generation capacity benefit is monetized by the AESC 2021 study avoided costs	Benefit
	2	Renewable Energy Credit Cost / Value	Quantified	See Notes	Wholesale cost of RECs is included in the winter peak, winter off-peak, summer peak, and summer off-peak retail energy costs from the preceding category.	Benefit
	3	Retail Supplier Risk Premium	Quantified	See Notes	Wholesale Risk Premium is built into the retail costs of electric energy and electric capacity sourced from the AESC 2021 study and used to calculate the benefits of avoided energy and capacity.	Benefit
	4	Forward Commitment: Capacity Value	Quantified	See Notes	Forward capacity avoided costs are included in capacity benefits.	Benefit
	5	Forward Commitment: Avoided Ancillary Services Value	Not applicable	See Notes	Not applicable to energy efficiency	Not Applicable
	6	Utility / Third Party Developer Renewable Energy, Efficiency, or DER costs	Quantified	$114,104,646	Rhode Island Energy costs to implement the electric energy efficiency portfolio. Total budget includes costs for Program Planning & Administration; Marketing; Customer Incentives; Sales Technical Assistance and Training; Evaluation & Market Research; Performance Incentive Mechanism	Cost

Category Level	Cat. #	Mixed Benefit-Cost, Cost, or Benefit Category	Treatment in Benefit-Cost Analysis (Quantified, Qualified, Not Treated)	Present Value or Qualitative Description	Description and Notes	Benefit or Cost
	7	Electric Transmission Capacity Costs / Value	Quantified	$12,940,124	Energy Efficiency: Electric transmission capacity benefits are quantified by multiplying a statewide Pooled Transmission Facility (PTF) transmission value from AESC 2021 study by the summer kW saved from efficiency measures	Benefit
				$4,953,897	Active Demand Response: Electric transmission capacity benefits are quantified by multiplying a statewide Pooled Transmission Facility (PTF) transmission value from AESC 2021 study by the summer kW saved from active Demand Response measures	Benefit
	8	Electric transmission infrastructure costs for Site Specific Resources	Not applicable	See Notes	Currently no location-specific energy efficiency included, all measures offered across service territory.	Not Applicable
	9	Net risk benefits to utility system operations (generation, transmission, distribution)	Not Quantified or Qualified	See Notes	Value of Improved Reliability benefit calculated based on reliability value from the AESC 2018 study multiplied by the avoided summer kW savings. Applies to both energy efficiency measures and active demand response measures. Values included in the row "Distribution system and customer reliability / resilience impacts"	Benefit
	10	Option value of individual resources	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
	11	Investment under Uncertainty: Real Options Cost / Value	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
	12	Energy Demand Reduction Induced Price Effect	Quantified	$20,107,679	Energy Efficiency measures: Electric Energy (kWh) DRIPE values quantified based on the energy DRIPE values included in the AESC 2021 study. Calculated for each of winter peak, winter off-peak, summer peak, and summer off-peak.	Benefit
				$67,986	Demand Response measures: Electric Energy (kWh) DRIPE values quantified based on the energy DRIPE values included in the AESC 2021 study. Calculated for each of winter peak, winter off-peak, summer peak, and summer off-peak.	Benefit
			Quantified	$10,810,984	Energy Efficiency measures: Electric Generation Capacity (kW) DRIPE value quantified by multiplying avoided summer kW by applicable capacity DRIPE values ($/kW) from the AESC 2021 study.	Benefit
				$4,720,347	Demand Response measures; Electric Generation Capacity (kW) DRIPE value quantified by multiplying avoided summer kW by applicable capacity DRIPE values ($/kW) from the AESC 2021 study.	Benefit

Category Level	Cat. #	Mixed Benefit-Cost, Cost, or Benefit Category	Treatment in Benefit-Cost Analysis (Quantified, Qualified, Not Treated)	Present Value or Qualitative Description	Description and Notes	Benefit or Cost
			Quantified	See Fuel benefits	Additional DRIPE benefits for oil fuel savings from energy efficiency measures are quantified by multiplying oil fuel savings (MMBtu) by applicable oil DRIPE values ($/MMBtu) from the AESC 2021 study. These benefits are included in the category "Participant non-energy costs/benefits: Oil, Gas, Water, Waste Water". Active demand response measures do not have oil fuel savings and therefore do not have oil DRIPE benefits.	Benefit
			Quantified	See notes	Gas Resource Benefits in the Electric energy efficiency Benefit Cost Model includes Gas Supply DRIPE and Gas-Electric Cross DRIPE monetized by multiplying the gas savings attributable to the electric portfolio measures by applicable avoided cost series from the AESC 2021 study. These benefits are included in the category "Participant non-energy costs/benefits: Oil, Gas, Water, Waste Water". Active demand response measures do not have gas savings and therefore do not have gas DRIPE benefits.	Benefit
	13	Greenhouse gas compliance costs	Quantified	See notes	Cost of compliance with criteria air pollutant regulations are included in the wholesale electric energy commodity costs from the AESC 2021 study and are included in the calculation of the energy benefits in the category "Energy Supply & Transmission Operating Value of Energy Provided or Saved"	Benefit
	14	Criteria air pollutant and other environmental compliance costs	Quantified	See notes	Cost of compliance with criteria air pollutant regulations are included in the wholesale electric energy commodity costs from the AESC 2021 study and are included in the calculation of the energy benefits in the category "Energy Supply & Transmission Operating Value of Energy Provided or Saved"	Benefit
	15	Innovation and Learning by Doing	Not Quantified or Qualified	See notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs. Likely a minimal value in comparison to other benefits included in RI Test, but possible value due to pilots, demonstrations, and assessments included in programs.	Benefit
	16	Distribution capacity costs	Quantified	$14,701,422	Energy Efficiency: Electric distribution capacity benefits are quantified by multiplying a Company-generated distribution value ($/kW) by the summer kW saved from efficiency measures.	Benefit
				$5,628,179	Active Demand Response: Electric distribution capacity benefits are quantified by multiplying a Company-generated distribution value ($/kW) by the summer kW saved from active Demand Response measures	Benefit
	17	Distribution delivery costs	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined

Category Level	Cat. #	Mixed Benefit-Cost, Cost, or Benefit Category	Treatment in Benefit-Cost Analysis (Quantified, Qualified, Not Treated)	Present Value or Qualitative Description	Description and Notes	Benefit or Cost
	18	Distribution system safety loss/gain	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
	19	Distribution system performance	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
	20	Utility low income	Quantified	See Notes	Reduced arrearages; bad debt write-offs; terminations and reconnections; notices; safety related emergency calls; customer calls and collections; and rate discounts are included as NEIs for income eligible programs. Aggregated with other NEIs in row "Program participant / prosumer benefits / costs"	Benefit
	21	Distribution system and customer reliability / resilience impacts	Quantified	$1,648,701	Value of Improved Reliability benefit calculated based on reliability value from the AESC 2021 study multiplied by the avoided summer kW savings. Applies to both energy efficiency measures and active demand response measures.	Benefit
				$250,541		Benefit
Customer Level	22	Program participant / prosumer benefits / costs	Quantified	$38,150,598	Energy Efficiency measures: Participant contribution cost is the direct cost of the measure that is not covered by the customer rebate/incentive for energy efficiency measures.	Cost
				$0	Active demand response measures: There is no customer cost for the ConnectedSolutions Active Demand Response program.	Cost
			Quantified	$25,577,063	Quantifiable non-resource, non-energy impacts are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2022 Annual Plan. Non resource, non-energy impacts may include but are not limited to labor, material, facility use, health and safety, materials handling, national security, property values, and transportation. Includes quantified utility NEIs noted elsewhere in this table, and national security NEI value.	Benefit
	23	Participant non-energy costs/benefits: Oil, Gas, Water, Waste Water	Quantified	$23,505,179	Energy Efficiency measures: Quantification of Resource Benefits from: Natural Gas, Oil, Propane, Water & Sewage. Natural Gas Benefits are based on Appendix C of the 2021 AESC study, Oil and Propane Benefits are based on Appendix D of the 2021 AESC study, Water & Sewage Benefits are derived from an internet survey of rates posted to the RI PUC website.	Benefit
				$0	Active demand response measures: no corresponding benefits for oil, gas, water, wastewater in the Active Demand Response benefit cost analysis so this value is zero	Benefit
	24	Low-Income Participant Benefits	Quantified	See Notes	Low-Income Participant Benefits are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2022 Annual Plan and TRM. See the	Benefit

Category Level	Cat. #	Mixed Benefit-Cost, Cost, or Benefit Category	Treatment in Benefit-Cost Analysis (Quantified, Qualified, Not Treated)	Present Value or Qualitative Description	Description and Notes	Benefit or Cost
					category "Program participant / prosumer benefits / costs" for these benefits	
	25	Consumer Empowerment & Choice	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
	26	Non-participant (equity) rate and bill impacts	Quantified	See Notes	External to cost effectiveness analysis. Bill Impacts model the effects of efficiency programs on annual customer bills by aggregating rate and consumption changes, including non-participants. Electric and natural gas rate and bill impact models included in Attachment 7 of the 2022 Annual Plan	Benefit (but not included in BCA screening)
Societal Level	27	Greenhouse gas externality costs	Quantified	$40,987,608	Energy Efficiency measures: Quantified Non-embedded Greenhouse gas reduction benefits obtained from the 2021 AESC Study. Non-embedded CO2 values are sourced from the following tables in the 2021 AESC Study Appendix B for electric savings and Appendix G for gas savings and oil savings.	Benefit
				$204,736	Active Demand Response measures: Quantified Non-embedded Greenhouse gas reduction benefits obtained from the 2021 AESC Study. Non-embedded CO2 values are sourced from the following tables in the 2021 AESC Study Appendix B for electric savings and Appendix G for gas savings and oil savings.	Benefit
	28	Criteria air pollutant and other environmental externality costs	Quantified	$1,419,449	Energy Efficiency measures: Quantified Non-embedded NOx reduction benefits obtained from the 2021 AESC Study. Additional research would be required to determine other benefit streams from air pollutants and other environmental externalities	Benefit
	29	Conservation and community benefits	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
	30	Non-energy costs/benefits: Economic Development	Quantified	$241,540,938	Energy efficiency measures: In 2022 the Company is treating the economic benefits category qualitatively in the primary RI Test and quantitatively in a secondary test. Economic benefits are calculated by multiplying program spending by a set of multipliers calculated in accordance with a methodology developed in the report: "Brattle Group Review of RI Test and Proposed Methodology Final"	Benefit
				$18,080,191	Active demand response measures: In 2022 the Company is treating the economic benefits category qualitatively in the primary RI Test and quantitatively in a secondary test. Economic benefits are calculated by multiplying program spending by a set of multipliers calculated in accordance with a methodology developed in the	Benefit

Category Level	Cat. #	Mixed Benefit-Cost, Cost, or Benefit Category	Treatment in Benefit-Cost Analysis (Quantified, Qualified, Not Treated)	Present Value or Qualitative Description	Description and Notes	Benefit or Cost
					report: "Brattle Group Review of RI Test and Proposed Methodology Final"	
	31	Innovation and knowledge spillover (Related to demonstration projects and other RD&D preceding larger scale deployment)	Qualified	Likely minimal value	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs. The portfolio of programs includes pilots, demonstrations and assessments and these likely generate benefits to further program and market development. The value of these innovation and knowledge spillover benefits is unknown but is estimated to be small in comparison to the overall magnitude of benefits currently included in the screening of the electric portfolio.	Benefit
	32	Societal Low-Income Impacts	Not Quantified or Qualified	See Notes	Participant Low-Income Benefits are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2022 Annual Plan and TRM. Societal low-income impacts are not included. Participant NEIs are aggregated with other Non-Energy Impacts and shown in the Program participant / prosumer benefits / costs category.	Undetermined
	33	Public Health	Not Quantified or Qualified	See Notes	Participant health benefits are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2022 Annual Plan, societal public health benefits are not monetized. Participant NEIs are aggregated with other Non-Energy Impacts and shown in the Program participant / prosumer benefits / costs category.	Benefit
	34	National Security and US international influence	Quantified	See Notes	National Security due to avoided oil imports are monetized for residential and income eligible measures that save oil in accordance with the 2022 Rhode Island TRM. The value of this NEI is aggregated with other Non-Energy Impacts and shown in the Program participant / prosumer benefits / costs category.	Benefit

Table 2. Alignment of RI Test to Docket 4600 Framework for 2023 Natural Gas Energy Efficiency Portfolio

Category Level	Cat. #	Mixed Benefit-Cost, Cost, or Benefit Category	Treatment in Benefit-Cost Analysis (Quantified, Qualified, Not Treated)	Present Value or Qualitative Description	Description and Notes	Benefit or Cost
Power System Level	1	Energy Supply & Transmission Operating Value of Energy Provided or Saved	Quantified	$27,031,407	Natural gas energy efficiency measures. Value of natural gas supply monetized by the AESC 2018 study avoided costs. Natural Gas Benefits are based on Appendix C of the 2018 AESC study. Includes avoided cost of delivering gas (retail margin) and the avoided cost of the gas.	Benefit
			Quantified	$93,590	Energy Efficiency Measures: Winter peak electric energy (kWh) savings associated with natural gas efficiency are monetized for winter peak by multiplying savings during this period by the avoided retail cost of winter peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	Benefit
			Quantified	$90,411	Energy Efficiency Measures: Winter off-peak electric energy (kWh) savings associated with natural gas efficiency are monetized for winter peak by multiplying savings during this period by the avoided retail cost of winter off-peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	Benefit
			Quantified	$221,830	Energy Efficiency Measures: Summer peak electric energy (kWh) savings associated with natural gas efficiency are monetized for winter peak by multiplying savings during this period by the avoided retail cost of Summer peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	Benefit
			Quantified	$187,863	Energy Efficiency Measures: Summer off-peak electric energy (kWh) savings associated with natural gas efficiency are monetized for winter peak by multiplying savings during this period by the avoided retail cost of Summer off-peak energy from Appendix B of the avoided cost schedules in the AESC 2021 study.	Benefit
			Quantified	$281,364	Energy Efficiency Measures: Value of avoided summer generation capacity benefit is monetized by the AESC 2021 study avoided costs	Benefit
	2	Renewable Energy Credit Cost / Value	Quantified	See Notes	Wholesale cost of RECs is included in the winter peak, winter off-peak, summer peak, and summer off-peak retail energy costs from the preceding category.	Benefit
	3	Retail Supplier Risk Premium	Quantified	See Notes	Wholesale Risk Premium is built into the retail costs of electric energy and electric capacity sourced from the AESC 2021 study and used to calculate the benefits of avoided energy and capacity.	Benefit
	4	Forward Commitment: Capacity Value	Quantified	See Notes	Forward capacity avoided costs are included in capacity benefits.	Benefit
	5	Forward Commitment: Avoided	Not applicable	See Notes	Not applicable to energy efficiency	Not Applicable

		Ancillary Services Value				
	6	Utility / Third Party Developer Renewable Energy, Efficiency, or DER costs	Quantified	$38,751,232	National Grid costs to implement the natural gas energy efficiency portfolio. Total budget includes costs for Program Planning & Administration; Marketing; Customer Incentives; Sales Technical Assistance and Training; Evaluation & Market Research; Performance Incentive Mechanism	Cost
	7	Electric Transmission Capacity Costs / Value	Quantified	$387,145	Energy Efficiency: Electric transmission capacity benefits are quantified by multiplying a statewide Pooled Transmission Facility (PTF) transmission value from AESC 2021 study by the summer kW saved from efficiency measures	Benefit
	8	Electric transmission infrastructure costs for Site Specific Resources	Not applicable	See Notes	Currently no location-specific energy efficiency included, all measures offered across service territory.	Not Applicable
	9	Net risk benefits to utility system operations (generation, transmission, distribution)	Quantified	See Notes	Value of Improved Reliability benefit calculated based on reliability value from the AESC 2021 study multiplied by the avoided summer kW savings. Values included in the row "Distribution system and customer reliability / resilience impacts"	Benefit
	10	Option value of individual resources	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
	11	Investment under Uncertainty: Real Options Cost / Value	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
	12	Energy Demand Reduction Induced Price Effect	Quantified	$144,156	Energy Efficiency measures: Electric Energy (kWh) DRIPE values quantified based on the energy DRIPE values included in the AESC 2021 study. Calculated for each of winter peak, winter off-peak, summer peak, and summer off-peak.	Benefit
			Quantified	$689,215	Energy Efficiency measures: Electric Generation Capacity (kW) DRIPE value quantified by multiplying avoided summer kW by applicable capacity DRIPE values ($/kW) from the AESC 2021 study.	Benefit
			Quantified	See Fuel benefits	Additional DRIPE benefits for oil fuel savings from energy efficiency measures are quantified by multiplying oil fuel savings (MMBtu) by applicable oil DRIPE values ($/MMBtu) from the AESC 2021 study. These benefits are included in the category "Participant non-energy costs/benefits: Oil, Gas, Water, Waste Water". Natural Gas measures do not have delivered fuel savings, so no value for the natural gas portfolio	Benefit
			Quantified	$280,742	Gas Supply DRIPE monetized by multiplying the gas savings attributable to the electric portfolio measures by applicable avoided cost series from the AESC 2021 study. These benefits are included in the category "Participant non-energy costs/benefits: Oil, Gas, Water, Waste Water".	Benefit

	13	Greenhouse gas compliance costs	Quantified	See notes	Cost of compliance with criteria air pollutant regulations are included in the wholesale electric energy commodity costs from the AESC 2021 study and are included in the calculation of the electric energy benefits in the category "Energy Supply & Transmission Operating Value of Energy Provided or Saved"	Benefit
	14	Criteria air pollutant and other environmental compliance costs	Quantified	See notes	Cost of compliance with criteria air pollutant regulations are included in the wholesale electric energy commodity costs from the AESC 2021 study and are included in the calculation of the electric energy benefits in the category "Energy Supply & Transmission Operating Value of Energy Provided or Saved"	Benefit
	15	Innovation and Learning by Doing	Qualified	Likely minimal value	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs. Likely a minimal value in comparison to other benefits included in RI Test, but possible value due to pilots, demonstrations, and assessments included in programs.	Undetermined
	16	Distribution capacity costs	Quantified	$383,412	Energy Efficiency: Electric distribution capacity benefits are quantified by multiplying a Company-generated distribution value ($/kW) by the summer kW saved from efficiency measures.	Benefit
	17	Distribution delivery costs	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of natural gas energy efficiency programs.	Undetermined
	18	Distribution system safety loss/gain	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of natural gas energy efficiency programs.	Undetermined
	19	Distribution system performance	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of natural gas energy efficiency programs.	Undetermined
	20	Utility low income	Quantified	See Notes	Reduced arrearages; bad debt write-offs; terminations and reconnections; notices; safety related emergency calls; customer calls and collections; and rate discounts are included as NEIs for income eligible programs. Aggregated with other NEIs in row "Program participant / prosumer benefits / costs"	Benefit
	21	Distribution system and customer reliability / resilience impacts	Quantified	$34,661	Value of Improved Reliability benefit calculated based on reliability value from the AESC 2018 study multiplied by the avoided summer kW savings. Applies to energy efficiency measures.	Benefit
Customer Level	22	Program participant / prosumer benefits / costs	Quantified	$8,718,703	Energy Efficiency measures: Participant contribution cost is the direct cost of the measure that is not covered by the customer rebate/incentive for energy efficiency measures.	Cost
			Quantified	$33,681,263	Quantifiable non-resource, non-energy impacts are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2022 Annual Plan. Non resource, non-energy impacts may include but are not limited to labor, material, facility use, health and safety, materials handling, national security, property values, and transportation. Includes	Benefit

					quantified utility NEIs noted elsewhere in this table, and national security NEI value.	
	23	Participant non-energy costs/benefits: Oil, Gas, Water, Waste Water	Quantified	$483,995	Energy Efficiency measures: Quantification of Resource Benefits from: Natural Gas, Oil, Propane, Water & Sewage. Natural Gas Benefits are based on Appendix C of the 2021 AESC study, Oil and Propane Benefits are based on Appendix D of the 2021 AESC study, Water & Sewage Benefits are derived from an internet survey of rates posted to the RI PUC website.	Benefit
	24	Low-Income Participant Benefits	Quantified	See Notes	Low-Income Participant Benefits benefits are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2021 Annual Plan. See the category "Program participant / prosumer benefits / costs" for these benefits	Benefit
	25	Consumer Empowerment & Choice	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
	26	Non-participant (equity) rate and bill impacts	Quantified	See Notes	External to cost effectiveness analysis. Bill Impacts model the effects of efficiency programs on annual customer bills by aggregating rate and consumption changes, including non-participants. Electric and natural gas rate and bill impact models included in Attachment 7 of the 2022 Annual Plan	Benefit (but not included in BCA screening)
Societal Level	27	Greenhouse gas externality costs	Quantified	$20,129,201	Energy Efficiency measures: Quantified Non-embedded Greenhouse gas reduction benefits obtained from the 2021 AESC Study. Non-embedded CO2 values are sourced from the following tables in the 2021 AESC Study Appendix B for electric savings and Appendix G for gas savings and oil savings.	Benefit
	28	Criteria air pollutant and other environmental externality costs	Quantified	$2,255,221	Quantified Non-embedded NOx reduction benefits obtained from the 2021 AESC Study. Additional research would be required to determine other benefit streams from air pollutants and other environmental externalities	Benefit
	29	Conservation and community benefits	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of natural gas energy efficiency programs.	Undetermined
	30	Non-energy costs/benefits: Economic Development	Qualified	$44,545,902	Energy efficiency measures: In 2023 the Company is treating the economic benefits category qualitatively in the primary RI Test and presenting economic benefits in a separate table. Economic benefits are calculated by multiplying program spending by a set of multipliers calculated in accordance with a methodology developed in the report: "Brattle Group Review of RI Test and Proposed Methodology Final"	Benefit
	31	Innovation and knowledge spillover (Related to demonstration projects and other RD&D	Qualified	Likely minimal value	Additional research necessary to determine applicability and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs. The portfolio of programs includes pilots, demonstrations and assessments and these likely generate benefits to further program and market development. The value of	Benefit

		preceding larger scale deployment)			these innovation and knowledge spillover benefits is unknown but is estimated to be small in comparison to the overall magnitude of benefits currently included in the screening of the electric portfolio.	
	32	Societal Low-Income Impacts	Not Quantified or Qualified	See Notes	Participant Low-Income Benefits are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2022 Annual Plan and TRM. Societal low-income impacts are not included. Participant NEIs are aggregated with other Non-Energy Impacts and shown in the Program participant / prosumer benefits / costs category.	Undetermined
	33	Public Health	Quantified	See Notes	Participant health benefits are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2022 Annual Plan, societal public health benefits are not monetized. Participant NEIs are aggregated with other Non-Energy Impacts and shown in the Program participant / prosumer benefits / costs category.	Benefit
	34	National Security and US international influence	Quantified	See Notes	National Security due to avoided oil imports are monetized for residential and income eligible measures that save oil in accordance with the 2022 Rhode Island TRM. The value of this NEI is aggregated with other Non-Energy Impacts and shown in the Program participant / prosumer benefits / costs category.	Benefit

Table E-1
Rhode Island Energy
Electric DSM Funding Sources in 2023 by Sector
$(000)

		Projections by Sector			
		Income Eligible Residential	**Non-Income Eligible Residential**	**Commercial & Industrial**	**Total**
(1)	**Projected Budget (from E-2):**	**$16,985.9**	**$36,222.2**	**$60,896.5**	**$114,104.6**
	Sources of Other Funding:				
(2)	Projected DSM Commitments at Year-End 2022:	$0.0	$0.0	$0.0	$0.0
(3)	Projected Year-End 2022 Fund Balance and Interest:	($14,184.1)	$2,157.9	$40,082.7	$28,056.5
(4)	Projected FCM Net Revenue from ISO-NE:	$340.7	$4,047.5	$5,737.5	$10,125.7
(5)	**Total Other Funding:**	**($13,843.4)**	**$6,205.4**	**$45,820.2**	**$38,182.2**
(6)	**Customer Funding Required:**	**$30,829.3**	**$30,016.8**	**$15,076.3**	**$75,922.5**
(7)	**Forecasted kWh Sales:**	**249,618,693**	**2,965,434,729**	**4,203,681,505**	**7,418,734,927**
(8)	Energy Efficiency Program charge per kWh, excluding uncollectible recovery:				**$0.01023**
(9)	Proposed SRP Opex Factor per kWh, excluding uncollectible recovery:				$0.00000
(10)	Total Proposed Energy Efficiency Charge per kWh, excluding uncollectible recovery:				$0.01023
(11)	Currently Effective Uncollectible Rate				1.30%
(12)	**Proposed Energy Efficiency Program Charge per kWh, including Uncollectible Recovery:**				$0.01036
(13)	Currently Effective Energy Efficiency Program Charge per kwh				$0.01222
(14)	Proposed Adjustment to Reflect Fully Reconciling Funding Mechanism				($0.00186)

Notes:
(1) Projected Budget from E-2 includes OER and EERMC costs allocated to each sector based on forecasted sales.
(2) DSM Commitments are projects that are under construction with anticipated completion in 2023.
(3) Fund balance projections include projected revenue and spend through year end with Income Eligible sector set to $0 through projected subsidization from other sectors, minus commitments which are illustrated separately on line (2). The fund balance includes a $1,732,178.47 credit from shareholder funds, with interest, to the fund balance which the Company made in May and June, 2022 based on the Company's involvement in Docket 22-05-EE. The fund balance also assumes a transfer of $5,000,000 to the Rhode Island Infrastructure Bank (RIIB), approved in the 2021 Annual Plan, to be made in 2022. Note that these funds have not yet been transferred to RIIB, however the Company anticipates, subject to PUC approval, transferring these funds given that the Company received a written request from RIIB on December 30, 2021, and is currently working with RIIB in order to ensure that all required documentation has been provided and is in order prior to completing the transfer.
(4) The total projection of FCM revenue is allocated by kWh sales to each sector. FCM Revenue includes a credit of $332,804 to reverse the penalty filed in Docket 5208, as National Grid is no longer seeking cost recovery. See Docket 5208 for additional details.
(5) Line (2) + Line (3) + Line (4)
(6) Line (1) - Line (5)
(7) Per Company Forecast
(9) Truncated to 5 decimal places
(11) Proposed SRP Opex Factor is $0.00000.
(10) Line (8) + Line (9)
(11) Uncollectible rate approved in Docket No 4770.
(12) Line (10) ÷ (1-Line (11), truncated to 5 decimal places
(13) Currently Effective EE Charge includes System Reliability Factor and uncollectible recovery. This is an 11 month rate that went into effect on February 1, 2022.
(14) Line (12) - Line (13)

Table E-2
Rhode Island Energy
2023 Electric Energy Efficiency Program Budget ($000)

	Program Planning & Administration	Marketing	Cost of services and product rebates/incentives provided to customers	Sales, Technical Assistance & Training	Evaluation & Market Research	Performance Incentive	Grand Total
Non-Income Eligible Residential							
Residential New Construction	$147.4	$23.9	$835.5	$543.4	$136.1		$1,686.3
ENERGY STAR® HVAC	$287.3	$278.3	$4,774.2	$829.5	$380.4		$6,549.7
Energy*Wise*	$590.5	$355.5	$12,301.7	$1,489.5	$282.7		$15,019.8
Energy*Wise* Multifamily	$153.1	$67.8	$1,419.8	$208.7	$33.4		$1,882.8
Residential Consumer Products	$141.1	$427.6	$1,535.5	$686.7	$27.1		$2,818.0
Home Energy Reports	$59.9	$13.2	$0.0	$2,560.2	$25.0		$2,658.3
Residential ConnectedSolutions	$92.1	$11.5	$1,503.7	$346.3	$31.9		$1,985.4
Energy Efficiency Education Programs	$0.0	$0.0	$0.0	$0.0	$0.0		$0.0
Residential Pilots	$0.0	$0.0	$0.0	$0.0	$0.0		$0.0
Community Based Initiatives - Residential	$37.1	$137.7	$105.8	$0.0	$0.0		$280.6
Comprehensive Marketing - Residential	$1.4	$309.3	$0.0	$0.0	$0.0		$310.7
Residential Performance Incentive	$0.0	$0.0	$0.0	$0.0	$0.0	$699.3	$699.3
Subtotal - Non-Income Eligible Residential	**$1,509.9**	**$1,624.7**	**$22,476.1**	**$6,664.3**	**$916.5**	**$699.3**	**$33,890.9**
Income Eligible Residential							
Single Family - Income Eligible Services	$534.8	$132.1	$9,855.7	$2,946.9	$90.3		$13,559.8
Income Eligible Multifamily	$181.7	$14.3	$2,596.1	$393.5	$44.3		$3,229.9
Income Eligible Workforce Development	$0.0	$0.0	$0.0	$0.0	$0.0		$0.0
Income Eligible Performance Incentive	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal - Income Eligible Residential	**$716.5**	**$146.4**	**$12,451.8**	**$3,340.4**	**$134.6**	**$0.0**	**$16,789.7**
Commercial & Industrial							
Large Commercial New Construction	$253.2	$302.3	$7,532.1	$1,809.4	$357.2		$10,254.3
Large Commercial Retrofit	$898.1	$225.1	$20,908.5	$4,997.1	$664.2		$27,693.0
Small Business Direct Install	$266.7	$232.6	$6,279.8	$343.0	$77.1		$7,199.2
Commercial ConnectedSolutions	$195.8	$6.8	$7,140.0	$160.7	$0.0		$7,503.3
Commercial Pilots	$0.0	$0.0	$0.0	$0.0	$0.0		$0.0
Community Based Initiatives - C&I	$12.3	$45.8	$35.3	$0.0	$0.0		$93.5
Finance Costs	$0.0	$0.0	$2,000.0	$0.0	$0.0		$2,000.0
Commercial Workforce Development	$0.0	$0.0	$0.0	$157.5	$0.0		$157.5
Commercial & Industrial Performance Incentive	$0.0	$0.0	$0.0	$0.0	$0.0	$2,690.9	$2,690.9
Subtotal - Commercial & Industrial	**$1,626.3**	**$812.7**	**$43,895.6**	**$7,467.6**	**$1,098.5**	**$2,690.9**	**$57,591.7**
Regulatory							
OER	$1,328.7	$0.0	$0.0	$0.0	$0.0		$1,328.7
EERMC	$766.2	$0.0	$0.0	$0.0	$0.0		$766.2
Rhode Island Infrastructure Bank	$0.0	$0.0	$3,737.5	$0.0	$0.0		$3,737.5
Subtotal - Regulatory	**$2,094.9**	**$0.0**	**$3,737.5**	**$0.0**	**$0.0**	**$0.0**	**$5,832.4**
Grand Total	**$5,947.7**	**$2,583.8**	**$82,561.0**	**$17,472.3**	**$2,149.7**	**$3,390.2**	**$114,105**

Notes:

(1) 2023 Large Commercial Retrofit Commitments ($000):

(2) For more information on Finance Costs, please refer to Attachment 2, Section 9.

(3) OER budget is equal to the SBC collections after zeroing out EERMC and OER budgets times 3% times 60%. EERMC budget was set by the PUC on January 25, 2022 for a total between gas and electric of $1,025,763. 74.7% of that total has been allocated to the electric budget, in accordance with the proportions of the gas and electric budget. This will be updated in the final draft.

(4) Finance Costs are detailed in Table E-9. Finance Costs include an injection of $2M into the Large C&I Revolving Loan Fund. Without this injection the Large C&I Revolving Loan Fund is projected to be negative by the end of 2023.

(5) Demonstrations and Assessments budgets are included in specific program level budgets listed above. More information on Demonstration and Assessments descriptions, budgets, and which program level budget they are included in can be found in Attachment 8.

Table E-3
Rhode Island Energy
Derivation of the 2023 Eligible PIM and Implementation Budgets ($000)

	Proposed 2023 Budget From E-2	Commitments	Regulatory Costs	Performance Incentive	Eligible Sector PIM Budget for Performance Incentive on E-8B	Implementation Expenses for Cost-Effectiveness on E-5
Non-Income Eligible Residential						
Residential New Construction	$1,686.3					$1,686.3
ENERGY STAR® HVAC	$6,549.7					$6,549.7
EnergyWise	$15,019.8					$15,019.8
EnergyWise Multifamily	$1,882.8					$1,882.8
Residential Consumer Products	$2,818.0					$2,818.0
Home Energy Reports	$2,658.3					$2,658.3
Residential ConnectedSolutions	$1,985.4					$1,985.4
Energy Efficiency Education Programs	$0.0					$0.0
Residential Pilots	$0.0					$0.0
Community Based Initiatives - Residential	$280.6					$280.6
Comprehensive Marketing - Residential	$310.7					$310.7
Residential Workforce Development	$0.0					$0.0
Residential Performance Incentive	$699.3			$699.3		$0.0
Subtotal - Non-Income Eligible Residential	**$33,890.9**	**$0.0**	**$0.0**	**$699.3**	**$31,181.3**	**$33,191.6**
Income Eligible Residential						
Single Family - Income Eligible Services	$13,559.8					$13,559.8
Income Eligible Multifamily	$3,229.9					$3,229.9
Income Eligible Workforce Development	$0.0					$0.0
Income Eligible Performance Incentive	$0.0			$0.0		$0.0
Subtotal - Income Eligible Residential	**$16,789.7**	**$0.0**	**$0.0**	**$0.0**	**$16,789.7**	**$16,789.7**
Commercial & Industrial						
Large Commercial New Construction	$10,254.3	$0.0				$10,254.3
Large Commercial Retrofit	$27,693.0	$0.0				$27,693.0
Small Business Direct Install	$7,199.2	$0.0				$7,199.2
Commercial ConnectedSolutions	$7,503.3					$7,503.3
Commercial Pilots	$0.0					$0.0
Community Based Initiatives - C&I	$93.5					$93.5
Finance Costs	$2,000.0					$2,000.0
Commercial Workforce Development	$157.5					$157.5
Commercial & Industrial Performance Incentive	$2,690.9			$2,690.9		$0.0
Subtotal - Commercial & Industrial	**$57,591.7**	**$0.0**	**$0.0**	**$2,690.9**	**$47,366.4**	**$54,900.8**
Regulatory						
OER	$1,328.7		$1,328.7			$1,328.7
EERMC	$766.2		$766.2			$766.2
Rhode Island Infrastructure Bank	$3,737.5		$3,737.5			$3,737.5
Subtotal - Regulatory	**$5,832.4**	**$0.0**	**$5,832.4**	**$0.0**	**$0.0**	**$5,832.4**
Grand Total	**$114,104.6**	**$0.0**	**$5,832.4**	**$3,390.2**	**$95,337.4**	**$110,714.5**

Notes:
(1) Eligible Sector Spending Budget = Total Budget from E-2 minus commitments, regulatory costs, pilots, assessments, Residential ConnectedSolutions, Commercial ConnectedSolutions, Performance Incentive
(2) Eligible Sector Spending Budget does not include assessments, see Attachment 8 for assessments budgets.
(3) Implementation Expenses = Total Budget from E-2 minus commitments and Performance Incentive.

Table E-4
Rhode Island Energy
Proposed 2023 Budget Compared to Approved 2022 Budget ($000)

	Proposed Implementation Budget 2023	Approved Implementation Budget 2022	Difference
Non-Income Eligible Residential			
Residential New Construction	$1,686.3	$1,617.0	$69.3
ENERGY STAR® HVAC	$6,549.7	$4,684.4	$1,865.3
Energy*Wise*	$15,019.8	$15,557.0	-$537.1
Energy*Wise* Multifamily	$1,882.8	$3,238.3	-$1,355.6
Residential Consumer Products	$2,818.0	$2,796.0	$22.0
Home Energy Reports	$2,658.3	$2,639.1	$19.2
Residential ConnectedSolutions	$1,985.4	$1,822.6	$162.8
Community Based Initiatives - Residential	$280.6	$255.1	$25.5
Comprehensive Marketing - Residential	$310.7	$247.9	$62.8
Subtotal - Non-Income Eligible Residential	**$33,191.6**	**$32,857.4**	**$334.2**
Income Eligible Residential			
Single Family - Income Eligible Services	$13,559.8	$13,275.3	$284.5
Income Eligible Multifamily	$3,229.9	$3,538.9	-$309.1
Subtotal - Income Eligible Residential	**$16,789.7**	**$16,814.3**	**-$24.6**
Commercial & Industrial			
Large Commercial New Construction	$10,254.3	$9,034.1	$1,220.1
Large Commercial Retrofit	$27,693.0	$25,010.5	$2,682.5
Small Business Direct Install	$7,199.2	$8,883.3	-$1,684.1
Commercial ConnectedSolutions	$7,503.3	$4,393.6	$3,109.7
Community Based Initiatives - C&I	$93.5	$85.0	$8.5
Commercial Pilots	$0.0	$0.0	$0.0
Finance Costs	$2,000.0	$2,000.0	$0.0
Commercial Workforce Development	$157.5	$157.5	$0.0
Subtotal Commercial & Industrial	**$54,900.8**	**$49,564.1**	**$5,336.7**
Regulatory			
EERMC	$766.2	$766.2	$0.0
OER	$1,328.7	$1,541.7	-$213.0
Rhode Island Infrastructure Bank	$3,737.5	$3,737.5	$0.0
Subtotal Regulatory	**$5,832.4**	**$6,045.4**	**-$213.0**
TOTAL IMPLEMENTATION BUDGET	**$110,714.5**	**$105,281.1**	**$5,433.3**
OTHER EXPENSE ITEMS			
Commitments	$0.0	$0.0	$0.0
Company Incentive	$3,390.2	$3,390.2	$0.0
Subtotal - Other Expense Items	**$3,390.2**	**$3,390.2**	**$0.0**
TOTAL BUDGET	**$114,104.6**	**$108,671.3**	**$5,433.3**

Notes:

(1) Program Implementation Budget excludes Commitments, Company Incentive; derived on Table E-3

(2) Total Budget includes Implementation, Commitments; illustrated on Table E-3

Table E-5 - Primary
Rhode Island Energy
Calculation of 2023 Program Year Cost-Effectiveness
All Dollar Values in ($000)

	RI Test Benefit/ Cost[1]	Total Benefit	Program Implementation Expenses[2]	Customer Contribution	Performance Incentive	¢/Lifetime kWh
Non-Income Eligible Residential						
Residential New Construction	2.08	$5,386.4	$1,686.3	$905.9		16.9
ENERGY STAR® HVAC	2.42	$22,720.0	$6,549.7	$2,827.9		12.6
Energy*Wise*	1.02	$19,305.5	$15,019.8	$3,946.4		117.8
Energy*Wise* Multifamily	1.55	$3,322.0	$1,882.8	$258.0		22.4
Home Energy Reports	2.66	$7,076.6	$2,658.3	$0.0		9.0
Residential Consumer Products	1.88	$9,198.1	$2,818.0	$2,063.4		11.8
Residential ConnectedSolutions	1.76	$3,503.0	$1,985.4	$0.0		N/A
Energy Efficiency Education Programs			$0.0			
Residential Pilots			$0.0			
Community Based Initiatives - Residential			$280.6			
Comprehensive Marketing - Residential			$310.7			
Residential Workforce Development			$0.0			
Non-Income Eligible Residential SUBTOTAL	**1.61**	**$70,511.5**	**$33,191.6**	**$10,001.6**	**$699.3**	**23.2**
Income Eligible Residential						
Single Family - Income Eligible Services	1.65	$22,357.6	$13,559.8	$0.0		47.6
Income Eligible Multifamily	1.31	$4,231.9	$3,229.9	$0.0		18.7
Income Eligible Workforce Development			$0.0			
Income Eligible Residential SUBTOTAL	**1.58**	**$26,589.5**	**$16,789.7**	**$0.0**	**$0.0**	**36.7**
Commercial & Industrial						
Large Commercial New Construction	1.97	$28,236.7	$10,254.3	$4,067.3		9.7
Large Commercial Retrofit	1.51	$73,891.7	$27,693.0	$21,381.4		16.8
Small Business Direct Install	1.03	$10,182.5	$7,199.2	$2,700.3		15.6
Commercial ConnectedSolutions	1.82	$13,678.4	$7,503.3	$0.0		N/A
Commercial Pilots			$0.0			
Community Based Initiatives - C&I			$93.5			
Finance Costs			$2,000.0			
Commercial Workforce Development			$157.5			
C&I SUBTOTAL	**1.47**	**$125,989.2**	**$54,900.8**	**$28,149.0**	**$2,690.9**	**16.5**
Regulatory						
OER			$1,328.7			
EERMC			$766.2			
Rhode Island Infrastructure Bank			$3,737.5			
Regulatory SUBTOTAL			**$5,832.4**			
TOTAL	**1.47**	**$223,090.2**	**$110,714**	**$38,150.6**	**$3,390.2**	**20.3**

Notes:
(1) RI Test B/C Test = Total Benefits from Table E-6A / Program Implementation Expenses from Table E-3 and Customer Contribution
Also includes effects of free-ridership and spillover.
(2) For Implementation Expenses derivation, see Table E-3.

Table E-5 - Economic Benefits
Rhode Island Energy
Calculation of 2023 Economic Benefits
All Dollar Values in ($000)

	Program Implementation Expenses[1]	RI Economic Multiplier	Economic Benefits
Non-Income Eligible Residential			
Residential New Construction	$1,686.3	1.56	$2,630.6
ENERGY STAR® HVAC	$6,549.7	1.58	$10,348.5
Energy*Wise*	$15,019.8	1.05	$15,770.8
Energy*Wise* Multifamily	$1,882.8	1.45	$2,730.0
Home Energy Reports	$2,658.3	1.65	$4,386.2
Residential Consumer Products	$2,818.0	1.11	$3,128.0
Residential ConnectedSolutions	$1,985.4	0.83	$1,647.9
Energy Efficiency Education Programs	$0.0		$0.0
Residential Pilots	$0.0		$0.0
Community Based Initiatives - Residential	$280.6		$0.0
Comprehensive Marketing - Residential	$310.7		$0.0
Residential Workforce Development	$0.0		$0.0
Non-Income Eligible Residential SUBTOTAL	**$33,191.6**		**$40,642.0**
Income Eligible Residential			
Single Family - Income Eligible Services	$13,559.8	0.96	$13,017.4
Income Eligible Multifamily	$3,229.9	1.30	$4,198.8
Income Eligible Workforce Development	$0.0		$0.0
Income Eligible Residential SUBTOTAL	**$16,789.7**		**$17,216.2**
Commercial & Industrial			
Large Commercial New Construction	$10,254.3	2.74	$28,096.7
Large Commercial Retrofit	$27,693.0	5.28	$146,219.1
Small Business Direct Install	$7,199.2	1.53	$11,014.8
Commercial ConnectedSolutions	$7,503.3	2.19	$16,432.3
Commercial Pilots	$0.0		$0.0
Community Based Initiatives - C&I	$93.5		$0.0
Finance Costs	$2,000.0		$0.0
Commercial Workforce Development	$157.5		$0.0
C&I SUBTOTAL	**$54,900.8**		**$201,762.9**
Regulatory			
OER	$1,328.7		$0.0
EERMC	$766.2		$0.0
Rhode Island Infrastructure Bank	$3,737.5		$0.0
Regulatory SUBTOTAL	**$5,832.4**		**$0.0**
TOTAL	**$110,714.5**		**$259,621.1**

Notes:
(1) For Implementation Expenses derivation, see Table E-3.
(2) RI Economic Multipliers from "Economic Multipliers Update" filed by National Grid in Docket 5189.

Table E-5A
Rhode Island Energy
Calculation of 2023 Program Year Cost-Effectiveness with TRC Test
All Dollar Values in ($000)

	TRC Benefit/ Cost[1]	Total Benefit	Program Implementation Expenses[2]	Customer Contribution	Performance Incentive	¢/Lifetime kWh
Non-Income Eligible Residential						
Residential New Construction	1.67	$4,336.6	$1,686.3	$905.9		16.9
ENERGY STAR® HVAC	1.90	$17,842.9	$6,549.7	$2,827.9		12.6
Energy*Wise*	0.78	$14,859.2	$15,019.8	$3,946.4		117.8
Energy*Wise* Multifamily	1.33	$2,847.0	$1,882.8	$258.0		22.4
Home Energy Reports	1.88	$5,002.7	$2,658.3	$0.0		9.0
Residential Consumer Products	1.42	$6,942.8	$2,818.0	$2,063.4		11.8
Residential ConnectedSolutions			$1,985.4	$0.0		N/A
Energy Efficiency Education Programs			$0.0			0.0
Residential Pilots			$0.0			0.0
Community Based Initiatives - Residential			$280.6			0.0
Comprehensive Marketing - Residential			$310.7			0.0
Non-Income Eligible Residential SUBTOTAL	**1.18**	**$51,831.2**	**$33,191.6**	**$10,001.6**	**$699.3**	23.2
Income Eligible Residential						
Single Family - Income Eligible Services	1.43	$19,410.6	$13,559.8	$0.0		47.6
Income Eligible Multifamily	1.10	$3,544.3	$3,229.9	$0.0		18.7
Income Eligible Residential SUBTOTAL	**1.37**	**$22,954.9**	**$16,789.7**	**$0.0**	**$0.0**	36.7
Commercial & Industrial						
Large Commercial New Construction	1.55	$22,214.1	$10,254.3	$4,067.3		9.7
Large Commercial Retrofit	1.21	$59,376.1	$27,693.0	$21,381.4		16.8
Small Business Direct Install	0.72	$7,117.8	$7,199.2	$2,700.3		15.6
Commercial ConnectedSolutions			$7,503.3			N/A
Commercial Pilots			$0.0			
Community Based Initiatives - C&I			$93.5			
Finance Costs			$2,000.0			
Commercial Workforce Development			$157.5			
C&I SUBTOTAL	**1.03**	**$88,708.1**	**$54,900.8**	**$28,149.0**	**$2,690.9**	16.5
Regulatory						
OER			$1,328.7			
EERMC			$766.2			
Rhode Island Infrastructure Bank			$3,737.5			
Regulatory SUBTOTAL			**$5,832.4**			
TOTAL	**1.07**	**$163,494.2**	**$110,714.5**	**$38,150.6**	**$3,390.2**	20.3

(1) TRC B/C Test omits societal benefits that are monetized in the RI Test, including non-embedded emissions (CO2 and Nox), and economic benefits. Also includes effects of free-ridership and spillover.
(2) For Implementation Expenses derivation, see Table E-3.

Table E-6
Rhode Island Energy
Summary of 2023 Benefits by Program (Energy Efficiency Measures)

	Benefits (000's)																		
			Capacity					Energy					Non Electric				Societal		
								Winter		Summer									
	Total	Total (Economic Excluded)	Summer Generation	Capacity DRIPE	Trans	Dist	Reliability	Peak	Off Peak	Peak	Off Peak	Electric Energy DRIPE	Natural Gas	Oil	Other Resource	Non Resource	Carbon	NOx	Economic
Non-Income Eligible Residential																			
Residential New Construction	$8,017	$5,386	$18	$16	$43	$49	$3	$409	$535	$161	$125	$295	$0	$1,022	$1,561	$99	$989	$61	$2,631
ENERGY STAR® HVAC	$33,069	$22,720	$601	$538	$1,414	$1,607	$97	$2,314	$2,891	$333	$280	$1,756	-$3	$5,476	$17	$521	$4,566	$311	$10,349
Energy*Wise*	$35,076	$19,305	$157	$216	$383	$435	$33	$365	$377	$206	$179	$372	$0	$9,902	$1,618	$616	$3,946	$500	$15,771
Energy*Wise* Multifamily	$6,052	$3,322	$58	$60	$138	$157	$11	$182	$212	$152	$133	$202	$0	$247	$52	$1,242	$457	$18	$2,730
Home Energy Reports	$11,463	$7,077	$296	$1,198	$442	$502	$22	$745	$640	$289	$223	$645	$0	$0	$0	$0	$2,051	$22	$4,386
Residential Consumer Products	$12,326	$9,198	$316	$816	$815	$926	$130	$797	$863	$465	$460	$1,286	$0	$41	$26	$1	$2,224	$31	$3,128
Non-Income Eligible Residential SUBTOTAL	**$106,003**	**$67,009**	**$1,448**	**$2,844**	**$3,235**	**$3,676**	**$295**	**$4,813**	**$5,519**	**$1,606**	**$1,400**	**$4,557**	**-$3**	**$16,687**	**$3,274**	**$2,479**	**$14,234**	**$944**	**$38,994**
Income Eligible Residential																			
Single Family - Income Eligible Services	$35,375	$22,358	$231	$263	$550	$625	$44	$651	$712	$350	$361	$592	$24	$4,769	$373	$9,864	$2,692	$255	$13,017
Income Eligible Multifamily	$8,431	$4,232	$9	$16	$21	$24	$2	$455	$444	$126	$109	$336	$0	$254	$45	$1,703	$667	$21	$4,199
Income Eligible Residential SUBTOTAL	**$43,806**	**$26,589**	**$240**	**$279**	**$571**	**$649**	**$46**	**$1,106**	**$1,156**	**$477**	**$471**	**$928**	**$24**	**$5,023**	**$418**	**$11,567**	**$3,359**	**$276**	**$17,216**
Commercial & Industrial																			
Large Commercial New Construction	$56,333	$28,237	$933	$1,021	$2,192	$2,491	$184	$3,948	$2,490	$2,470	$1,517	$3,501	-$232	$0	$6	$1,694	$5,949	$73	$28,097
Large Commercial Retrofit	$220,111	$73,892	$2,525	$6,042	$6,400	$7,271	$1,028	$6,117	$4,655	$4,416	$2,911	$9,126	-$906	-$47	$0	$9,838	$14,389	$126	$146,219
Small Business Direct Install	$21,197	$10,182	$205	$626	$543	$617	$96	$1,374	$784	$1,071	$542	$2,000	-$120	-$620	$0	$0	$3,064	$1	$11,015
C&I SUBTOTAL	**$297,641**	**$112,311**	**$3,664**	**$7,690**	**$9,135**	**$10,379**	**$1,307**	**$11,438**	**$7,929**	**$7,957**	**$4,970**	**$14,627**	**-$1,258**	**-$667**	**$6**	**$11,532**	**$23,403**	**$200**	**$185,331**
TOTAL	**$447,450**	**$205,909**	**$5,351**	**$10,812**	**$12,942**	**$14,704**	**$1,649**	**$17,358**	**$14,603**	**$10,040**	**$6,841**	**$20,112**	**-$1,236**	**$21,043**	**$3,698**	**$25,577**	**$40,995**	**$1,420**	**$241,541**

Table E-6A
Rhode Island Energy
Summary of 2023 Impacts by Program (Energy Efficiency Measures)

	Load Reduction in kW		Electric Energy Savings					Gas Savings			Oil Saved			Propane Saved			Total Savings (Electric, Gas, Oil, Propane)		
			MWh		MMBtu		short tons CO_2	MMBtu		short tons CO_2	MMBtu		short tons CO_2	MMBtu		short tons CO_2	MMBtu		short tons CO_2
	Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual[2]	Annual	Lifetime	Annual[2]	Annual	Lifetime	Annual[2]	Annual	Lifetime	Annual[2]	Annual[3]	Lifetime	Annual[2]
Non-Income Eligible Residential																			
Residential New Construction	20	53	779	15,377	2,657	52,468	390	-	-	-	1,545	38,617	135	1,444	36,109	127	5,646	127,194	652
ENERGY STAR® HVAC	670	971	4,376	74,205	14,930	253,187	1,958	(33)	(424)	(2)	11,799	211,751	959	29	429	2	26,725	464,942	2,917
Energy*Wise*	445	556	3,007	16,102	10,260	54,940	1,442	-	-	-	20,137	381,132	2,055	1,727	34,079	126	32,124	470,151	3,623
Energy*Wise* Multifamily	76	36	637	9,538	2,172	32,544	341	-	-	-	423	9,376	49	16	332	2	2,612	42,253	392
Home Energy Reports	4,077	6,300	29,649	29,649	101,161	101,161	12,193	-	-	-	-	-	-	-	-	-	101,161	101,161	12,193
Residential Consumer Products	1,038	664	5,850	41,313	19,961	140,961	3,829	-	-	-	84	1,588	7	7	46	0	20,052	142,595	3,836
Non-Income Eligible Residential SUBTOTAL	**6,324**	**8,581**	**44,297**	**186,185**	**151,142**	**635,262**	**20,154**	**(33)**	**(424)**	**(2)**	**33,988**	**642,464**	**3,205**	**3,223**	**70,996**	**257**	**188,321**	**1,348,297**	**23,614**
Income Eligible Residential																			
Single Family - Income Eligible Services	430	430	2,816	28,475	9,608	97,156	1,158	304	3,648	18	10,423	183,994	839	708	5,937	49	21,044	290,734	2,064
Income Eligible Multifamily	42	61	1,220	17,313	4,162	59,072	502	-	-	-	518	11,482	42	10	250	1	4,690	70,804	544
Income Eligible Residential SUBTOTAL	**473**	**491**	**4,036**	**45,788**	**13,770**	**156,228**	**1,660**	**304**	**3,648**	**18**	**10,942**	**195,475**	**881**	**718**	**6,187**	**50**	**25,734**	**361,538**	**2,608**
Commercial & Industrial																			
Large Commercial New Construction	1,273	1,049	10,095	147,186	34,445	502,199	5,794	(2,097)	(27,263)	(162)	-	-	-	-	-	-	32,348	474,936	5,632
Large Commercial Retrofit	7,585	6,570	38,594	291,888	131,682	995,920	24,983	(17,781)	(109,549)	(1,544)	(306)	(2,141)	(38)	-	-	-	113,596	884,231	23,401
Small Business Direct Install	780	712	10,201	63,612	34,805	217,043	4,803	(2,414)	(14,486)	(160)	(4,717)	(28,303)	(431)	-	-	-	27,673	174,254	4,212
C&I SUBTOTAL	**9,639**	**8,331**	**58,890**	**502,685**	**200,932**	**1,715,162**	**35,580**	**(22,292)**	**(151,297)**	**(1,866)**	**(5,023)**	**(30,444)**	**(468)**	**-**	**-**	**-**	**173,617**	**1,533,420**	**33,245**
TOTAL	**16,436**	**17,403**	**107,223**	**734,658**	**365,844**	**2,506,652**	**57,393**	**(22,021)**	**(148,073)**	**(1,851)**	**39,907**	**807,495**	**3,618**	**3,941**	**77,183**	**307**	**387,671**	**3,243,256**	**59,467**

Notes:
(1) Lifetime savings are equal to annual savings multiplied by the expected life of measures expected to be installed in each program.
(2) Annual short tons CO2 savings is based on gross annual energy savings in Year 1. The AESC 2021 study was used to inform the electric emissions factor for 2023, taking the average of summer/winter on/off-peak.

Table E-6B
Rhode Island Energy
Summary of 2023 Demand Response Benefits and Savings

	Benefits (000's)															Load Reduction (MW)	MWh Saved	
			Capacity					Energy					Non Electric	Societal				
								Winter		Summer								
	Total	Total (Economic Excluded)	Summer Generation	Capacity DRIPE	Trans	Dist	Reliability	Peak	Off Peak	Peak	Off Peak	Energy DRIPE	Non Resource	Carbon	Economic	Summer	Annual	Lifetime
Non-Income Eligible Residential																		
Residential ConnectedSolutions	$5,149	$3,501	$232	$939	$854	$971	$43	$63	$73	$25	$29	$68	$0	$205	$1,648	7.9	3.1	3.1
Commercial & Industrial																		
Commercial ConnectedSolutions	$30,111	$13,678	$933	$3,781	$4,100	$4,657	$207	$0	$0	$0	$0	$0	$0	$0	$16,432	37.8	0.0	0.0
TOTAL	**$35,260**	**$17,180**	**$1,165**	**$4,720**	**$4,954**	**$5,628**	**$251**	**$63**	**$73**	**$25**	**$29**	**$68**	**$0**	**$205**	**$18,080**	**45.7**	**3.1**	**3.1**

Table E-7
Rhode Island Energy
Comparison of 2023 and 2022 Goals and Tracking

	Proposed 2023 Goal		Proposed 2023 Tracking				Approved 2022				Difference			
	Lifetime Electric Energy Savings (MWh)	Active Demand Response (kW)	Annual Electric Energy Savings (MWh)	Annual Passive Summer Demand Savings (kW)	Total Net Lifetime Energy Savings (MMBtu)	Planned Unique Participants	Lifetime Electric Energy Savings (MWh)	Annual Electric Energy Savings (MWh)	Annual Passive Summer Demand Savings (kW)	Active Demand Response (kW)	Lifetime Electric Energy Savings (MWh)	Annual Electric Energy Savings (MWh)	Annual Passive Summer Demand Savings (kW)	Active Demand Response (kW)
Non-Income Eligible Residential														
Residential New Construction	15,377		779	20	127,194	410	14,947	867	74		431	-88	-55	
ENERGY STAR® HVAC	74,205		4,376	670	464,942	6,371	77,717	4,620	240		-3,512	-244	430	
Energy*Wise*	16,102		3,007	445	470,151	9,465	13,472	2,789	424		2,630	218	21	
Energy*Wise* Multifamily	9,538		637	76	42,253	1,744	20,783	1,424	143		-11,245	-787	-67	
Home Energy Reports	29,649		29,649	4,077	101,161	276,390	26,852	26,852	3,692		2,797	2,797	385	
ENERGY STAR® Lighting	0		0	0	0	0	0	0	0		0	0	0	
Residential Consumer Products	41,313		5,850	1,038	142,595	29,828	47,554	6,885	1,118		-6,241	-1,034	-80	
Residential ConnectedSolutions		7,878				6,900				7,365		0		513
Non-Income Eligible Residential SUBTOTAL	**186,185**	**7,878**	**44,297**	**6,324**	**1,348,297**	**331,108**	**201,325**	**43,435**	**5,691**	**7,365**	**-15,141**	**862**	**633**	**513**
Income Eligible Residential														
Single Family - Income Eligible Services	28,475		2,816	430	290,734	3,111	38,506	3,314	480		-10,032	-498	-49	
Income Eligible Multifamily	17,313		1,220	42	70,804	2,786	24,309	1,538	49		-6,996	-318	-7	
Income Eligible Residential SUBTOTAL	**45,788**	**0**	**4,036**	**473**	**361,538**	**5,897**	**62,816**	**4,851**	**529**	**0**	**-17,028**	**-816**	**-56**	**0**
Commercial & Industrial														
Large Commercial New Construction	147,186		10,095	1,273	474,936	45	192,343	12,589	1,745		-45,157	-2,494	-471	
Large Commercial Retrofit	291,888		38,594	7,585	884,231	2,142	312,931	41,132	8,490		-21,044	-2,538	-904	
Small Business Direct Install	63,612		10,201	780	174,254	339	64,394	9,976	904		-782	**225**	**-124**	
Commercial ConnectedSolutions		37,800				216				32,400				5,400
C&I SUBTOTAL	**502,685**	**37,800**	**58,890**	**9,639**	**1,533,420**	**2,741**	**569,668**	**63,696**	**11,139**	**32,400**	**-66,983**	**-4,807**	**-1,499**	**5,400**
TOTAL	**734,658**	**45,678**	**107,223**	**16,436**	**3,243,256**	**339,746**	**833,808**	**111,983**	**17,359**	**39,765**	**-99,151**	**-4,760**	**-923**	**5,913**

Notes:

(1) Planned 2023 participation takes into account net-to-gross and estimates unique participation by taking into account 2021 unique customer accounts to savings ratios. Therefore the number of planned measures may be more than the estimated participants shown. For measure counts please view the widget tables in Attachments 1 and 2. Table E-7 no longer includes a comparison to the previous year's participation. Due to the way unique participation is calculated it is not possible to compare year-over-year results.

(2) There are additional Low Income participants in Residential New Construction.

(3) A customer can participate in more than one program, for example, Residential Consumer Products and and Home Energy Reports, therefore the population reached can be more than 100%.

Table E-8A
Rhode Island Energy
2023 Electric PIM Benefits, Allocations, and Categorization ($000)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Capacity					Energy					Utility NEIs	Non Electric				Societal		
	Summer Generation	Capacity DRIPE	Transmission	Distribution	Reliability	Winter Peak Energy	Winter Off Peak Energy	Summer Peak Energy	Summer Off Peak Energy	Electric Energy DRIPE	Utility NEIs	Natural Gas and DRIPE	Oil and Oil DRIPE	Propane and Water	Non Resource	Carbon	NOx	Economic
Non-Income Eligible Residential																		
Residential New Construction	$18	$16	$43	$49	$3	$409	$535	$161	$125	$295	$0	$0	$1,022	$1,561	$99	$989	$61	$2,631
ENERGY STAR® HVAC	$601	$538	$1,414	$1,607	$97	$2,314	$2,891	$333	$280	$1,756	$0	-$3	$5,476	$17	$521	$4,566	$311	$10,349
Energy*Wise*	$157	$216	$383	$435	$33	$365	$377	$206	$179	$372	$0	$0	$9,902	$1,618	$616	$3,946	$500	$15,771
Energy*Wise* Multifamily	$58	$60	$138	$157	$11	$182	$212	$152	$133	$202	$0	$0	$247	$52	$1,242	$457	$18	$2,730
Home Energy Reports	$296	$1,198	$442	$502	$22	$745	$640	$289	$223	$645	$0	$0	$0	$0	$0	$2,051	$22	$4,386
Residential Consumer Products	$316	$816	$815	$926	$130	$797	$863	$465	$460	$1,286	$0	$0	$41	$26	$1	$2,224	$31	$3,128
Non-Income Eligible Residential SUBTOTAL	$1,448	$2,844	$3,235	$3,676	$295	$4,813	$5,519	$1,606	$1,400	$4,557	$0	-$3	$16,687	$3,274	$2,479	$14,234	$944	$38,994
Income Eligible Residential																		
Single Family - Income Eligible Services	$231	$263	$550	$625	$44	$651	$712	$350	$361	$592	$301	$24	$4,769	$373	$9,563	$2,692	$255	$13,017
Income Eligible Multifamily	$9	$16	$21	$24	$2	$455	$444	$126	$109	$336	$6	$0	$254	$45	$1,697	$667	$21	$4,199
Income Eligible Residential SUBTOTAL	$240	$279	$571	$649	$46	$1,106	$1,156	$477	$471	$928	$307	$24	$5,023	$418	$11,260	$3,359	$276	$17,216
Commercial & Industrial																		
Large Commercial New Construction	$933	$1,021	$2,192	$2,491	$184	$3,948	$2,490	$2,470	$1,517	$3,501	$0	-$232	$0	$6	$1,694	$5,949	$73	$28,097
Large Commercial Retrofit	$2,525	$6,042	$6,400	$7,271	$1,028	$6,117	$4,655	$4,416	$2,911	$9,126	$0	-$906	-$47	$0	$9,838	$14,389	$126	$146,219
Small Business Direct Install	$205	$626	$543	$617	$96	$1,374	$784	$1,071	$542	$2,000	$0	-$120	-$620	$0	$0	$3,064	$1	$11,015
C&I SUBTOTAL	$3,664	$7,690	$9,135	$10,379	$1,307	$11,438	$7,929	$7,957	$4,970	$14,627	$0	-$1,258	-$667	$6	$11,532	$23,403	$200	$185,331
Included in PIM? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
Percent Application in PIM	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	50%	50%	0%	0%	0%	0%
Category	Electric Utility System Benefits	Electric Utility System Benefits	Electric Utility System Benefits	Electric Utility System Benefits	Electric Utility System Benefits	Electric Utility System Benefits	Electric Utility System Benefits	Electric Utility System Benefits	Electric Utility System Benefits	Electric Utility System Benefits	Electric Utility System Benefits	Resource Benefits	Resource Benefits	Resource Benefits	NA	NA	NA	NA

Notes
From 2023 Benefit-Cost Model, Tab E8A-PIM Benefits

Table E-8B
Rhode Island Energy
2023 Electric PIM Costs

	(1)	(2)	(3)
	Costs ($)		
	Eligible Spending Budget from Table E-3	Regulatory Costs	Total Costs for PIM Calculations
Non-Income Eligible Residential SUBTOTAL	$31,181	$255	$31,437
Income Eligible Residential SUBTOTAL	$16,790	$255	$17,045
C&I SUBTOTAL	$47,366	$255	$47,622
Included in PIM? (Y/N)	Y	Y	Y

Notes

Source is 2023 Benefit-Cost Model, Tab E8B-PIM Costs. Regulatory costs allocated equally to each sector. OER and RIIB costs have been omitted from Regulatory Costs.

Table E-8C
Rhode Island Energy
2023 Electric PIM and SQA

Sector PI = min{ Payout Cap(j), [Actual Net Benefits* Design Payout Rate(g) * Payout Rate Adjustment(i)] }

Sector	Planned Eligible Benefits		Planned Eligible Costs	Planned Eligible Net Benefits (4)	Design Performance Achievement	Design Performance Payout	Design Payout Rate	Design Payout Rate Thresholds	Payout Rate Adjustments	Payout Cap	Service Quality Metric
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	100% Electric Utility System Benefits	50% Resource Benefits	Eligible Spending Budget + Regulatory Costs	=(a)+(b)-(c)	Net benefits at which design incentive pool is achieved	Set by PUC	=(f)/(e)	Achievement levels at which the Payout Rate Adjustments in (i) will be applied—Set by PUC	Factor to adjust Design Payout Rate for if final program achievement fall within the ranges in (h)—Set by PUC	=1.25*(f)	Yes if (d) ≤ 0; No if (d) >0
										Cap on sector payout regardless of achievement in sector	See Service Quality Table
Non-Income Eligible Residential	$29,393,607	$9,979,496	$31,436,734	$7,936,368	$7,936,368	$699,283	8.81%	a. Achievement < 25% b. 25% ≤ Achievement < 50% c. 50% ≤ Achievement < 75% d. 75% ≤ Achievement • Spending > Planned Eligible Costs	a. 0.0 b. Achievement/100 + 0.1 c. Achievement/100 + 0.25 d. 1.0 • See Boundary Rules	$874,103	Yes
Income Eligible Residential	$6,229,247	$2,732,766	$17,045,090	-$8,083,077	$2,000,000	$500,000	25.00%			$625,000	Yes
Commercial & Industrial	$79,095,898	-$959,672	$47,621,822	$30,514,405	$30,514,405	$2,690,882	8.82%			$3,363,603	No

Sector SQA = Maximum Service Adjustment(e) * Service Achievement Scaling Factor(g)

	Planned Eligible Benefits		Planned Eligible Costs	Design Service Achievement	Maximum Service Adjustment	Service Adjustment Thresholds	Service Achievement Scaling Factors	Achievement Cost Adjustment
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
	100% Electric Utility System Benefits	50% Resource Benefits	Eligible Spending Budget + Regulatory Costs	=(a)+(b)	Maximum downward adjustment to earned incentive—Set by PUC	Adjusted Achievement levels at which the Service Adjustments in (e) will be applied; adjustment is calculated in (h)	Factor to scale program achievement that fall within the ranges in (f)	Actual-cost-based adjustment factor applied to achievement. Result is if the difference between achievement and cost variances are greater than 5%, the Actual Achievement will be adjusted for use in
Non-Income Eligible Residential	$29,393,607	$9,979,496	$31,436,734	N/A	N/A	a. Adjusted Achievement < 65% b. 65% ≤ Adjusted Achievement < 95% c. 95% ≤ Adjusted Achievement	a. 1 b. (95-Adjusted Achievement)/30 c. 0	Performance Variance = "Actual Benefits" /"Design Achievement" - "Spending" /"Planned Eligible Cost" If the absolute value (Performance Variance) ≤ 0.05, Then Adjusted Achievement = Actual Achievement Else Adjusted Achievement = Actual Achievement * (1+ Performance Variance)
Income Eligible Residential	$6,229,247	$2,732,766	$17,045,090	$8,962,013	$443,300			
Commercial & Industrial	$79,095,898	-$959,672	$47,621,822	N/A	N/A			

Table E-9
Rhode Island Energy
Revolving Loan Fund Projections

Large C&I Revolving Loan Fund

(1)	**Total Loan Fund Deposits Through 2022**	**$**	**20,547,780**
(2)	Current Loan Fund Balance	$	4,360,123
	Loans Paid Year-To-Date	*$*	*2,330,246*
	Repayments Year-To-Date	*$*	*2,572,300*
(3)	Projected Additional Loans by Year End 2022	$	4,880,000
(4)	Projected Additional Repayments by Year End 2022	$	4,561,651
(5)	**Projected Year End Loan Fund Balance 2022**	**$**	**4,041,773**
(6)	2023 Fund Injection	$	2,000,000
(7)	**Projected Loan Fund Balance, January 2023**	**$**	**6,041,773**
(8)	Projected Repayments throughout 2023	$	4,762,036
(9)	Estimated Loans in 2023	$	9,100,000
(10)	**Projected Year End Loan Fund Balance 2023**	**$**	**1,703,810**

Small Business Revolving Loan Fund

(1)	**Total Loan Fund Deposits Through 2022**	**$**	**3,303,570**
(2)	Current Loan Fund Balance	$	2,726,897
	Loans Paid Year-To-Date	*$*	*167,275*
	Repayments Year-To-Date	*$*	*328,808*
(3)	Projected Additional Loans by Year End 2022	$	504,725
(4)	Projected Additional Repayments by Year End 2022	$	317,402
(5)	**Projected Year End Loan Fund Balance 2022**	**$**	**2,539,574**
(6)	2023 Fund Injection	$	-
(7)	**Projected Loan Fund Balance, January 2023**	**$**	**2,539,574**
(8)	Projected Repayments throughout 2023	$	147,982
(9)	Estimated Loans in 2023	$	1,000,000
(10)	**Projected Year End Loan Fund Balance 2023**	**$**	**1,687,556**

Public Sector Revolving Loan Fund

(1)	**Total Loan Fund Deposits Through 2022**	**$**	**53,994**
(2)	Current Loan Fund Balance	$	46,798
	Funds returned to OER	*$*	*-*
	Repayments Year-To-Date	*$*	*5,388*
(3)	Projected Additional Loans by Year End	$	-
(4)	Projected Additional Repayments by Year End	$	-
(5)	**Projected Year End Loan Fund Balance 2022**	**$**	**46,798**
(6)	2023 Fund Injection	$	-
(7)	**Projected Loan Fund Balance, January 2023**	**$**	**46,798**
(8)	Projected Repayments throughout 2023	$	-
(9)	Estimated Loans in 2023	$	-
(10)	**Projected Year End Loan Fund Balance 2023**	**$**	**46,798**

Efficient Buildings Fund

(1)	**Energy Efficiency Funds allocated to EBF through 202**	**$**	**22,087,113**
(2)	Total EBF Loans Outstanding	$	55,075,045

Notes

(1) Funding injections since loan funds began. Net of any adjustments.

(2) Current Loan Fund Balance is through May 2022; it includes all loans and repayments made by May 2022. Public Sector Revolving Loan Fund reduced by transfers to RI PEP Incentives. EBF reports in terms of loans outstanding.

(3) Projected Loans from May to Year-End 2022 is estimated based on projects currently under construction that are anticipated to be paid out by year-end. It is difficult to project this amount accurately due to the fact that projects could be delayed by a month or two resulting in payment occurring in 2023 instead of 2022.

(4) Projected Repayments from June to Year-End 2022 is estimated based on the monthly average amount of repayments.

(5) Equal to (2) - (3) + (4).

(6) Fund injection of $2M for the Large C&I Revolving Loan Fund in included under the Finance Cost line in table E-2.

(7) Equal to (5) + (6).

(8) Assumption based on monthly average repayments in 2022 over 12 month period; repayments accumulate over time and may vary widely.

(9) Amount projected to be lent to customers in 2023

(10) Equal to (7) + (8) - (9).

(11) Efficient Buildings Fund - To updated for the second draft of the 2023 Annual Plan. The 2023 Annual Plan only includes two values for EBF: 1) The Energy Efficiency Funds allocated to EBF through 2021. 2) Total EBF Loans Outstanding as of July 2022. Additional information is not available because RIIB has informed the Company that, commencing with the 2022 Plan, it will not be providing forward looking projections to the Company regarding EBF. The Company is therefore unable to provide any future projections in the 2023 Annual Plan regarding EBF. The state's System Reliability and Least Cost procurement statute (amended in 2021) directs that $5M shall be transferred to RIIB. However, RIIB has not informed the Company the statuatory $5M transfer to RIIB in 2023 will go to EBF.

Table E-10
Rhode Island Energy
Rhode Island Electric Energy Efficiency 2003 - 2023
$(000)

Electric	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013[4]	2014	2015	2016	2017	2018	2019	2020	2021	2022[5]	2023[6]
Energy Efficiency Budget ($Million)[1]	$23.1	$22.6	$23.1	$22.4	$22.5	$21.0	$32.4	$37.6	$59.2	$61.4	$77.5	$87.0	$86.6	$87.5	$94.6	$94.6	$107.5	$111.1	$116.8	$108.7	$114.1
Spending Budget ($Million)[2]	$16.3	$15.8	$17.6	$16.5	$16.4	$14.7	$23.5	$28.8	$45.3	$55.3	$64.8	$80.6	$77.3	$77.6	$88.5	$88.7	$98.1	$101.1	$104.8	$93.0	$95.3
Actual Expenditures ($Million)[3]	$22.8	$19.5	$23.4	$23.7	$21.9	$19.2	$31.7	$29.7	$40.0	$50.7	$72.9	$85.3	$87.4	$78.4	$94.8	$93.0	$100.7	$88.2	$94.6		
Incentive Percentage[10]	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	N/A	N/A	N/A
Target Incentive	$712,557	$781,959	$774,689	$726,627	$723,000	$647,689	$1,035,943	$1,267,043	$1,992,513	$2,434,131	$3,240,747	$4,032,000	$3,867,400	$3,878,087	$4,425,528	$4,436,022	$4,905,009	$5,054,448	$5,500,000	$3,390,165	$3,390,165
Earned Incentive	$712,557	$604,876	$795,648	$760,623	$716,075	$675,282	$1,085,888	$1,333,996	$1,929,273	$2,469,411	$2,997,681	$4,223,321	$4,533,360	$4,128,034	$4,829,847	$4,940,402	$3,290,237	$3,242,675	$3,464,590		
Annual Summer Demand kW Savings Goal Achieved (%)				106%	106%	113%	142%	78%	71%	83%	114%	78%	112%	101%	103%	116%	98%	79%	83%		
Annual MWh Energy Savings Goal Achieved (%)				111%	102%	111%	115%	107%	94%	93%	99%	105%	115%	107%	115%	110%	98%	88%	95%		
Energy Efficiency Program Charge ($/kWh)[7]	$0.00200	$0.00200	$0.00200	$0.00200	$0.00200	$0.00200	$0.00320	$0.00320	$0.00526	$0.00592	$0.00876	$0.00911	$0.00953	$0.01077	$0.01124	$0.00972	$0.01121	$0.01323	$0.01113	$0.01213	$0.01036
Annual Cost to 500 kWh/month Residential Customer w/o tax[8]	$12.00	$12.00	$12.00	$12.00	$12.00	$12.00	$19.20	$19.20	$31.56	$35.52	$52.56	$54.66	$57.18	$64.62	$67.44	$58.32	$67.26	$79.38	$66.78	$72.78	$62.16
Annual Cost to 500 kWh/month Residential Customer w/ tax[9]	$12.50	$12.50	$12.50	$12.50	$12.50	$12.50	$20.00	$20.00	$32.88	$37.00	$54.75	$56.94	$59.56	$67.31	$70.25	$60.75	$70.06	$82.69	$69.56	$75.81	$64.75

Notes:

(1) Energy Efficiency Budget includes total expenditures and commitments. Includes all demand side management program-related expenses, including rebates, administration and general expenses, evaluation, commitments for future years and Company incentive.

(2) Prior to 2017, Spending Budget Eligible for Shareholder Incentive includes: Implementation, Administration, General, and Evaluation Expenses; excludes EERMC and OER Costs, Commitments, Copays, and Outside Finance Costs. Beginning in 2017, Outside Finance Costs were also included. Beginning in 2018 Pilot expenses were also excluded. Beginning in 2019 ConnectedSolutions expenses and assessments were also excluded.

(3) Actual Expenditures is actual spend during calendar year. Includes expenditures and commitments. Includes all demand side management program-related expenses, including rebates, administration and general expenses, evaluation, commitments for future years and Company incentive.

(4) In the Company's gas and electric rate cases in docket 4323, the PUC approved the uncollectibles gross-up in the electric EE Program Charge effective February 1, 2013, and a new rate applicable to the gross-up of the gas EE Program Charge, effective February 1, 2013.

(5) 2022 values are planned.

(6) 2023 values are proposed.

(7) Beginning in 2012, the EE Program Charge includes the System Reliability Factor. It does not include the $0.0003 renewables per RI General Laws §39-2-1.2 and Order #19608, which appears on customer bills. In 2022, the surcharge was in effect for an 11 month period beginning February 1, 2022.

(8) Reflects the annual cost excluding Gross Earnings Tax.

(9) Reflects the annual cost including Gross Earnings Tax.

(10) Incentive percentage not applicable for 2021 and going forward due to new performance incentive mechanism developed for the 2021 Annual Plan. See Section 11 of the Main Text of the 2023 Annual Plan for additional details.

Table G-1
Rhode Island Energy
Gas DSM Funding Sources in 2023 by Sector
$(000)

		Projections by Sector			
		Income Eligible Residential	Non-Income Eligible Residential	Commercial & Industrial	Total
(1)	**Projected Budget (from G-2):**	**$9,234.4**	**$18,229.0**	**$11,287.8**	**$38,751.2**
	Sources of Other Funding:				
(2)	Projected Year-End 2022 Fund Balance and Interest:	($7,642.5)	$935.1	$11,484.2	$4,776.8
(3)	**Total Other Funding:**	**($7,642.5)**	**$935.1**	**$11,484.2**	**$4,776.8**
(4)	**Customer Funding Required:**	**$16,876.9**	**$17,293.9**	**($196.4)**	**$33,974.5**
(5)	Forecasted Firm Dth Volume	1,751,260	18,641,723	19,659,477	40,052,460
(6)	Forecasted Non Firm Dth Volume			237,451	237,451
(7)	Less: Exempt DG Customers			(1,562,431)	(1,562,431)
(8)	**Forecasted Dth Volume:**	**1,751,260**	**18,641,723**	**18,334,497**	**38,727,480**
(9)	Average Energy Efficiency Program Charge per Dth excluding Uncollectible Recovery:				$0.877
(10)	Proposed Energy Efficiency Program Charge per Dth excluding Uncollectible Recovery	$1.054	$1.054	$0.679	
(11)	Currently Effective Uncollectible Rate	1.91%	1.91%	1.91%	
(12)	**Proposed Energy Efficiency Program Charge per Dth, including Uncollectible Recovery:**	**$1.074**	**$1.074**	**$0.692**	
(13)	Currently Effective Energy Efficiency Program Charge per Dth	$1.354	$1.354	$0.886	
(14)	Adjustment to Reflect Fully Reconciling Funding Mechanism	($0.280)	($0.280)	($0.194)	

Notes

(1) Projected Budget from G-2 includes OER and EERMC costs allocated to each sector based on forecasted volume.

(2) Fund Balance projections include projected revenue and spend through year-end with Residential and C&I sector subsidies applied to Income Eligible as detailed in the 2023 EE Plan Table G-1 The fund balance includes a $562,736.48 credit from shareholder funds to the fund balance, with interest, which the Company made in May and June, 2022 based on the Company's involvement in Docket 22-05-EE. .

(10) The proposed EE program charges allow for the use of collections from one sector to fund energy efficiency services in other sectors that would otherwise not be supported with the proposed collection rates. The C&I charge includes collection of $8.11 million of which $4.14 million will be allocated to the low income sector and $3.97 million to the residential sector. See EERMC 2-14 attachment for calculation of rate.

(11) Uncollectible rate approved in Docket No. 4770.

(13) This is an 11 month rate that went into effect February 1, 2022.

Table G-2
Rhode Island Energy
2023 Gas Energy Efficiency Program Budget ($000)

	Program Planning and Administration	Marketing	Cost of services and product rebates/incentives provided to customers	Sales, Technical Assistance and Training	Evaluation & Market Research	Performance Incentive	Grand Total
Non-Income Eligible Residential:							
ENERGY STAR® HVAC	$153.5	$207.0	$3,450.4	$254.8	$109.0	$0.0	$4,174.7
Energy*Wise*	$342.4	$62.4	$7,916.6	$1,428.8	$183.9	$0.0	$9,934.2
EnergyWise Multifamily	$82.5	$50.8	$1,192.8	$184.0	$17.2	$0.0	$1,527.4
Home Energy Reports	$10.6	$0.0	$0.0	$432.4	$2.6	$0.0	$445.6
Residential Pilots	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Residential New Construction	$62.0	$2.1	$410.5	$436.3	$54.1	$0.0	$965.2
Comprehensive Marketing - Residential	$0.1	$69.0	$0.0	$0.0	$0.0	$0.0	$69.1
Community Based Initiatives - Residential	$12.3	$45.8	$35.3	$0.0	$0.0	$0.0	$93.5
Residential Workforce Development	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Residential Performance Incentive	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal - Non-Income Eligible Residential	**$663.5**	**$437.2**	**$13,005.6**	**$2,736.2**	**$367.0**	**$0.0**	**$17,209.5**
Income Eligible Residential:							
Single Family - Income Eligible Services	$225.4	$22.0	$4,164.3	$1,011.7	$36.6	$0.0	$5,460.0
Income Eligible Multifamily	$137.5	$8.6	$3,033.5	$467.6	$31.4	$0.0	$3,678.6
Income Eligible Workforce Development	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Income Eligible Performance Incentive	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal - Income Eligible Residential	**$362.9**	**$30.7**	**$7,197.8**	**$1,479.2**	**$68.0**	**$0.0**	**$9,138.6**
Commercial & Industrial							
Large Commercial New Construction	$101.0	$148.6	$1,164.9	$934.5	$153.5	$0.0	$2,502.4
Large Commercial Retrofit	$282.6	$244.9	$2,708.5	$1,912.4	$147.4	$0.0	$5,295.8
Small Business Direct Install	$10.1	$22.9	$269.9	$56.2	$1.6	$0.0	$360.9
Commercial & Industrial Multifamily	$37.3	$25.4	$531.0	$160.5	$5.2	$0.0	$759.3
Commercial Pilots	$52.3	$7.5	$178.3	$30.0	$0.0	$0.0	$268.0
Finance Costs	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Community Based Initiatives - C&I	$4.1	$15.3	$11.8	$0.0	$0.0	$0.0	$31.2
Commercial Workforce Development	$0.0	$0.0	$0.0	$67.5	$0.0	$0.0	$67.5
Commercial & Industrial Performance Incentive	$0.0	$0.0	$0.0	$0.0	$0.0	$1,000.0	$1,000.0
Subtotal - Commercial & Industrial	**$487.3**	**$464.5**	**$4,864.4**	**$3,161.1**	**$307.7**	**$1,000.0**	**$10,285.1**
Regulatory							
EERMC	$259.5	$0.0	$0.0	$0.0	$0.0	$0.0	$259.5
OER	$596.0	$0.0	$0.0	$0.0	$0.0	$0.0	$596.0
Rhode Island Infrastructure Bank	$0.0	$0.0	$1,262.5	$0.0	$0.0	$0.0	$1,262.5
Subtotal - Regulatory	**$855.5**	**$0.0**	**$1,262.5**	**$0.0**	**$0.0**	**$0.0**	**$2,118.0**
Grand Total	**$2,369.3**	**$932.4**	**$26,330.3**	**$7,376.6**	**$742.7**	**$1,000.0**	**$38,751.2**

Notes:

(1) OER budget is equal to the SBC collections after zeroing out EERMC and OER budgets times 3% times 60%. EERMC budget was set by the PUC on January 25, 2022 for a total between gas and electric of $1,025,763. 25.3% of that total has been allocated to the gas budget, in accordance with the proportions of the gas and electric budget. The EERMC budget will be updated in the final draft.

(2) Demonstrations and Assessments are included in specific program level budgets listed above. More information on Demonstration and Assessments descriptions, budgets, and which program level budget they are included in can be found in Attachment 8.

(3) Based on the state's System Reliability and Least Cost procurement statute (amended in 2021), funds transferred to the Rhode Island Infrastructure Bank are now classified under Regulatory costs.

Table G-3
Rhode Island Energy
Derivation of the 2023 Eligible PIM & Implementation Budgets ($000)

	Proposed 2023 Budget From G-2 ($000)	Outside Finance and Stakeholder Oversight Costs ($000)	Performance Incentive ($000)	Eligible Sector PIM Budget for Performance Incentive on G-8 ($000)[1]	Implementation Expenses for Cost-Effectiveness on G-5 ($000)[2]
Non-Income Eligible Residential					
ENERGY STAR® HVAC	$4,174.7				$4,174.7
Energy*Wise*	$9,934.2				$9,934.2
EnergyWise Multifamily	$1,527.4				$1,527.4
Home Energy Reports	$445.6				$445.6
Residential Pilots	$0.0				$0.0
Residential New Construction	$965.2				$965.2
Comprehensive Marketing - Residential	$69.1				$69.1
Community Based Initiatives - Residential	$93.5				$93.5
Residential Workforce Development	$0.0				$0.0
Residential Performance Incentive	$0.0		$0.0		$0.0
Subtotal - Non-Income Eligible Residential	**$17,209.5**	**$0.0**	**$0.0**	**$17,209.5**	**$17,209.5**
Income Eligible Residential					
Single Family - Income Eligible Services	$5,460.0				$5,460.0
Income Eligible Multifamily	$3,678.6				$3,678.6
Income Eligible Workforce Development	$0.0				$0.0
Income Eligible Performance Incentive	$0.0		$0.0		$0.0
Subtotal - Income Eligible Residential	**$9,138.6**	**$0.0**	**$0.0**	**$9,138.6**	**$9,138.6**
Commercial & Industrial					
Large Commercial New Construction	$2,502.4				$2,502.4
Large Commercial Retrofit	$5,295.8				$5,295.8
Small Business Direct Install	$360.9				$360.9
Commercial & Industrial Multifamily	$759.3				$759.3
Commercial Pilots	$268.0				$268.0
Finance Costs	$0.0				$0.0
Community Based Initiatives - C&I	$31.2				$31.2
Commercial Workforce Development	$67.5				$67.5
Commercial & Industrial Performance Incentive	$1,000.0		$1,000.0		$0.0
Subtotal - Commercial & Industrial	**$10,285.1**	**$0.0**	**$1,000.0**	**$8,986.0**	**$9,285.1**
Regulatory					
EERMC	$259.5	$259.5			$259.5
OER	$596.0	$596.0			$596.0
Rhode Island Infrastructure Bank	$1,262.5	$1,262.5			$1,262.5
Subtotal - Regulatory	**$2,118.0**	**$2,118.0**			**$2,118.0**
Grand Total	**$38,751.2**	**$2,118.0**	**$1,000.0**	**$35,334.1**	**$37,751.2**

Notes:

(1) Eligible Sector Spending Budget for Performance Incentive = Budget from G-2 minus Regulatory Costs, Pilots, Assessments, and Performance Incentive.

(2) Implementation Expenses = Budget from G-2 minus Performance Incentive.

(3) Eligible Sector Spending Budget does not include assessments, see Attachment 8 for assessments budgets.

Table G-4
Rhode Island Energy
Proposed 2023 Budget Compared to Approved 2022 Budget ($000)

	Proposed Implementation Budget 2023	Approved Implementation Budget 2022	Difference
Non-Income Eligible Residential			
ENERGY STAR® HVAC	$4,174.7	$3,650.5	$524.1
EnergyWise	$9,934.2	$8,575.0	$1,359.1
EnergyWise Multifamily	$1,527.4	$1,488.6	$38.7
Home Energy Reports	$445.6	$441.5	$4.1
Residential Pilots	$0.0	$0.0	$0.0
Residential New Construction	$965.2	$566.4	$398.8
Comprehensive Marketing - Residential	$69.1	$68.0	$1.1
Community Based Initiatives - Residential	$93.5	$85.0	$8.5
Residential Performance Incentive	$0.0	$0.0	$0.0
Subtotal - Non-Income Eligible Residential	**$17,209.5**	**$14,875.0**	**$2,334.4**
Income Eligible Residential			
Single Family - Income Eligible Services	$5,460.0	$6,370.0	-$910.1
Income Eligible Multifamily	$3,678.6	$2,947.5	$731.1
Income Eligible Performance Incentive	$0.0	$0.0	$0.0
Subtotal - Income Eligible Residential	**$9,138.6**	**$9,317.6**	**-$179.0**
Commercial & Industrial			
Large Commercial New Construction	$2,502.4	$3,140.9	-$638.5
Large Commercial Retrofit	$5,295.8	$4,672.1	$623.7
Small Business Direct Install	$360.9	$354.1	$6.8
Commercial & Industrial Multifamily	$759.3	$957.0	-$197.7
Commercial Pilots	$268.0	$215.8	$52.3
Finance Costs	$0.0	$0.0	$0.0
Community Based Initiatives - C&I	$31.2	$28.3	$2.8
Commercial Workforce Development	$67.5	$67.5	$0.0
Commercial & Industrial Performance Incentive	$1,000.0	$1,000.0	$0.0
Subtotal Commercial & Industrial	**$10,285.1**	**$10,435.7**	**-$150.6**
Regulatory			
EERMC	$259.5	$259.5	$0.0
OER	$596.0	$755.6	-$159.6
Rhode Island Infrastructure Bank	$1,262.5	$1,262.5	$0.0
Subtotal Regulatory	**$2,118.0**	**$2,277.6**	**-$159.6**
TOTAL BUDGET	**$38,751.2**	**$36,906.0**	**$1,845.3**

Notes:

(1) Program Implementation Budget excludes Commitments, Company Incentive; derived on Table G-3

(2) Total Budget includes Implementation, Commitments; illustrated on Table G-3

(3) Performance Incentive is allocated to the C&I Sector Consistent with the final PIM approved in Docket 5076.

Table G-5 - Primary
Rhode Island Energy
Calculation of 2023 Program Year Cost-Effectiveness
All Dollar Values in ($000)

	Rhode Island Benefit/ Cost[1]	Total Benefit	Program Implementation Expenses[2]	Customer Contribution	Performance Incentive	$/Lifetime MMBtu
Non-Income Eligible Residential						
Energy Star® HVAC	1.27	$10,766.1	$4,174.7	$4,274.6		$16.35
EnergyWise	1.04	$10,938.3	$9,934.2	$606.7		$22.55
EnergyWise MultiFamily	3.94	$6,254.0	$1,527.4	$59.4		$11.78
Home Energy Reports	3.09	$1,378.8	$445.6	$0.0		$6.00
Residential New Construction	1.20	$1,556.3	$965.2	$326.9		$20.51
Comprehensive Marketing - Residential			$69.1			
Community Based Initiatives - Residential			$93.5			
Residential Pilots			$0.0			
Non-Income Eligible Residential Subtotal	**1.37**	**$30,893.5**	**$17,209.5**	**$5,267.5**	**$0.0**	$17.90
Income Eligible Residential						
Single Family - Income Eligible Services	1.86	$10,133.6	$5,460.0	$0.0		$32.27
Income Eligible Multifamily	2.93	$10,776.5	$3,678.6	$0.0		$18.72
Income Eligible Residential Subtotal	**2.29**	**$20,910.1**	**$9,138.6**	**$0.0**	**$0.0**	$24.99
Large Commercial & Industrial						
Large Commercial New Construction	4.33	$11,119.9	$2,502.4	$68.2		$5.06
Large Commercial Retrofit	1.98	$16,352.3	$5,295.8	$2,975.7		$8.94
Small Business Direct Install	3.12	$1,276.8	$360.9	$48.6		$6.35
Commercial & Industrial Multifamily	5.21	$5,822.9	$759.3	$358.6		$18.58
Commercial Pilots			$268.0			
Community Based Initiatives - C&I			$31.2			
Finance Costs			$0.0			
Commercial Workforce Development			$67.5			
Commercial & Industrial Subtotal	**2.52**	**$34,571.9**	**$9,285.1**	**$3,451.2**	**$1,000.0**	$8.17
Regulatory						
EERMC			$259.5			
OER			$596.0			
Rhode Island Infrastructure Bank			$1,262.5			
Regulatory Subtotal			**$2,118.0**			
Grand Total	**1.82**	**$86,375.5**	**$37,751**	**$8,718.7**	**$1,000.0**	$14.61

Notes:

(1) RI Test B/C Test = Total Benefits from Table G-6 excluding Economic Benefits / Program Implementation Expenses from Table G-3 and Customer Contribution. Also includes effects of free-ridership and spillover.
(2) For Implementation Expenses derivation, see Table G-3.

Table G-5 - Economic Benefits
Rhode Island Energy
Calculation of 2023 Economic Benefits
All Dollar Values in ($000)

	Program Implementation Expenses[1]	RI Economic Multiplier	Economic Benefits
Non-Income Eligible Residential			
Energy Star® HVAC	$4,175	0.97	$4,049.4
EnergyWise	$9,934	1.08	$10,728.9
EnergyWise MultiFamily	$1,527	1.70	$2,596.5
Home Energy Reports	$446	1.12	$499.0
Residential New Construction	$965	0.34	$328.2
Comprehensive Marketing - Residential	$69		$0.0
Community Based Initiatives - Residential	$93		$0.0
Residential Pilots	$0		$0.0
Non-Income Eligible Residential SUBTOTAL	**$17,209**		**$18,202.0**
Income Eligible Residential			
Single Family - Income Eligible Services	$5,460	1.05	$5,733.0
Income Eligible Multifamily	$3,679	1.62	$5,959.4
Income Eligible Residential SUBTOTAL	**$9,139**		**$11,692.4**
Commercial & Industrial			
Large Commercial New Construction	$2,502	0.74	$1,851.8
Large Commercial Retrofit	$5,296	2.10	$11,121.1
Small Business Direct Install	$361	1.39	$501.6
Commercial & Industrial Multifamily	$759	1.55	$1,177.0
Commercial Pilots	$268		$0.0
Community Based Initiatives - C&I	$31		$0.0
Finance Costs	$0		$0.0
Commercial Workforce Development	$68		$0.0
C&I SUBTOTAL	**$9,285**		**$14,651.5**
Regulatory			
OER	$596		$0.0
EERMC	$260		$0.0
Rhode Island Infrastructure Bank	$1,263		$0.0
Regulatory SUBTOTAL	**$2,118**		**$0.0**
TOTAL	**$37,751**		**$44,545.9**

Notes:
(1) For Implementation Expenses derivation, see Table G-3.
(2) RI Economic Multipliers from "Economic Multipliers Update" filed by National Grid in Docket 5189.

Table G-5A
Rhode Island Energy
Calculation of 2023 Program Year Cost-Effectiveness with TRC Test
All Dollar Values in ($000)

	TRC Benefit/ Cost	Total Benefit	Program Implementation Expenses	Customer Contribution	Performance Incentive	$/Lifetime MMBtu
Non-Income Eligible Residential						
Energy Star® HVAC	0.84	$7,057.0	$4,174.7	$4,274.6		$16.4
EnergyWise	0.78	$8,221.2	$9,934.2	$606.7		$22.6
EnergyWise MultiFamily	3.43	$5,436.5	$1,527.4	$59.4		$11.8
Home Energy Reports	1.32	$588.6	$445.6	$0.0		$6.0
Residential New Construction	0.90	$1,162.1	$965.2	$326.9		$20.5
Comprehensive Marketing - Residential			$69.1			
Community Based Initiatives - Residential			$93.5			
Residential Pilots			$0.0			
Residential Workforce Development			$0.0			
Non-Income Eligible Residential Subtotal	**1.00**	**$22,465.4**	**$17,209.5**	**$5,267.5**	**$0.0**	**$17.9**
Income Eligible Residential						
Single Family - Income Eligible Services	1.66	$9,057.3	$5,460.0	$0.0		$32.3
Income Eligible Multifamily	2.55	$9,393.9	$3,678.6	$0.0		$18.7
Income Eligible Workforce Development			$0.0			$0.0
Income Eligible Residential Subtotal	**2.02**	**$18,451.2**	**$9,138.6**	**$0.0**	**$0.0**	**$25.0**
Large Commercial & Industrial						
Large Commercial New Construction	2.90	$7,464.3	$2,502.4	$68.2		$5.1
Large Commercial Retrofit	1.14	$9,439.7	$5,295.8	$2,975.7		$8.9
Small Business Direct Install	1.90	$778.9	$360.9	$48.6		$6.3
Commercial & Industrial Multifamily	4.82	$5,391.5	$759.3	$358.6		$18.6
Commercial Pilots			$268.0	$0.0		
Community Based Initiatives - C&I			$31.2	$0.0		
Finance Costs			$0.0	$0.0		
Commercial Workforce Development			$67.5	$0.0		
Commercial & Industrial Subtotal	**1.68**	**$23,074.4**	**$9,285.1**	**$3,451.2**	**$1,000.0**	**$8.2**
Regulatory						
EERMC			$259.5			
OER			$596.0			
Rhode Island Infrastructure Bank			$1,262.5			
Regulatory Subtotal			**$855.5**			
Grand Total	**1.38**	**$63,991.1**	**$36,488.7**	**$8,718.7**	**$1,000.0**	**$14.6**

Notes:
(1) TRC B/C Test = (Energy + Capacity + Resource Benefits) / (Program Implementation + Customer Contribution + Performance Incentive)
Also includes effects of free-ridership and spillover.
(2) For Implementation Expenses derivation, see Table G-3.

Table G-6
Rhode Island Energy
Summary of 2023 Benefits by Program

	Benefits ($000)																			
			Natural Gas Benefits		Electric Capacity					Electric Energy						Non-Electric and Non-Gas			Societal		
										Winter		Summer									
	Total	Total (Economic Excluded)	Natural Gas	Natural Gas DRIPE	Summer Generation	Capacity DRIPE	Trans	Dist	Reliability	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	Electric Energy DRIPE	Oil and Oil DRIPE	Other Resource	Non Resource	Carbon	NOx	Economic
Non-Income Eligible Residential																				
Energy*Wise*	$21,667	$10,938	$4,228	$27	$58	$100	$78	$77	$5	$49	$56	$51	$44	$36	$0	$71	$3,341	$2,400	$317	$10,729
Energy Star® HVAC	$14,816	$10,766	$4,668	$42	$188	$506	$261	$259	$25	$18	$6	$142	$118	$81	$0	$32	$711	$3,351	$358	$4,049
EnergyWise Multifamily	$8,851	$6,254	$1,212	$9	$6	$13	$8	$8	$1	$1	$0	$5	$4	$2	$0	$46	$4,121	$726	$92	$2,597
Home Energy Reports	$1,878	$1,379	$564	$25	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$739	$52	$499
Residential New Construction	$1,884	$1,556	$567	$5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$7	$583	$351	$43	$328
Non-Income Eligible Residential SUBTOTAL	**$49,095**	**$30,893**	**$11,239**	**$106**	**$252**	**$619**	**$347**	**$344**	**$31**	**$68**	**$63**	**$198**	**$167**	**$119**	**$0**	**$157**	**$8,756**	**$7,567**	**$861**	**$18,202**
Income Eligible Residential																				
Single Family - Income Eligible Services	$15,867	$10,134	$1,552	$11	$18	$35	$24	$24	$2	$20	$23	$15	$13	$16	$0	$0	$7,304	$960	$117	$5,733
Income Eligible Multifamily	$16,736	$10,777	$1,774	$17	$8	$26	$11	$11	$1	$1	$1	$6	$5	$4	$0	$24	$7,503	$1,248	$135	$5,959
Income Eligible Residential SUBTOTAL	**$32,602**	**$20,910**	**$3,326**	**$28**	**$26**	**$61**	**$36**	**$35**	**$3**	**$21**	**$24**	**$21**	**$18**	**$21**	**$0**	**$24**	**$14,807**	**$2,208**	**$251**	**$11,692**
Commercial & Industrial																				
Large Commercial New Construction	$12,972	$11,120	$3,906	$38	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$23	$3,498	$3,284	$372	$1,852
Large Commercial Retrofit	$27,473	$16,352	$7,574	$98	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,768	$6,233	$679	$11,121
Small Business Direct Install	$1,778	$1,277	$477	$6	$0	$0	$0	$0	$0	$4	$3	$1	$1	$3	$0	$276	$9	$450	$47	$502
Commercial & Industrial Multifamily	$7,000	$5,823	$510	$5	$3	$10	$4	$4	$0	$0	$0	$2	$2	$2	$0	$4	$4,844	$388	$44	$1,177
Commercial & Industrial SUBTOTAL	**$49,223**	**$34,572**	**$12,467**	**$146**	**$3**	**$10**	**$4**	**$4**	**$0**	**$4**	**$3**	**$3**	**$3**	**$5**	**$0**	**$303**	**$10,118**	**$10,355**	**$1,143**	**$14,651**
Grand Total	**$130,921**	**$86,375**	**$27,031**	**$281**	**$281**	**$689**	**$387**	**$383**	**$35**	**$94**	**$90**	**$222**	**$188**	**$144**	**$0**	**$484**	**$33,681**	**$20,129**	**$2,255**	**$44,546**

Table G-6A
Rhode Island Energy
Summary of 2023 Impacts by Program

	Gas Savings			Electric Energy Savings					Total Carbon Savings
	MMBtu		short tons CO_2	MWh		MMBtu		short tons CO_2	short tons CO2
	Annual	Lifetime	Annual[2]	Annual	Lifetime	Annual	Lifetime	Annual[2]	Annual[2]
Non-Income Eligible Residential									
Energy*Wise*	19,725	467,356	1,422	110	2,581	375	8,806	57	1,479
Energy Star® HVAC	30,691	516,670	2,253	308	4,586	1,051	15,647	146	2,400
EnergyWise Multifamily	6,466	134,723	534	9	158	29	540	6	540
Home Energy Reports	74,245	74,245	4,343	-	-	-	-	-	4,343
Residential New Construction	3,476	62,999	229	-	-	-	-	-	229
Non-Income Eligible Residential SUBTOTAL	**134,602**	**1,255,993**	**8,782**	**426**	**7,325**	**1,455**	**24,993**	**210**	**8,992**
Income Eligible Residential									
Single Family - Income Eligible Services	8,230	169,180	481	51	1,022	173	3,485	21	502
Income Eligible Multifamily	12,652	196,519	740	17	219	57	746	7	747
Income Eligible Residential SUBTOTAL	**20,883**	**365,699**	**1,222**	**67**	**1,240**	**230**	**4,231**	**27**	**1,249**
Commercial & Industrial									
Large Commercial New Construction	34,808	507,961	3,555	-	-	-	-	-	3,555
Large Commercial Retrofit	80,414	925,439	4,324	-	-	-	-	-	4,324
Small Business Direct Install	5,688	64,521	369	8	116	26	395	4	372
Commercial & Industrial Multifamily	3,950	60,158	257	6	82	22	281	5	262
Commercial & Industrial SUBTOTAL	**124,859**	**1,558,079**	**8,504**	**14**	**198**	**48**	**676**	**8**	**8,512**
Grand Total	**280,344**	**3,179,772**	**18,508**	**508**	**8,763**	**1,733**	**29,900**	**245**	**18,753**

Notes:
1) Lifetime savings are equal to annual savings multiplied by the expected life of measures expected to be installed in each program.

(2) Annual short tons CO2 savings is based on gross annual energy savings in Year 1. The AESC 2021 study was used to inform the electric emissions factor for 2023, taking the average of summer/winter on/off-peak

Table G-7
Rhode Island Energy
Comparison of 2023 and 2022 Goals

	Proposed 2023 Goal	Proposed 2023 Tracking		Approved 2022		Difference	
	Lifetime Energy Savings (MMBtu Natural Gas)	Annual Energy Savings (MMBtu Natural Gas)	Planned Unique Participants	Lifetime Energy Savings (MMBtu Natural Gas)	Annual Energy Savings (MMBtu Natural Gas)	Lifetime Energy Savings (MMBtu Natural Gas)	Annual Energy Savings (MMBtu Natural Gas)
Non-Income Eligible Residential							
Energy*Wise*	467,356	19,725	1,716	478,550	20,850	-11,195	-1,125
Energy Star® HVAC	516,670	30,691	2,904	439,717	26,740	76,953	3,950
EnergyWise Multifamily	134,723	6,466	3,453	147,064	8,279	-12,341	-1,814
Home Energy Reports	74,245	74,245	130,585	93,548	93,548	-19,302	-19,302
Residential New Construction	62,999	3,476	460	64,899	3,610	-1,900	-134
Non-Income Eligible Residential SUBTOTAL	**1,255,993**	**134,602**	**139,117**	**1,223,778**	**153,027**	**32,215**	**-18,425**
Income Eligible Residential							
Single Family - Income Eligible Services	169,180	8,230	797	218,847	10,942	-49,667	-2,712
Income Eligible Multifamily	196,519	12,652	2,742	273,085	14,700	-76,566	-2,048
Income Eligible Residential SUBTOTAL	**365,699**	**20,883**	**3,539**	**491,932**	**25,642**	**-126,233**	**-4,760**
Commercial & Industrial							
Large Commercial New Construction	507,961	34,808	62	788,763	52,956	-280,802	-18,148
Large Commercial Retrofit	925,439	80,414	59	1,332,508	142,888	-407,070	-62,474
Small Business Direct Install	64,521	5,688	146	91,700	6,113	-27,179	-425
Commercial & Industrial Multifamily	60,158	3,950	488	131,220	8,803	-71,062	-4,853
Commercial & Industrial SUBTOTAL	**1,558,079**	**124,859**	**755**	**2,344,192**	**210,760**	**-786,112**	**-85,901**
TOTAL	**3,179,772**	**280,344**	**143,411**	**4,059,902**	**389,430**	**-880,130**	**-109,085**

Notes:

(1) Participants can participate in more than one program, for example Home Energy Reports and EnergyWise.

(2) Planned 2023 participation takes into account net-to-gross and estimates unique participation by taking into account 2021 unique customer accounts to savings ratios. Therefore the number of planned measures may be more than the planned participants. For measure counts please view the widgets tables at the end of the Residential and C&I text sections. Table G-7 no longer includes a comparison to the previous year's participation. Due to the way unique participation is calculated it is not possible to compare year-over-year results.

Table G-8A
Rhode Island Energy
2023 Gas PIM Benefits, Allocations, and Categorization ($000)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	Natural Gas Benefits		Utility NEIs	Electric Capacity					Electric Energy					Non-Electric and Non-Gas			Societal		
									Winter		Summer								
	Natural Gas	Natural Gas DRIPE	Utility NEIs	Summer Generation	Capacity DRIPE	Trans	Dist	Reliability	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	Electric Energy DRIPE	Oil and Oil DRIPE	Other Resource	Non Resource	Carbon	NOx	Economic
Non-Income Eligible Residential																			
Energy*Wise*	$4,228	$27	$433	$58	$100	$78	$77	$5	$49	$56	$51	$44	$36	$0	$71	$2,908	$2,400	$317	$10,729
Energy Star® HVAC	$4,668	$42	$0	$188	$506	$261	$259	$25	$18	$6	$142	$118	$81	$0	$32	$711	$3,351	$358	$4,049
EnergyWise Multifamily	$1,212	$9	$0	$6	$13	$8	$8	$1	$1	$0	$5	$4	$2	$0	$46	$4,121	$726	$92	$2,597
Home Energy Reports	$564	$25	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$739	$52	$499
Residential New Construction	$567	$5	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$7	$583	$351	$43	$328
Non-Income Eligible Residential SUBTOTAL	**$11,239**	**$106**	**$433**	**$252**	**$619**	**$347**	**$344**	**$31**	**$68**	**$63**	**$198**	**$167**	**$119**	**$0**	**$157**	**$8,323**	**$7,567**	**$861**	**$18,202**
Income Eligible Residential																			
Single Family - Income Eligible Services	$1,552	$11	$79	$18	$35	$24	$24	$2	$20	$23	$15	$13	$16	$0	$0	$7,225	$960	$117	$5,733
Income Eligible Multifamily	$1,774	$17	$37	$8	$26	$11	$11	$1	$1	$1	$6	$5	$4	$0	$24	$7,466	$1,248	$135	$5,959
Income Eligible Residential SUBTOTAL	**$3,326**	**$28**	**$117**	**$26**	**$61**	**$36**	**$35**	**$3**	**$21**	**$24**	**$21**	**$18**	**$21**	**$0**	**$24**	**$14,691**	**$2,208**	**$251**	**$11,692**
Commercial & Industrial																			
Large Commercial New Construction	$3,906	$38	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$23	$3,498	$3,284	$372	$1,852
Large Commercial Retrofit	$7,574	$98	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,768	$6,233	$679	$11,121
Small Business Direct Install	$477	$6	$0	$0	$0	$0	$0	$0	$4	$3	$1	$1	$3	$0	$276	$9	$450	$47	$502
Commercial & Industrial Multifamily	$510	$5	$0	$3	$10	$4	$4	$0	$0	$0	$2	$2	$2	$0	$4	$4,844	$388	$44	$1,177
Commercial & Industrial SUBTOTAL	**$12,467**	**$146**	**$0**	**$3**	**$10**	**$4**	**$4**	**$0**	**$4**	**$3**	**$3**	**$3**	**$5**	**$0**	**$303**	**$10,118**	**$10,355**	**$1,143**	**$14,651**
Grand Total	**$27,031**	**$281**	**$549**	**$281**	**$689**	**$387**	**$383**	**$35**	**$94**	**$90**	**$222**	**$188**	**$144**	**$0**	**$484**	**$33,132**	**$20,129**	**$2,255**	**$44,546**
Included in PIM? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
Percent Application in PIM	100%	100%	100%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	0%	0%	0%	0%
Category	Gas Utility System Benefits	Gas Utility System Benefits	Gas Utility System Benefits	Resource Benefits	Resource Benefits	Resource Benefits	Resource Benefits	Resource Benefits	Resource Benefits	Resource Benefits	Resource Benefits	Resource Benefits	Resource Benefits	Resource Benefits	Resource Benefits	NA	NA	NA	NA

Notes
From 2023 Benefit-Cost Model, reflects benefits in Table G-6.

Table G-8B - Compliance Filing
Rhode Island Energy
2023 Gas PIM Costs ($000)

	(1)	(2)	(3)
	Costs ($)		
	Eligible Spending Budget from Table G-3	Regulatory Costs	Total Costs for PIM Calculations
Non-Income Eligible Residential SUBTOTAL	$17,209	$87	$17,296
Income Eligible Residential SUBTOTAL	$9,139	$87	$9,225
Commercial & Industrial SUBTOTAL	$8,986	$87	$9,073
Included in PIM? (Y/N)	Y	Y	Y

Notes
Source is Table G-2 and G-3. Regulatory costs allocated equally to each sector. OER and RIIB costs have been omitted from Regulatory Costs.

Table G-8C
Rhode Island Energy
2023 Gas PIM and SQA

Sector PI = min{ Payout Cap(j), [Actual Net Benefits* Design Payout Rate(g) * Payout Rate Adjustment(i)] }

Sector	Planned Eligible Benefits		Planned Eligible Costs	Planned Eligible Net Benefits (4)	Design Performance Achievement	Design Performance Payout	Design Payout Rate	Design Payout Rate Thresholds	Payout Rate Adjustments	Payout Cap	Service Quality Metric
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	100% Gas Utility System Benefits	50% Resource Benefits	Eligible Spending Budget + Regulatory Costs	=(a)+(b)-(c)	Net benefits at which design incentive pool is achieved	Set by PUC	=(f)/(e)	Achievement levels at which the Payout Rate Adjustments in (i) will be applied—Set by PUC	Factor to adjust Design Payout Rate for if final program achievement fall within the ranges in (h)—Set by PUC	=1.25*(f)	Yes if (d) ≤ 0; No if (d) >0
										Cap on sector payout regardless of achievement in sector	See Service Quality Table
Non-Income Eligible Residential	$11,777,311	$1,182,351	$17,295,978	-$4,336,315	$2,000,000	$500,000	25.00%	a. Achievement < 25% b. 25% ≤ Achievement < 50% c. 50% ≤ Achievement < 75% d. 75% ≤ Achievement • Spending > Planned Eligible Costs	a.0.0 b.Achievement/100 + 0.1 c.Achievement/100 + 0.25 d.1.0 •See Boundary Rules	$625,000	Yes
Income Eligible Residential	$3,470,964	$144,867	$9,225,122	-$5,609,290	$2,000,000	$500,000	25.00%			$625,000	Yes
Commercial & Industrial	$12,613,017	$171,602	$9,072,510	$3,712,109	$3,712,109	$1,000,000	26.94%			$1,250,000	No

Sector SQA = Maximum Service Adjustment(e) * Service Achievement Scaling Factor(g)

	Planned Eligible Benefits		Planned Eligible Costs	Design Service Achievement	Maximum Service Adjustment	Service Adjustment Thresholds	Service Achievement Scaling Factors	Achievement Cost Adjustment
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
	100% Gas Utility System Benefits	50% Resource Benefits	Eligible Spending Budget + Regulatory Costs	=(a)+(b)	Maximum downward adjustment to earned incentive	Adjusted Achievement levels at which the Service Adjustments in (e) will be applied; adjustment is calculated in (h)	Factor to scale program achievement that fall within the ranges in (f)	Actual-cost-based adjustment factor applied to achievement. Result is if the difference between achievement and cost variances are greater than 5%, the Actual Achievement will be adjusted for use in
Non-Income Eligible Residential	$11,777,311	$1,182,351	$17,295,978	$12,959,662	$290,063	a. Adjusted Achievement < 65% b. 65% ≤ Adjusted Achievement < 95% c. 95% ≤ Adjusted Achievement	a.1 b.(95-Adjusted Achievement)/30 c.0	Performance Variance = "Actual Benefits" /"Design Achievement" - "Spending" /"Planned Eligible Cost" If the absolute value (Performance Variance) ≤ 0.05, Then Adjusted Achievement = Actual Achievement Else Adjusted Achievement = Actual Achievement * (1+ Performance Variance)
Income Eligible Residential	$3,470,964	$144,867	$9,225,122	$3,615,832	$171,275			
Commercial & Industrial	$12,613,017	$171,602	$9,072,510	N/A	N/A			

Table G-9
Rhode Island Energy
Revolving Loan Fund Projections

Large C&I Revolving Loan Fund

(1)	**Total Loan Fund Deposits Through 2022**	**$**	**3,590,440**
(2)	Current Loan Fund Balance	$	2,481,254
(3)	Projected Loans by Year End 2022	$	1,200,000
(4)	Projected Repayments by Year End 2022	$	311,389
(5)	**Projected Year End Loan Fund Balance 2022**	**$**	**1,592,643**
(6)	2023 Fund Injection	$	-
(7)	**Projected Loan Fund Balance, January 2023**	**$**	**1,592,643**
(8)	Projected Repayments throughout 2023	$	309,469
(9)	Estimated Loans in 2023	$	1,200,000
(10)	**Projected Year End Loan Fund Balance 2023**	**$**	**702,112**

Notes

1 Funding injections since loan funds began. Net of any adjustments.

2 Current Loan Fund Balance is through May 2022

3 Projected Loans by Year End 2022 is estimated based on current commitments

4 Projected Repayments by Year End 2022 is estimated based on projected loans by year end and repayment schedules

5 Equal to (2) - (3) + (4)

6 Fund Injection, as budgeted on G-2

7 Equal to (5) + (6)

8 Assumption based on average repayments over 12 months; repayments accumulate over time and may vary widely.

Table G-10
Rhode Island Energy
Rhode Island Gas Energy Efficiency 2003 - 2023
$(000)

Gas	2007[4]	2008	2009	2010	2011[5]	2012	2013[6]	2014	2015	2016	2017	2018	2019	2020[7]	2021[8]	2022[9]	2023[x]
Energy Efficiency Budget ($Million)[1]	-	$7.3	$7.6	$4.8	$7.3	$13.7	$19.5	$23.5	$24.5	$27.7	$29.7	$28.1	$31.6	$34.3	$35.0	$36.9	$38.8
Spending Budget ($Million)[2]	-	$6.6	$6.1	$4.5	$6.2	$12.9	$17.9	$21.8	$22.4	$25.0	$27.8	$26.2	$29.2	$31.6	$32.4	$33.4	$35.3
Actual Expenditures ($Million)[3]	-	$7.4	$6.3	$5.5	$4.9	$13.3	$19.6	$21.5	$21.5	$24.6	$29.1	$28.8	$29.5	$24.6			
Incentive Percentage[12]	-	4.4%	4.4%	4.4%	4.4%	4.4%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	NA	NA	NA
Target Incentive	-	$288,734	$266,980	$199,743	$274,460	$570,382	$898,285	$1,089,700	$1,119,800	$1,251,654	$1,387,550	$1,309,076	$1,460,570	$1,578,601	$1,700,000	$1,000,000	$1,000,000
Earned Incentive	-	$288,734	$262,121	$231,310	$239,863	$586,036	$968,229	$1,362,108	$1,387,079	$1,496,869	$1,633,531	$1,541,255	$1,580,119	$347,732			
Annual MMBtu Energy Savings Goal Achieved (%)		109%	139%	127%	117%	99%	109%	124%	111%	106%	113%	120%	104%	71%			
System Benefits Charge ($/therm) - all non-exempt customers[11]	$0.0071	$0.0107	$0.0150	$0.0150	$0.0411	$0.0384	$0.0417	-	-	-	-	-	-	-	-	-	-
Residential System Benefits Charge ($/therm)	-	-	-	-	-	-	-	$0.0600	$0.0781	$0.0748	$0.0888	$0.0869	$0.0715	$0.1011	$0.0871	$0.1271	$0.1074
C&I System Benefits Charge ($/therm)	-	-	-	-	-	-	-	$0.0492	$0.0637	$0.0487	$0.0726	$0.0671	$0.0420	$0.0704	$0.0596	$0.0846	$0.0692
Annual Cost to 846 Therm/year Residential Customer w/o tax[9]	$6.04	$9.05	$12.69	$12.69	$18.28	$32.49	$35.28	$50.76	$66.07	$63.28	$75.12	$73.52	$60.49	$85.53	$73.69	$107.53	$90.86
Annual Cost to 846 Therm/year Residential Customer w/tax[10]	$6.23	$9.33	$13.08	$13.08	$18.85	$33.49	$36.37	$52.33	$68.11	$65.24	$77.44	$75.79	$62.36	$88.18	$75.97	$110.86	$93.67

Notes:

(1) Energy Efficiency Budget includes total expenditures and commitments. Includes all demand side management program-related expenses, including rebates, administration and general expenses, evaluation, commitments for future years and Company incentive.

(2) Prior to 2017, Spending Budget Eligible for Shareholder Incentive includes: Implementation, Administration, General, and Evaluation Expenses; excludes EERMC and OER Costs, Commitments, Copays, and Outside Finance Costs. Beginning in 2017, Outside Finance Costs were also included. Beginning in 2018 Pilot expenses were also excluded. Beginning in 2019 ConnectedSolutions expenses and assessment were also excluded.

(3) Actual Expenditures is actual spend during calendar year. Includes expenditures and commitments. Includes all demand side management program-related expenses, including rebates, administration and general expenses, evaluation, commitments for future years and Company incentive.

(4) Gas programs began during July 2007 and were not reported on separately that year since programs were still in development. The 2007 gas programs are included in 2008 reporting. Systems Benefit Charge shown for 2007 is the weighted average of $0.063 per decatherm from January 1, 2007 - June 30, 2007 and $0.107 per decatherm from July 1, 2007 through December 31, 2008.

(5) On July 25, 2011 the Commission ordered that National Grid could increase the gas System Benefits Charge from $0.15 to $0.411 per decatherm for the period of August 1, 2011 through December 31, 2011. Annual cost represents 7 months usage (632 therms) at $0.015 per therm and 5 months usage (214 therms) at $0.0411 per therm.

(6) In the Company's gas and electric rate cases in docket 4323, the PUC approved the uncollectibles gross-up in the electric EE Program Charge effective February 1, 2013, and a new rate applicable to the gross-up of the gas EE Program Charge, effective February 1, 2013.

(7) 2021 values are planned.

(8) 2022 values are proposed.

(9) Reflects the annual cost excluding Gross Earnings Tax.

(10) Reflects the annual cost including Gross Earnings Tax.

(11) The Gas EE Program Charge was uniform for all customers until 2014, at which time the Company proposed and the PUC approved individual factors for the residential and C&I sectors.

(12) Incentive percentage not applicable for 2022 due to new performance incentive mechanism developed for the 2022 Annual Plan. See Section 11 of the Main Text of the 2022 Annual Plan for additional details.

2022 Pilots, Demonstrations and Assessments

Table of Contents

1. Introduction

The Company invests in pilots, demonstrations and assessments to research and develop new measures, solutions, and offerings to expand energy efficiency choices and benefits to customers. The Company has developed a framework to assess and test new innovations for the energy efficiency and active demand response portfolios. The Company has applied this framework in developing the solutions described in the 2023 Annual Plan, including new measures and solutions proposed in prior years' Annual Plans as well as new demonstrations and assessments for 2023.

Process: The Company has developed a standard process by which it tests new ideas and determines if each idea merits a pilot, demonstration, or assessment. There are eight steps in the process. Each idea is first assessed in the **Intake** stage to determine whether the solution can be offered through the energy efficiency or demand reduction programs and whether it is commercially available. The application of the idea, target customers, context of existing programs and offerings, initial identification of market barriers that the idea addresses or faces, and preliminary savings potential are developed in the **Concept** stage. Ideas in these two early stages of review make up the Innovation Pipeline, which continually evolves as new ideas are examined and promising ideas are further vetted and launched into the portfolio.

The Concept stage necessitates preliminary research and analysis of the product, which will inform the **Plan** stage. Key decisions on how to progress with the solution are made during the Plan stage, including whether a pilot, demonstration, or assessment is required to develop the idea and, if so, whether an independent or vendor evaluation approach should be taken. The ideas included in Section 4 are all in the plan stage of development and recommended for a pilot, demonstration, or assessment. The decisions around what type and rigor of testing required for each item will be made with input from the Company Evaluation Measurement & Verification (EM&V) team, EERMC Consultants, and OER.

The planned pilot, demonstration, or assessment will be executed in the **Develop or Demonstrate** stage. Updates will be provided to the stakeholder teams on a quarterly basis.

Once the develop or demonstration stage is complete, the offering will be finalized and launched through the **Qualify**, **Launch**, and **Maximize** stages. During these stages, the product will be handed off to the Company's Customer Energy Management (CEM) team, vendor, and implementation teams who will manage the product as part of the Company's energy efficiency portfolio.

During any of the above stages it is possible for the idea to **Exit** the process. There are three possible outcomes of an Exit: The product may be **Retired** if it does not fit into our programs or if there is no viable business case. The product may be **Parked** if the policy or infrastructure required for the idea to be successfully delivered to customers is not available but may be in the near term. Finally, the product may be **Referred** directly to the programs if the idea is expected to produce reliable savings, fits readily into an existing program or measure, and the receiving program has the capability to finalize savings and incentives.

Innovation Pipeline: The process outlined above is designed to bring in as many ideas as possible and quickly determine to what extent the Company should invest resources in developing each idea. Ideas for new product inclusion come from a wide range of sources, including by not limited to: customers, vendors, contractors, supply-chain actors, industry researchers, and other program administrators. The pilots, demonstrations, and assessments discussed here have already been identified as ideas that should be further explored and tested, but ideas included in the Innovation Pipeline may emerge for additional, immediate analysis over the course of 2023. To ensure those emerging ideas can be quickly and efficiently vetted, the Company has set aside budget to fund approximately three ideas in each sector. Promising ideas may progress to a demonstration or as a program measure. Historically, the Company typically waited for approval of the Annual Plan before proceeding with new pilots and demonstrations. In 2023, although the Company is proposing a smaller overall budget for pilots, demonstrations, and assessments, a larger Innovation Pipeline budget has been proposed. Furthermore, the Company intends to leverage the Innovation Pipeline not only for assessments but for in-year pilots and demonstrations. This will allow the Company to act with greater urgency and in a more agile manner moving forward. Stakeholders will be notified prior and allowed to vet projects and provide input before the Company proceeds with pilots, demonstrations, or assessments that the Company considers including in the Innovation Pipeline.

Evaluation: It is to be expected that each idea passing through this process will have a different set of requirements and research questions that must be answered prior to qualification and inclusion in programs. Depending on the characteristics of the idea, the expected program delivery pathway, and the nature of the uncertainty around the idea, the Company plans for different approaches to evaluate the idea during a pilot, demonstration, or assessment. For example, a low touch residential product that we expect to deliver through an upstream program requires a very different analysis than a high touch industrial measure with few potential customers across the state.

The Customer Energy Management Growth and Development team will recommend a research plan for each pilot, demonstration, or assessment approved through the planning process. The

team will solicit input from the Company's EM&V team, OER, and EERMC consultants on whether the research requirements can be best met through an independent evaluation, a vendor evaluation, or an internal review. These approaches are further discussed in the next section.

2. Definitions

The Company, using guidance from the PUC, has outlined three separate pathways that may be used to investigate ideas in the Innovation Pipeline: Pilot, Demonstration, or Assessment. It is assumed that any idea selected for a Pilot, Demonstration, or Assessment has been vetted through the Intake and Concept stages outlined above. Ideas are vetted for fit and feasibility, commercial availability, and documented preliminary recommendations of characteristics like target customer, market barriers, magnitude of potential savings, and delivery pathway. A pipeline idea will only be recommended as a pilot, demonstration, or assessment if there are clearly articulated research goals that cannot be answered without a concerted research effort.

The Company has three research pathways that can be applied during a pilot, demonstration, or assessment: Independent Evaluation (highest rigor), Vendor Evaluation, or Internal Review (lowest rigor). The research pathway will be chosen depending on the needs and potential of a Pilot, Demonstration, or Assessment and consider the uncertainty of the savings, scope of the offering, market barriers, and whether the technology is considered under a pilot, demonstration, or assessment. The research pathways and evaluation pathways are summarized in Table 1 and defined further below.

Table 1. Definitions: Pilots, Demonstrations and Assessments

	Pilot	Demonstration	Assessment
Defining Characteristics	• May result in independent program • Long-term, comprehensive engagement required to test and develop offering • Market capabilities may need to be developed	• Technology requires information gathering and field installations	• Technology addresses program need that can't be met with other, more certain solutions • Technology does not have a robust basis for energy savings

Cost effective savings information	Unknown or limited	Estimated savings	Unknown or limited
Evaluation Options*	Vendor or Independent	Vendor or Independent	Vendor, Independent, or Internal Review
Savings contribution to shareholder incentive	No	Yes	No
Cost recovery from SBC	Yes	Yes	Yes

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

Pilots

In 2019, the Company redefined what it considers a pilot in accordance with the Docket No. 4600-A PUC Guidance Document. Per the Guidance Document, "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."[1]

Pilots are designed to explore technologies and approaches to energy management not included in the core energy efficiency programs (Residential, Commercial and Industrial (C&I), 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.

[1] Docket No. 4600-A PUC Guidance Document, October 27, 2017. Section V. Pilots.

Savings associated with Pilots will not contribute to shareholder incentives. Pilots may be evaluated with either an independent or a vendor evaluation.

A pilot is likely to be recommended when a solution:

- Meets the fit and feasibility criteria of the Intake stage.
- Is clearly defined in the Concept stage, including savings and potential estimates.
- Is unique and robust enough to operate as a standalone program.
- Requires comprehensive, long-term engagement to determine the benefits and structure of a potential standalone program.
- May require creation of new market capabilities for program success.

Demonstrations

For actions in this Plan that do not fall under the Docket 4600-A definition of pilots, the Company proposes the following definitions for demonstrations and assessments: Where a pilot will test the feasibility of a new program outside of the existing core programs, 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.

A demonstration is likely to be recommended when a solution:

- Meets the fit and feasibility criteria of the Intake stage.
- Is clearly defined in the Concept stage, including savings and potential estimates.
- May require information-gathering and field installations.
- Offers a robust basis for energy savings.

Assessments

Assessments 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.

An assessment is likely to be recommended when a solution:

- Has questions of fit and feasibility in the Intake stage.
- Addresses a program need that cannot be met with other, more certain options.
- Lacks a robust basis for energy savings.

The Company employees three methods for conducting pilots, demonstration, and assessment evaluations, described below.

Independent evaluations
Independent evaluations apply the greatest level of rigor to the pilot, demonstration, or assessment and require broad coordination between teams. The Company participates in the planning and review process, but the evaluation itself is subject to the procurement process, oversight, and methods outlined in Attachment 3. The third-party evaluator develops the evaluation plan prior to customer installations to ensure the number and condition of customer installations are appropriately rigorous. The evaluator does not necessarily perform customer installations but is involved to the extent required to ensure appropriate metering and customer feedback needed for the final analysis.

An independent evaluation is likely to be recommended if a solution:

- Is expected to contribute significant savings towards program savings goals.
- Must consider a population-level analysis, as opposed to site-specific analysis, to answer research questions.
- Poses policy or baseline questions that should be addressed through the evaluation framework.

Vendor evaluations
Vendor evaluations are managed by internal staff, with a single vendor completing all tasks. Vendor evaluations may be applied to a pilot, demonstration, or assessment. This evaluation pathway engages vendors to provide initial research on market readiness, market barriers, customer interest, and work in other territories, before they assess, install, and analyze the results of the technology. The vendor must not have a financial interest in the outcome of the pilot, demonstration, or assessment and must have the necessary engineering, research, or M&V experience to evaluate the idea in an unbiased manner. The vendor ultimately recommends whether and how to integrate the technology into the programs and presents key information to inform deployment of the offering, such as target customers, market barriers,

savings methodology, and best practices for installations and commissioning. The key differences between a vendor evaluator and independent evaluator relate to oversight and coordination with the RI EM&V framework described in Attachment 3.

A vendor evaluation is likely to be recommended if a solution:

- Is not expected to contribute significant program savings, either because it is a niche application or the per-project savings are relatively small.
- Is expected to be delivered through a custom pathway with site specific information inputs available during program delivery

Internal reviews
Internal reviews may use internal resources to explore a product through an Assessment. The Company typically relies on external resources for pilots and demonstrations in order to leverage outside expertise and maintain the integrity of the savings calculations. Internal reviews focus on key questions of uncertainty or policy related to technologies under investigation. An internal review can draw on available external resources and data, but will perform the research, analysis, and recommendations internally.

An internal review is likely to be recommended if:

- The solution is examined as an Assessment.
- Research questions can be answered without customer installations.
- Research can be delivered with internal resources and external resources available without undertaking a procurement process (such as ESource).

3. Summary of Pilots, Demonstrations and Assessments

The following pilots, demonstrations, and assessments are proposed for 2023. Savings estimates are approximate and only include primary fuel savings for the target customer population.

Table 2. Electric Commercial and Industrial Demonstrations and Assessments

Classification	Fuel	Name	C&I Program	Duration	Budget*	Savings Est.	Evaluation
Demonstrations							
Lighting	Dual	Network Lighting Controls Plus HVAC (NLC+)	C&I Retrofit	2020-2023	$124,841	1.44 kWh/SF	Vendor

HVAC	Dual	Air Curtains	C&I Retrofit	2022 - 2023	$97,389	14 MWh per install	Vendor
	Dual	Automated RTU Optimization	Allocated	2022-2023	$18,633	115 kWh/ton cooling	Vendor
Innovation Pipeline**	Elec.	Innovative Electric	Allocated	2023	$62,500	To be estimated	TBD
Assessments							
Active Demand Response	Elec.	Building Flexibility through DR	C&I Retrofit	2022 - 2023	$24,844	Unknown	Internal Review
HVAC	Elec.	Rightsizing RTUs	Allocated	2022 - 2023	$12,422	Unknown	Internal Review
Total Electric C&I Demonstration					**$303,363**		
Total Electric C&I Assessments					**$37,266**		

Table 3. Gas Commercial and Industrial Pilots, Demonstrations and Assessments

Classification	Fuel	Name	C&I Programs	Duration	Budget*	2023 Savings Est. (Therms)	Evaluation
Pilot							
Active Demand Response	Gas	Gas Demand Response Pilot	N/A	2022-2023	$268,042	27,520	Vendor
Demonstrations							
HVAC	Dual	Network Lighting Controls Plus HVAC (NLC+)	C&I Retrofit	2020-2023	$61,489	0.012/sf	Vendor
	Dual	Air Curtains	C&I Retrofit	2022-2023	$97,389	252 MMBtu per install	Vendor
	Dual	Automated RTU Optimization	Allocated	2022-2023	$18,633	10-20%	Independent
Innovation Pipeline**	Gas	Innovative Gas	Allocated	2023	$31,055	To be estimated	TBD
Assessments							
HVAC	Dual	Rightsizing RTUs	Allocated	2022-2023	$12,422	Unknown	Internal Review
Total Gas C&I Pilots					**$268,042**		
Total Gas C&I Demonstrations					**$208,566**		
Total Gas C&I Assessments					**$12,422**		

Table 4. Electric Residential Demonstrations and Assessments							
Classification	**Fuel**	**Name**	**Residential Program**	**Duration**	**Budget***	**Savings Estimation**	**Evaluation**
Demonstration							
HVAC	Dual	New Air Sealing and Insulation Products	EnergyWise	2021-2023	$24,844	0.05 kWh/sqft	Vendor
****Innovation Pipeline**	Elec	Innovation Electric	Allocated	2023	$56,094	To be estimated	TBD
Assessments							
Total Electric Residential Demonstration					**$80,938**		
Total Electric Residential Assessments					**$0**		

Table 5. Gas Residential Demonstrations and Assessments							
Classification	**Fuel**	**Name**	**Residential Program**	**Duration**	**Budget***	**Savings Est.**	**Evaluation**
Demonstrations							
HVAC	Dual	New Air Sealing and Insulation Products	EnergyWise	2021-2023	$74,532	0.1/sqft	Vendor
Innovation Pipeline**	Gas	Innovation Gas	Allocated	2023	$31,055	To be estimated	TBD
Total Gas Residential Demonstration					**$105,587**		

Note:
*Budgets indicated in this table include, evaluation, incentives, program administration, sales, marketing, technical assistance and training (if applicable). Pilots and Assessments budgets are not included in Performance Incentive calculations.

** Innovation budgets are for demonstrations that present opportunities during the plan term. Budget and savings estimates will be developed when the demonstrations are identified.

4. Commercial and Industrial Pilots, Demonstrations, and Assessments

4.1 Commercial and Industrial Pilots

This section summarizes each pilot and describes the way it advances, detracts, or remains neutral on achieving the Docket 4600 goals for the electric and gas system.

a. Gas Demand Response

Pilot Stage: Develop or Demonstrate

Innovation Overview: With gas DR, the Company will test supply and/or distribution system benefits, reduction of gas system peak demand via a reduction in overall natural gas consumption, customer adoption of gas DR and incentive levels to drive participation. Testing Gas DR will allow the Company to understand the impact on gas systems and whether RI Energy's role in the market has influenced market adoption using a follow-up study to the 2021 AESC Study to look more closely at potential Peak Day winter gas costs.

The Company plans to target 40-50 dekatherms (DTh) of hourly peak reduction in the winter of 2022/23, 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 Peak Period Gas Demand Response (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.

The Company has been utilizing electric Demand Response (DR) to address grid constraints and help provide reliable service to our customers for a number of years. During the winter of 2018/19, the Company launched a Peak Period Gas Demand Response (PPDR) pilot offering, which incentivizes customers to shift their usage outside of the peak-period of the gas system

(6AM-9AM from November 1st to March 31st). This pilot targeted commercial and industrial customers who have intra-day flexibility of their natural gas usage. Customers in this pilot would be able to provide their demand reduction via either fuel-switching or demand control (e.g. thermostat setback). In 2019/20, the company added the Expanded Demand Response (EDR) offering, which targeted large customers that could achieve 24-hour gas reductions, primarily with back-up heating. At the close of the 2021/22 season, the company had no participants in the PPDR pilot offering and two in the EDR pilot offering.

Customer segment addressed*:* The gas DR pilot offerings are focused on large, firm commercial and industrial customers, specifically those with gas equipment that can be curtailed without creating an unsafe environment. The goal of the project is to test the following:

- Are customers interested in participating in an incentivized Gas Demand Response program?
- If so, what are the acceptable price point values by customer business type and equipment type?
- What are the supply and/or distribution system benefits?
- What is the scalability of the program?
- Can customers that temporarily shift their gas usage outside of peak hours maintain some daily gas usage reductions?

Pilot Delivery: The gas DR pilot involves the installation of data recording hardware that provides granular usage data for participating customers. Data from the pilot will be evaluated each year.

Peak-Period Demand Response (PPDR): For winter 2022/23, the Company expects to maintain participation in PPDR. Many pilot parameters will remain similar to the terms of the pilot offering launched during the winter of 2020/21:

- RI Energy can only call a limited number of event during a given winter.
- Customer participation in this pilot offering and the called events will be compensated via direct incentive payments, not in the form of a reduced rate.
- While enrolled customer participation in called events will be mandatory, this participation will be enforced through contractual structures and financial incentives– National Grid will not maintain a unilateral right to disrupt gas service to participating customers during called events.

Incentive Structure: As was the case in prior years, customer compensation for participation in the PPDR pilot offering will be based on a combination of 'reservation' and 'energy' payments. Each of these rates will be standard offers to all customers, though customer earning opportunity will vary based on the volume of peak hour Dth reduction that each customer can commit to and deliver. The Company will continue to utilize a rolling performance rating that measures customer reliability and limits payments to non-performing resources.

Extended Demand Response (EDR):

The basic parameters of this pilot offering match those of the PPDR pilot offering. However, in the EDR offering, the duration of each event would be 24 hours (10AM on day 1 until 10AM on day 2, Nov. 1st through March 31st). Customers in the EDR pilot offering are expected to achieve their committed demand reductions via fuel-switching. Limitations will also be put in place that will limit the number of consecutive days on which any individual customer could be called to participate in the EDR pilot offering. National Grid will have the right to call up to 6 events during the winter at the stated incentive rate.

The EDR pilot offering will provide incentives for customers who can eliminate their usage on a given day by switching to an alternative source (most typically a delivered fuel option) to meet their energy needs.

Incentive Structure: Customer compensation for participation in the EDR pilot offering will be based on the same combination of 'reservation' and 'energy' payments outlined in the PPDR pilot offering description, set at different levels for each pilot offering. Each of these rates will be standard offers to all customers, though customer earnings opportunity will vary based on the volume of peak hour DTh reduction that each customer can commit to and deliver. As with the PPDR pilot offering, the EDR 'reservation' incentives will be subject to a performance rating based on a measurement of customer reliability.

Evaluation: Vendor Evaluation

Changes in 2023: The Gas Peak Period Demand Response and Extended Demand Response pilot offerings will continue in the winter of 2022/23. The Company plans to retain current levels of enrollment in the EDR offering and the PPDR pilot offering. The addition of the previously mentioned performance rating will ensure that incentives paid by the company are aligned with the delivered reliability of customer resources.

Table 6: Docket 4600 Goals - Gas Demand Response	
4600 Goals for Gas distribution System	Advances/Detracts/Neutral

Provide reliable, safe, clean, and affordable energy to Rhode Island customers over the long term (this applies to all energy use, not just regulated fuels).	Advances. DR has the potential for many value streams, such as alleviating local distribution system constraints, increasing system flexibility, potentially delaying infrastructure reinforcement projects, and providing a revenue stream for participants.
Strengthen the Rhode Island economy, support economic competitiveness, retain and create jobs by optimizing the benefits of a modern grid and attaining appropriate rate design structures.	Advances. DR has the potential for many value streams, such as alleviating local distribution system constraints, increasing system flexibility, potentially delaying infrastructure reinforcement projects, and providing a revenue stream for participants that would support economic growth.
Address the challenge of climate change and other forms of pollution.	Advances. While demand response does not directly address climate change, the additional insight into usage due to the increased data resolution provided to participants may create an opportunity for additional energy efficiency projects. Additionally, there may be a reduction in carbon due to participation in DR events. Providing alternatives to gas infrastructure may also provide indirect benefits for combatting climate change.
Prioritize and facilitate increasing customer investment in their facilities (efficiency, distributed generation, storage, responsive demand, and the electrification of vehicles and heating) where that investment provides recognizable net benefits.	Neutral – this pilot is neutral on this goal
Appropriately compensate distributed energy resources for the value they provide to the gas system, customers, and society.	Neutral – this pilot is neutral on this goal
Appropriately charge customers for the cost they impose on the grid.	Neutral – this pilot is neutral on this goal
Appropriately compensate the distribution utility for the services it provides.	Neutral – this pilot is neutral on this goal
Align distribution utility, customer, and policy objectives and interests through the regulatory framework, including rate design, cost recovery, and incentive.	Advances. Gas DR pilot advances this goal by putting incentives towards peak reduction on the gas distribution network that may help to achieve the GHG reduction goals of the Resilient Rhode Island Act of 2014 and the Rhode Island GHG Emissions Reduction Plan of 2016. There is also an alignment in the sense that customer participation could affect system planning, which could have a larger financial impact for all customers.

	In this way, participants are incentivized for providing the behavior that matches the goals of the company.

4.2 Commercial and Industrial Demonstrations

The Company is prioritizing one new demonstration in 2023, as well as the continuation of five demonstrations included in prior-year plans.

a. Network Lighting Controls Plus HVAC

Demonstration Stage: Develop or Demonstrate

Innovation Overview: Network Lighting Control Plus HVAC (NLC+) go beyond traditional advanced lighting controls. NLC+ systems have the hardware and software capabilities to act as a simple, stand-alone energy management system or to interface seamlessly with more sophisticated existing building systems. In either case, local, granular occupancy, and other sensing data from the NLC+ system facilitates additional savings from HVAC, plug loads, and complete energy management. This technology could be implemented as a retrofit to existing buildings, or as a component of a comprehensive new construction project. The most significant challenge in realizing savings for these projects is the integration of HVAC controls, the commissioning of the system, and conveying the cumulative value of this approach with customers. A successful program offering must support the commissioning process.

Target Customer and Program Fit: Initial customer segments to be considered for this analysis are offices, schools/universities, industrial, retail and hospitals.

Prior Efforts: The NCL+ demonstration was initiated in 2020. Phase I of the research, which concluded in July 2020, included a market readiness assessment for this technology. Twenty-two interviews were completed with a collection of lighting and HVAC industry representatives, customers, and internal program staff. Interviews identified barriers and opportunities for NLC+ in Rhode Island.

Phase II of the research began in 2020 and includes customer installations and M&V efforts. Phase II will continue into 2022 due to the longer than anticipated time required to recruit customers for the demonstration and long lead times of the lighting projects. At the time of writing, one project is expected to move forward, and additional leads are being processed.

Demonstration Delivery: The demonstration is focused on the potential of integrating lighting and HVAC controls through the networked lighting controls system. The most significant barriers

identified in the Phase I research were related to the integration of the two systems, including bridging the siloed lighting and HVAC trades. Phase II of the demonstration will include up to four customer installations. The goal of the installation will be to investigate the energy and non-energy benefits of projects, pain points in commissioning the projects, and knowledge gaps that may hinder fully realizing expected HVAC savings. Finally, Phase II will recommend if and how this technology can be included in the energy efficiency programs.

Evaluation: Vendor evaluation

b. Air Curtains

Demonstration Stage: Concept

Innovation Overview: Air Curtains are placed over doorways between two differently conditioned environments to limit heat transfer between the two spaces, thus reducing the heating/cooling load needed to maintain their separate environments. They are an effective alternative to plastic vinyl strip curtains and high speed roll up doors, particularly in areas of heavy human/vehicle traffic. Air curtains consist of a fan mounted over a doorway which when turned on, creates a seamless air barrier over the open doorway. This serves a dual purpose of preventing mixture of air between the separated spaces and entry of dust and other contaminants.

Target Customer and Program Fit: This technology will be a benefit to industrial customers with large overhead doors separating indoor and outdoor spaces where there is high foot or vehicular traffic, such as loading docks or warehouses. There is potential that this technology can also benefit smaller industrial and commercial customers with areas of high foot traffic, such as small retail businesses or restaurants. In addition, this technology has been utilized in refrigeration applications, and could be utilized in large industrial refrigerated warehouses and smaller coolers with high foot traffic.

Prior Efforts: No prior efforts, in Rhode Island, have been undertaken to include air curtains as a prescriptive measure. There is a limited history of air curtains being included in prior custom projects.

Demonstration Delivery: The Company would demonstrate the effectiveness of air curtains in a few different scenarios, as there are several applications of air curtains. Primarily, demonstrating capability in a large industrial setting separating a conditioned indoor space and an unconditioned outdoor space, a small commercial application separating a conditioned indoor space and an unconditioned outdoor space, and refrigerated spaces both large and small.

Evaluation: Vendor Evaluation

c. Automated RTU Optimization

Demonstration Stage: Concept

Innovation Overview: The Company is looking for new ways for customers to improve control of their HVAC systems to realize energy savings and improve comfort. One such approach is automated systems optimization, in which software analyzes and modifies the control of equipment automatically. This demonstration project will examine the SwarmStat™ product, which can be deployed for smaller customers with 2 or more RTUs controlled by smart thermostats and no existing EMS. This product is of particular interest since it allows simple, enhanced controls for small to medium customers with minimal upfront investment.

Target Customer and Program Fit: Customers with 4+ RTUs and no building automation or energy management system.

Prior Efforts: In 2022, the Company began recruitment for this Demonstration. No efforts had been made prior to that.

Demonstration Delivery: The Company will work with an independent evaluator to assess gas and electric savings realized by automated optimization software. The Company expects the demonstration to include a pre/post analysis of energy consumption for 10-15 customers, which will be used to develop deemed savings estimates. To date, recruitment has been challenging. At the time of this writing, just two customers have signed up to participate. The Company is continuing to recruit additional customers, however, without at least 10-15 customers, there will be insufficient data to develop a deemed savings estimate.

Evaluation: Independent Evaluation

d. Gas Leak Survey and Repair

Demonstration Stage: Develop or Demonstrate

Innovation Overview: Facilities with large natural gas use often have extensive internal gas infrastructure beyond the utility meter, including pipes and valves. Over time, degradation in valves, fittings, and other gas infrastructure components can occur, resulting in natural gas being leaked into the ambient environment. These leaks represent both a waste of energy, as the leaked gas is purchased by the customer but not put to use, and a direct negative environmental impact as the methane in natural gas is a potent greenhouse gas.

This demonstration intends to investigate the program potential of providing customers with gas leak detection and repair services. Vendors will survey customers' internal gas infrastructure to identify and quantify leaks, which will be repaired by vendors or internal customer labor, reducing overall customer gas purchase.

Target Customer and Program Fit: Initial customer segments to be considered for this analysis are large natural gas users with significant internal gas infrastructure (for example, large valves typically in the 6" or larger size range), such as industrial manufacturing facilities.

Prior Efforts: The Gas Leak Survey demonstration was initiated in 2022. The Company has received anecdotal information regarding the costs and benefits of similar efforts carried out in other territories. At the time of this writing, an initial leak survey vendor has been identified, and the Company is working to identify customers whose facilities are good fits for this demonstration, as well as determining technical requirements and financial support levels.

Demonstration Delivery: The demonstration is anticipated to include two to four customer sites, depending on cost and customer interest. The goal of the demonstration is to investigate the:

- Parameters for determining appropriate customer sites.
- Costs to conduct the survey and complete fixes.
- Energy and non-energy benefits of projects, including measure persistence.
- Challenges and knowledge gaps in conducting the survey and making fixes identified.
- Knowledge gaps that may hinder fully realizing expected natural gas savings.

The most significant barriers anticipated are:

- Coordination with the identified initial leak survey vendor.
- Identification of qualified leak survey vendors in the local area.

Evaluation: Vendor evaluation

4.3 Commercial and Industrial Assessments

The Company is exploring new C&I assessments, however, at the time of this writing, no new assessments have been proposed for 2023.

a. Software and Hardware Solutions for Rightsizing RTUs

Demonstration Stage: Concept

Innovation Overview: Along with installing more efficient HVAC equipment customers can avoid energy consumption over time by rightsizing their equipment at the time of design or specification. Equipment is often oversized to ensure occupant comfort, but the same levels of comfort can be provided with appropriately sized and controlled equipment.

This assessment will explore developing an approach for identifying rightsizing opportunities and estimating incremental savings through rightsizing equipment. Two potential opportunities are rightsizing when an older oversized system is replaced or switching from whole-building heating to spot heating. Further, the Company will explore how software can be used to encourage rightsizing, either by more effective control of smaller equipment or by establishing that existing equipment is oversized.

Target Customer and Program Fit: All commercial and industrial customers

Prior Efforts: An effort was begun in 2022 to systematically consider rightsizing in the C&I sector. The residential programs have offered downsizing HVAC system incentives for some time.

Assessment Delivery: The assessment will establish a protocol for when and how rightsizing should be considered. This will include discussions with market actors to understand how equipment is typically sized and barriers to more appropriate sizing for new installations and for time of replacement installations. The Company will include discussions with the EM&V team about savings and baseline documentation. The assessment will make recommendations on whether rightsizing should be considered within the prescriptive HVAC offerings or only on a custom basis.

Evaluation: Internal Review

5. Residential Pilots, Demonstrations, and Assessments

5.1 Residential Pilots

The Company does not propose any new or continued Residential Pilots for 2023.

5.2 Residential Demonstrations

The Company plans to continue one demonstration for the Residential sector in 2023.

a. New Air Sealing and Insulation Products

Demonstration Stage: Develop or Demonstrate

Innovation Overview: Several new technologies claim to improve infiltration and insulation of homes. The two technologies of focus in this demonstration are sprayed-in air-sealing and injection foam for residential and multifamily buildings.

Vendors such as AeroBarrier operate in both new construction and renovations, offering a waterborne acrylic sealing fluid, which is sprayed into homes, covering surfaces and filling gaps up to one-quarter inch in width. AeroBarrier performs this service alongside a blower door test to monitor leakage as the spray seals gaps.

Building Envelope Materials offers a polyurethane foam that can be injected into building cavities to improve R-value. The conventional limitation for this technology has been the risk of toxicity and hazardous particulates, but the product manufacturer believes it has solved this problem.

Target Customer and Program Fit: Both technologies have the potential to significantly improve the heating and cooling efficiency of under-insulated buildings. Target customers are single-family homes, particularly those that are under-insulated.

Demonstration Delivery: The Company will work with the residential implementation vendor to identify several residential single-family sites with a need for improved insulation and will work with the two vendors to deploy their systems at those sites. Six homes in total will participate, two each with the individual technologies and two with both deployed.

Prior Efforts: The demonstration began in 2021. The Company screened the processes for residential customer cost and benefit and determined applicable customer characteristics. The Company also interviewed vendors to determine pricing and feasibility, scoping out project deliverables; the demonstration will continue in 2023.

Evaluation: Vendor Evaluation

5.3 Residential Assessments

The company is not planning any new or continued Residential Assessments for 2023.

2022 Cross-Program Summary

Table of Contents

1. Introduction

The Cross-Program Summary documents how the proposed 2023 Energy Efficiency Annul Plan programs relate to other specific National Grid programs outside of the energy efficiency docket. The questions are based on Public Utility Commission Information Requests 1-8 and 1-9, from the 2019 Energy Efficiency Annual Plan, Docket 4888.

2. Programs with no interaction with other program proposals

The descriptions in this section apply to the following programs:

a. Residential New Construction
b. Energy Wise
c. EnergyWise Multifamily
d. Home Energy Reports
e. Energy Star HVAC
f. Residential Consumer Products
g. Single Family Income Eligible Services
h. Income Eligible Multifamily
i. Large Commercial New Construction
j. Small Business Direct Install
k. Commercial and Industrial Multifamily

1. Is the program being moved from, consolidated with, or split between another program proposal?
    a. No

2. Does the program have a component funded in other programs?
    a. No

3. Does the primary purpose of the project or program fall into one of the following categories?
    a. DR: local system
        i. No
    b. DR: bulk system/transmission
        i. No
    c. DG: adoption/interconnection
        i. No
    d. DG: load reduction
        i. No

e. Storage: grid side
    i. No
f. Storage: customer side
    i. No
g. Grid Mod: physical infrastructure/grid-facing data
    i. No
h. Grid Mod: customer-facing data
    i. No
i. Electrification: vehicles
    i. No
j. Electrification: heating
    i. No

4. If the response to any of subsection c. are in the affirmative, please respond to the following:
    a. N/A

3. Programs with interaction with other program proposals

This section provides information about interaction of some programs with other program proposals:

3.1 Residential Connected Solutions

1. Is the program being moved from, consolidated with, or split between another program proposal?
    a. Yes. The Company is eligible to earn a shareholder incentive through the System Efficiency: Annual MW Capacity Savings Performance-Based Incentive Mechanism in Docket Nos. 4770/4780.
    b. Yes. The centralized online marketplace is an online store that promotes energy efficient products from Products, HVAC, Energy Star Lighting, and Connected Solutions. See Marketing, Outreach & Education section in Attachment 1. It also promotes electric vehicle solution suite and a renewable energy advisor is planned. The marketplace creation was funded by OPEX in several jurisdictions. In 2023, the RI EE Annual Plan includes budget for the marketplace licensing fee, rebates as a service, water heater advisor, and active DR enrollment related to energy efficiency.

2. Does the program have a component funded in other programs?
    a. Yes. Funding for the shareholder incentive for achieving Annual MW Capacity Savings is from Docket Nos. 4770/4780.
    b. Yes. The centralized online marketplace has non-EE funding for renewable energy advisor.

3. Does the primary purpose of the project or program fall into one of the following categories?

a. DR: local system
    i. Yes
b. DR: bulk system/transmission
    i. No
c. DG: adoption/interconnection
    i. No
d. DG: load reduction
    i. No
e. Storage: grid side
    i. No
f. Storage: customer side
    i. No
g. Grid Mod: physical infrastructure/grid-facing data
    i. No
h. Grid Mod: customer-facing data
    i. No
i. Electrification: vehicles
    i. No
j. Electrification: heating
    i. No

4. If the response to any of subsection c. are in the affirmative, please respond to the following:
    a. Confirm the project or program is independent from other projects and programs in the categories in c.
        i. The DR local system component of the Residential Connected Solutions Program is an independent program offering for residential customers but contributes to the Annual MW Capacity Savings Performance-Based Incentive Mechanism in Docket Nos. 4770/4780.

    b. Explain why the spending for the categories listed above should be funded in multiple programs/dockets.
        i. N/A

3.2 Large Commercial Retrofit

1. Is the program being moved from, consolidated with, or split between another program proposal?
    a. No.

2. Does the program have a component funded in other programs?

a. No

3. Does the primary purpose of the project or program fall into one of the following categories?
    a. DR: local system
        i. No
    b. DR: bulk system/transmission
        i. No
    c. DG: adoption/interconnection
        i. No
    d. DG: load reduction
        i. No
    e. Storage: grid side
        i. No
    f. Storage: customer side
        i. No
    g. Grid Mod: physical infrastructure/grid-facing data
        i. No
    h. Grid Mod: customer-facing data
        i. No
    i. Electrification: vehicles
        i. No
    j. Electrification: heating
        i. No

4. If the response to any of subsection c. are in the affirmative, please respond to the following:
    a. N/A

3.3 Commercial Connected Solutions

1. Is the program being moved from, consolidated with, or split between another program proposal?
    a. Yes. The Company is eligible to earn a shareholder incentive through the System Efficiency: Annual MW Capacity Savings Performance-Based Incentive Mechanism in Docket Nos. 4770/4780.

2. Does the program have a component funded in other programs?
    a. Yes. Funding for the shareholder incentive for achieving Annual MW Capacity Savings is from Docket Nos. 4770/4780.

3. Does the primary purpose of the project or program fall into one of the following categories?

a. DR: local system
    i. Yes
b. DR: bulk system/transmission
    i. No
c. DG: adoption/interconnection
    i. No
d. DG: load reduction
    i. No
e. Storage: grid side
    i. No
f. Storage: customer side
    i. Yes
g. Grid Mod: physical infrastructure/grid-facing data
    i. No
h. Grid Mod: customer-facing data
    i. No
i. Electrification: vehicles
    i. No
j. Electrification: heating
    i. No

4. If the response to any of subsection c. are in the affirmative, please respond to the following:
    a. Confirm the project or program is independent from other projects and programs in the categories in c.
        i. The DR local system and customer-side storage components of the Commercial Connected Solutions Program will both contribute to the Annual MW Capacity Savings Performance-Based Incentive Mechanism in Docket Nos. 4770/4780.
    b. Explain why the spending for the categories listed above should be funded in multiple programs/dockets.
        i. Unlike the energy storage projects approved as part of Dockets Nos. 4770/4780 Amended Settlement Agreement, the Energy Storage Initiative in the 2023 Plan is a storage-enabled DR program that is focused on incentivizing the use of customer-owned behind-the-meter (BTM) storage to shift peak load at traditional end-use customer facilities. Through this energy efficiency offering, the Company is intending to test use cases for BTM, customer-owned storage, to identify all applications that are beneficial to customers and the grid and to grow a robust market.

Standardized Definitions for the 2023 Annual Energy Efficiency Plan

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 Rhode Island Energy's annual plan energy efficiency savings goals.

Market Potential Study

A Market Potential Study is a detailed assessment of the energy efficiency potential in a given market. In this Plan, the term is used in reference to the 2020 "Rhode Island Energy Efficiency Market Potential Study."[1]

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.

[1] Refer to the Market Potential Study: http://rieermc.ri.gov/wp-content/uploads/2020/06/ri-study-final-report-volume-i-main-report-2020-06-10.pdf

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. Per the Least Cost Procurement Standards, as updated in RI PUC Docket 5015, a portfolio is required to be cost-effective.

Program

A collection of defined services and/or measures carried out by Rhode Island Energy 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. Per the Least Cost Procurement Standards, as updated in RI PUC Docket 5015, a program is required to be cost-effective.

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 Group or Category

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.

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.

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

Refer to the definition above. Included in this section again to indicate that assessments can be a component of programs.

Demonstration

Refer to the definition above. Included in this section again to indicate that assessments can be a component of programs.

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 RI PUC in Docket 5023.[2]

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.

[2] RI PUC Docket 5023: http://www.ripuc.ri.gov/eventsactions/docket/5023page.html

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.