

May 15, 2020

**BY ELECTRONIC MAIL**

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

**RE: Docket 4888 – The Narragansett Electric Company d/b/a National Grid  
2019 Energy Efficiency Year-End Report**

Dear Ms. Massaro:

I have enclosed an electronic version of National Grid's<sup>1</sup> 2019 Energy Efficiency Year-End Report (Year-End Report), which summarizes the electric and natural gas results, program highlights, and customer experiences in the 2019 program year. The Company has provided a copy of the Year-End Report to the parties in this proceeding.<sup>2</sup>

The Company has included cost schedules identified as Attachments 1a and 2a as a new feature in the Year-End Report. The Rhode Island Division of Public Utilities and Carriers (Division) recommended that the Company include these attachments in the Year-End Report as a courtesy to the Rhode Island Public Utilities Commission. Since the fall of 2019, the Company collaborated with the Division to develop Attachments 1a and 2a, which provide an additional level of granularity for the spending that occurs in the Company's energy efficiency programs. This filing also includes a presentation that the Division prepared and provided to the Energy Efficiency Resource Management Council (EERMC) at the EERMC's meeting on April 30, 2020. This presentation contains additional information regarding the reasoning for the development of Attachments 1a and 2a.

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<sup>1</sup> The Narragansett Electric Company d/b/a National Grid (National Grid or Company).

<sup>2</sup> Per practice during the COVID-19 emergency period, the Company is providing a PDF version of the 2019 Energy Efficiency Year-End Report. The Company will provide the Commission Clerk with a hard copy and, if needed, additional hard copies of this filing at a later date.

Luly E. Massaro, Commission Clerk  
Docket 4888 – 2019 Energy Efficiency Year-End Report  
May 15, 2020  
Page 2 of 2

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

Sincerely,




Raquel J. Webster

cc: Docket 4888/4889 Service List  
Jon Hagopian, Esq.  
John Bell

Certificate of Service

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



\_\_\_\_\_  
Joanne M. Scanlon

May 15, 2020  
Date

**Docket No. 4888 - National Grid – 2019 Energy Efficiency Plan (EEP)**  
**Docket No. 4889 - National Grid – 2019 System Reliability Procurement**  
**Report (SRP) Service list updated 5/15/2020**

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**The Narragansett Electric Company  
d/b/a National Grid**

**2019 Energy Efficiency Year-End Report**

**May 15, 2020**



# Table of Contents

Overview .....	1
Residential Programs .....	6
Overview .....	6
EnergyWise.....	6
ENERGY STAR® Lighting.....	7
ENERGY STAR® Appliances .....	8
Home Energy Reports.....	9
Residential New Construction .....	9
High Efficiency “HVAC” (Electric and Gas) - Heating, Cooling and Hot Water .....	14
Multifamily .....	15
Residential Connected Solutions.....	16
Community Based Initiative .....	17
Rhode Island Energy Innovation Hub .....	18
Residential Energy Efficiency Education Programs .....	19
Income Eligible Services.....	20
Commercial & Industrial Programs.....	21
Overview .....	21
Large Commercial and Industrial New Construction .....	22
Large Commercial and Industrial Retrofit .....	23
Strategic Energy Management Demonstration (SEM) .....	30
Codes and Standards .....	32
Residential Pilots.....	34
Commercial and Industrial Pilots .....	36
Evaluation, Measurement and Verification Studies .....	37
New Cost Schedules.....	39
System Reliability Procurement.....	40
Financing .....	41
Rhode Island Comprehensive Marketing.....	44
Jobs Impacts.....	44
Shareholder Incentive.....	45

Attachments:

Attachment 1: Electric Summary Tables of Year-End Results

Attachment 1a: Electric Costs Schedules

Attachment 2: Gas Summary Tables of Year-End Results

Attachment 2a: Gas Costs Schedules

Attachment 3: Case Studies and Evaluation Summaries

Attachment 4: Year End Participation Memo

Attachment 5: Rhode Island 2019 Energy Efficiency Workforce Analysis Final Report

Attachment 6: DPUC Summary of Work Regarding Development of New EE Program Cost Schedules

## Overview

This Year-End report summarizes the gas and electric results, program highlights, and customer experiences during the 2019 Program Year. The electric and gas programs are described more fully in the Settlement of the Parties, filed in Docket No. 4888 on October 15, 2018 and approved by the Rhode Island Public Utilities Commission (PUC) at its open meeting on December 20, 2018.

The primary goal set forth in the 2019 Settlement of Parties was to “create energy and economic cost savings for Rhode Island consumers through energy efficiency.”<sup>1</sup> The charts below summarize the electric and gas program benefit cost ratios, savings and expenditures compared to planned benefit cost ratios, savings goals, and budgets respectively. The benefit cost ratios are far greater than 1, indicating that the Company’s programs created positive value to Rhode Island for every dollar invested in 2019. In total, the 2019 programs will create electric cost savings of \$300.6 million and gas cost savings of \$68.5<sup>2</sup> million for Rhode Island customers over the life of the installed energy efficiency measures.

In addition to cost savings, the 2019 energy efficiency programs created significant economic benefits to Rhode Island. The programs supported 877 full-time equivalent (FTE) workers in 2019. Most of the jobs created as a result of energy efficiency investments were local because they were tied to installation of equipment and other materials. In fact, of the 1,151 companies and agencies involved in National Grid’s 2019 energy efficiency programs, 71% were located in Rhode Island.<sup>3</sup> In addition, the 2019 energy efficiency programs will add over \$81.0 million to Rhode Island’s Gross State Product (GSP).

Another goal of the 2019 Plan was to achieve electric and gas savings targets established in the 2019 EE Program Plan, which were consistent with the goals established for 2019 in the 2018-2020 Three Year Least Cost Procurement Plan. The 2019 electric savings target was 194,677 MWh. At the end of the year, the Company achieved 190,159 MWh energy savings, which represents 97.7% of that goal. The achieved savings equal 2.60% of the referenced 2015 electric load. The Company also had an annual kW savings goal of 30,117 kW, and at the end of the year, it had achieved 29,595 kW savings, which represents 98.3% of that goal.

The 2019 gas savings target was 432,708 annual MMBtu. At year’s end, the Company achieved 451,466 annual MMBtu, which represents 104.3% of that goal. The achieved savings represents 1.06% of the referenced 2015 natural gas load. Detailed savings information can be found in Attachment 1, tables E-1, E-2 and Attachment 2, tables G-1 and G-2.

Additional cost and savings information can be found in Attachment 1, tables E-1 and E-3, and Attachment 2, tables G-1 and G-3.

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<sup>1</sup> Energy Efficiency Program Plan (EEPP) for 2019, Settlement of the Parties, October 15, 2019, Docket 4888, page 1.

<sup>2</sup> From Table G-2, Attachment 2, Natural Gas Benefits. Carbon value is embedded in Natural Gas Benefits.

<sup>3</sup> Guidehouse, Rhode Island 2019 Energy Efficiency Workforce Analysis Final Report, May 2019. Copy included in Attachment 5.

	2019 Goal/Benchmark <sup>4</sup>	2019 Actual <sup>5</sup>	% of Goal
<b>Electric</b>			
Annual MWh Savings	194,677	190,159	97.7%
Annual kW Savings	30,117	29,595	98.3%
Lifetime Benefits (\$Mil)	\$505.6	\$489.3	97%
RI Test Benefit/Cost Ratio	4.00	3.44	86%
<b>Gas</b>			
Annual MMBtu	432,708	451,466	104.3%
Lifetime Benefits (\$Mil)	\$114.8	\$115.7	100.8%
RI Test Benefit/Cost Ratio	2.70	2.66	99%
	<b>2019 Budget (\$Mil)<sup>6</sup></b>	<b>2019 Actual (\$Mil)<sup>7</sup></b>	<b>% of Goal</b>
<b>Electric</b>			
Total Expenditures <sup>8</sup>	\$107.5	\$107.3	100%
Total Implementation Expenses <sup>9</sup>	\$102.6	\$104.1	101%
<b>Gas</b>			
Total Expenditures	\$31.6	\$31.7	100%
Total Implementation Expenses	\$30.1	\$30.1	100%

A few key factors helped to drive strong performance in the electric and gas portfolios towards their electric and gas annual energy savings goals. On the electric side, the transformation of the residential LED market continued, contributing to the non-income eligible residential sector's strong performance above goal. On the gas side, the strong performance across all sectors was driven by programs including: Energy Star® HVAC, EnergyWise, Income Eligible Multifamily, and Large Commercial New Construction.

In 2019, the Residential and Commercial ConnectedSolutions active demand response programs were launched. The Residential ConnectedSolutions program exceeded its annual active demand response goal, achieving 1.88MW of active demand response reduction, driven in part by enrolling over 3,100 thermostats. The Commercial ConnectedSolutions program also saw strong performance, achieving 31.5MW of active demand response reduction over the summer through 115 customer accounts. Active Demand Reduction goals have been increased in 2020 for both the Residential and Commercial ConnectedSolutions programs.

The energy savings achieved as part of the 2019 Plan provided a meaningful contribution to Rhode Island's electricity needs. Since 2007, energy efficiency has saved over 10.1 million MWh at a cost lower than the cost of supply. As shown in Figure 1 below, these savings accumulate over the average ten-year lifetime

<sup>4</sup>See 2019 EEPP Settlement of the Parties, Docket No. 4888.

<sup>5</sup>Actual savings in 2019.

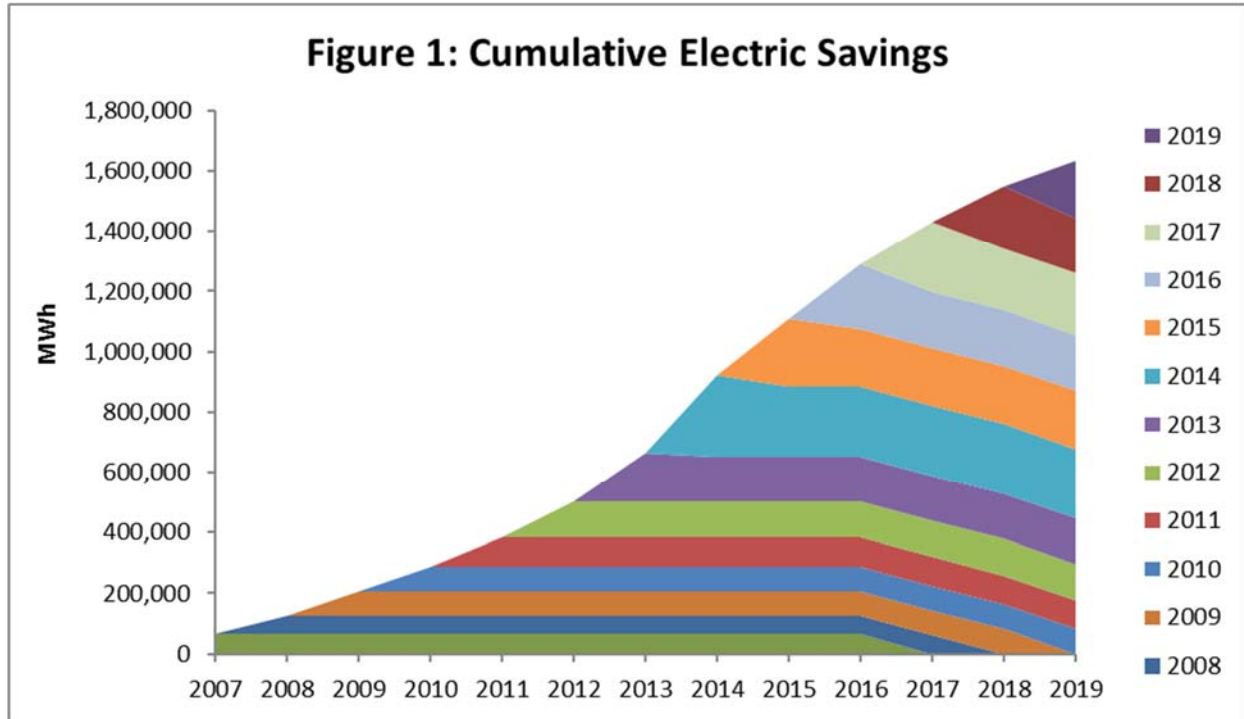
<sup>6</sup>See 2019 EEPP Settlement of the Parties, Docket No. 4888.

<sup>7</sup>Actual spend in 2019.

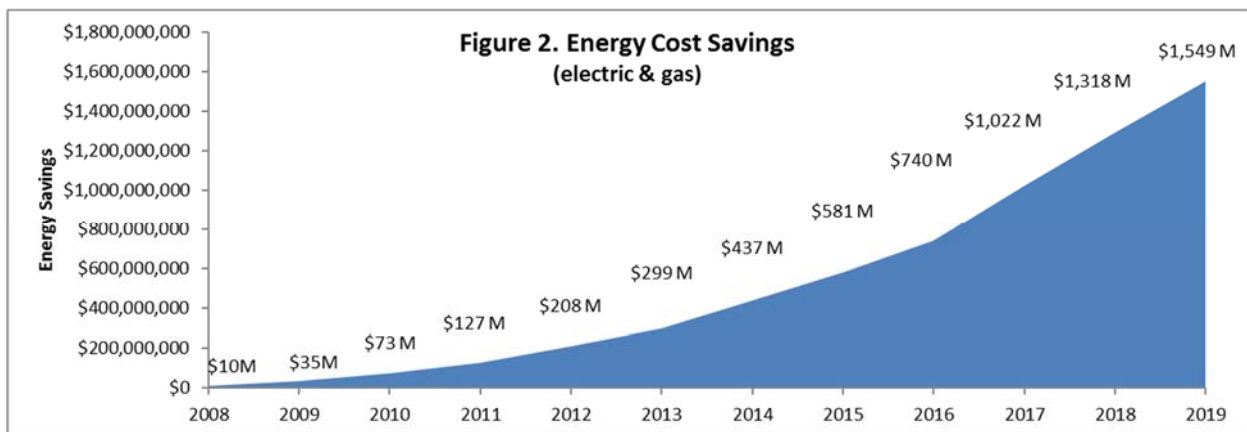
<sup>8</sup>Includes implementation costs, EERMC and OER costs, and shareholder incentive.

<sup>9</sup>Includes all program-related expenses, i.e. incentives, administration and general expenses, marketing, sales, technical assistance, evaluation, and training. Also includes Finance Costs (which include payments to the Rhode Island Infrastructure Bank (RIIB)) as detailed in Tables E-3 and G-3 in this report.

of the installed measures. The only exception is the savings from Home Energy Reports. This program only has a one-year measure life and is counted as such in Figure 1. At the end of 2019, the cumulative energy savings met 18% of Rhode Island’s electric load.



Since 2008, natural gas energy efficiency programs have also created significant cumulative savings. From 2008 to 2019, over 18.4 million MMBTUs of natural gas were saved. The combination of electric and natural gas savings, procured at a cost that is less than the cost of supply, has created significant savings for customers. As shown in Figure 2, cumulative electric and natural gas savings since 2008 have saved Rhode Islanders \$1.54 billion in energy costs.



To achieve the 2019 energy savings goals, the Company focused on four strategies initially introduced in the 2018-2020 Energy Efficiency and System Reliability Procurement Plan (Three-Year Plan) in Docket

4684. Below are highlights from the implementation of these four strategies. Details on these strategies, other programs, and initiatives are found in subsequent sections of this Year-End Report.

The first strategy was focused on the “Customer.” By focusing first and foremost on the needs of the customer in all segments, the Company sought to provide services that would enable customers to control their energy usage, reduce their bills, and help support their financial well-being. For example, the ENERGY STAR® Partner of the Year award-winning EnergyWise program introduced a 100% weatherization incentive provided to landlords which resulted in increased participation with both assessments and weatherization. The Energywise program also developed a process to transfer customers interested in EnergyWise from the National Grid customer service center directly to a program scheduler to arrange for a home energy assessment appointment and the program launched online home energy assessments in the fourth quarter of 2019. Further focusing on the customer, the Home Energy Reports program developed a new six-month experience for the highest electric users that received electronic HERs in order to keep customers engaged who may often use more than their neighbors. The goal of the campaign was to provide smaller, more achievable goals that would allow them to change their energy “rank” within their neighborhood one step at a time. Customers would then see their monthly progress in the target rank emailed version of the HER. On the Commercial side, the Company’s New Construction program is focused on addressing energy efficiency in the concept or early stages of the project to maximize the energy savings. Examples of this can be seen in the Accelerated Performance initiative. Although the initiative was launched in 2018, the Company continues to build off its success and engage developers and building owners early in the project process by establishing Energy Use Intensity goals before a request for proposal was issued to a design team. This proactive approach to energy efficiency enabled deeper savings for new construction projects

The second strategy was “Least Cost”, which seeks to deliver energy efficiency services as cost-effectively as possible through optimizing finance and promoting upstream initiatives. Examples of promoting cost efficiency included leveraging numerous financial tools including On Bill Repayment (OBR), Heat Loans, the Efficient Building Fund (EBF), taking advantage of LEDs below \$1/bulb, and enhancing code trainings. Blending a focus on the customer with the strategic focus on delivering services as cost efficiently as possible, the Company also worked with the Capital Good Fund (CGF) which provides financing to customers with less than perfect credit. In 2019, there were 910 loans processed totaling approximately \$5.6 million in project costs.

The third strategy was focusing on the “Environment.” Maximizing energy efficiency savings provides the greatest contribution to reducing Rhode Island’s greenhouse gas emissions and contributing to the State’s clean energy policy goals. As a part of these efforts, there were several actions taken in 2019 which contributed to greenhouse gas reductions. The HVAC Electric program completed the first full year of offering energy efficient electric heating with air source heat pumps for partial or full displacement of oil/propane/electric resistance heat in a total of 533 homes. In the Residential New Construction program, 2019 continued to see a higher than planned number of non-gas heated homes. Several large developers chose to install heat pumps instead of gas heat systems. 62% of completed units were heated by electric air source heap pumps, and 28% heated by gas. In total, the electricity, delivered fuel, and

natural gas savings delivered by the 2019 Plan save over 1,108,436 tons of carbon over the life of the installed measures.

“Innovation” was the final strategy pursued in 2019. Continually innovating to capture energy efficiency savings from new technologies and program process improvements is critical to the long-term sustainability of the Company’s nation-leading energy efficiency programs. As such, the Company pursued several areas to pave the way for future energy savings while seeking integration with energy efficiency, demand response, and renewable energy. In 2019, the Residential New Construction Program supported the State’s first zero energy ready neighborhood project – Wynfield Place – consisting of three triplex units in Warwick, RI and the “Sheridan Small Homes” Passive House community in Olneyville, RI – designed by graduate students from Rhode Island School of Design (RISD) and ONE Neighborhood Builders. Sheridan Small Homes is intended to be used as prototype for Passive House housing units infill areas. In 2019, the Company also successfully launched the Residential and Commercial ConnectedSolutions active demand response programs whereby customers reduced their A/C setpoint at certain hours during the summer to reduce demand. This launch represented the successful culmination of a thorough pilot process and will deliver millions of dollars in energy benefits to Rhode Island customers into the future.

The following sections in this report outline the different programs and initiatives that comprised the 2019 Rhode Island Energy Efficiency Electric and Gas Portfolios and focuses on many of the highlights therein.



# Residential Programs

## Overview

In 2019, the residential sector was cost-effective with RI Test benefit cost (B/C) ratios of 2.68 for electric programs and 2.27 for gas programs. The Company spent 95.9% of the electric residential implementation budget, achieved 103.1% of electric targeted annual energy savings, and achieved 105.4% of electric targeted annual demand savings. The Company spent 101.6% of the gas residential implementation budget and achieved 102.9% of gas targeted annual energy savings. Additional details on spending and savings by program can be found in Attachment 1, tables E-1, E-2, E-3 and Attachment 2, tables G-1, G-2 and G-3.

## EnergyWise

*EnergyWise* is a direct-to-customer in-home program that educates residents on how their home can become more energy efficient. This program works with single family customers of one-to-four-unit buildings in a two-pronged approach. During the initial visit, known as the home energy assessment, energy specialists spend two-to-three hours educating the customer about their home's performance. A comprehensive, whole-house approach is taken where the major energy components of a home are assessed for age and performance and the interactions between systems are explained. Rhode Island customers benefit from two-person assessments. During the two-person assessment, one staff member focuses on upgrading instant-savings opportunities such as installation of energy efficient lighting, pipe insulation, efficient water savings devices, and advanced power strips. The second assessment team member is dedicated to learning about the customer's concerns with their home such as high energy usage, drafty areas, or cold rooms. The specialist then brings the customer through the home identifying opportunities to improve the systems (heating, water heating, and appliances) and building envelope, the exterior structure of the residence where air leakage can occur and educates them on how these improvements will improve household comfort while saving on energy bills. Information about the home's heating fuel source, age of systems, solar system feasibility, and central air conditioning with smart thermostat controls or opportunities for smart thermostat controls are captured to leverage other efficiency programs. At the completion of the assessment, the customer receives an Energy Action Plan that indicates additional energy savings opportunities and any incentives or financing that are available towards the energy efficiency upgrades. The two-person team minimizes the length of time at the customer home with a dedicated specialist focused on answering a customer's questions and educating them about their home's energy use.

Customers that proceed to the next phase of *EnergyWise* receive weatherization upgrades. These improvements seal areas where unconditioned air leaks into the home and conditioned air leaks out, and increase insulation in the walls, attic, and basement areas as needed. Weatherization brings a noticeable difference in the comfort level of a customer's home if the residence was previously drafty or lacking in insulation. This upgrade also provides efficiency savings for the next twenty years regardless of who occupies the residence. Homeowners that complete weatherization upgrades improve comfort while saving money on energy costs.

## Overview of Performance

2019 was an excellent year for the EnergyWise program. While efficient lighting upgrade opportunities were not as prevalent as planned, an increase in customer participation led to energy savings above goals. Delivered fuel customers received parity in incentive levels in 2019 and electric customers received a limited enhanced weatherization incentive to increase electric savings. Over 12,500 customers received home energy assessments and approximately 5,000 customers proceeded with weatherization. 913 customers financed energy efficiency upgrades with the 0% Heat Loan totaling \$5.6 million in improvements.

## Highlights

In 2019, EnergyWise was awarded the Sustained Excellence, ENERGY STAR® Partner of the Year award for Energy Efficiency Program Deliver by the U.S. Environmental Protection Agency and the Department of Energy for the third consecutive year. Seventeen Independent Insulation Contractors also received the Century Club Award from ENERGY STAR® for completing 100 or more weatherization projects during 2018. Rhode Island is a recognized leader in protecting the environment through energy efficiency and for the outstanding quality control process that customers receive in Rhode Island.

In 2019, the program also had the following enhancements:

- Weatherization incentives offered at parity for all National Grid customers regardless of heating fuel.
- 100% weatherization incentive provided to EnergyWise landlords, which resulted in increased participation with both assessments and weatherization.
- Online home energy assessments launched in the fourth quarter of 2019.
- Developed a process to transfer customers interested in EnergyWise from the National Grid customer service center directly to a program scheduler to arrange for a home energy assessment appointment.
- Referral of candidates for electrification of heat to HVAC program.

## ENERGY STAR® Lighting

The successful transformation of the Rhode Island residential lighting market has been supported by the efforts of Rhode Island's ENERGY STAR® Lighting Program. Since 2017, when the program exclusively provided incentives to light emitting diode (LED) technology, Rhode Island customers have responded positively by purchasing these bulbs in high volume from retailers, via flash sale promotions, at a pop-up retailer, and through other specialized channels such as direct sales with students in the School Fundraiser campaigns or through receiving free bulbs at local food banks. The program, in conjunction with the ENERGY STAR Appliances program, provides considerable retailer support with training of qualified products, in-store education events for customers, retailer verification of program signage, and online training of products and promotions. The majority of lighting products in 2019 were sold at Rhode Island retailers through upstream buydowns between lighting manufacturers and the retailer that lower shelf prices for customers. The Lighting Program's goal to provide affordable and accessible efficient lighting is

paired with providing education so consumers select a lighting product that meets their needs and expectations.

### **Overview of Performance**

In 2019, the program focused on supporting local retailers and promoted short-term lighting promotions that were available at local stores. Activities were also supported with online flash sales through a refreshed National Grid marketplace. The ENERGY STAR® Lighting program achieved 106.8% of the savings goal while reaching over 314,000 participants.

### **Highlights**

2019 highlighted customers' preference for LEDs over other types of lighting purchases with strong performance of the program's lighting products. A goal of the year was to educate customers that attractive pricing for LEDs was supported by the energy efficiency charge on the electric bill and to assist customers on finding available products at their local retail stores. Even with the LED market well established, new products continue to enter the market that align with customer preferences. These products include decorative products where the customer can see the lighting filament in a bulb and smart bulbs that are controllable with smart phones. The broad range and availability of lighting products is another indicator that market transformation of this industry is occurring. Linear LEDs was a new program product added in 2019.

### **ENERGY STAR® Appliances**

In 2019, the ENERGY STAR® Appliances (also referred to as Residential Consumer Products) program focused on efficient dehumidifiers, dryers, room air cleaners, room air conditioners, pool pumps, advanced power strips, refrigerator and freezer recycling, dehumidifier recycling, Low-E storm windows, and efficient shower heads. This program works in tandem with ENERGY STAR® Lighting by leveraging resources with in-store retailer visits and social media campaigns when appropriate. An online training platform is used within this program and ENERGY STAR Lighting to train retail sales staff about products and functions as a critical resource for retailers when there are numerous products and features associated with different appliances.

### **Overview of Performance**

The ENERGY STAR® Appliances program reached 132% of its savings goal while serving over 31,600 participants.

### **Highlights**

The ENERGY STAR® Appliances program had a successful year with strong performance in dehumidifier incentives and recycling, dryer, room air cleaners, room air conditioner, and Tier 2 advanced power strip incentives, and the mid-stream pool pump initiative. Flash sales of advanced power strips, dehumidifiers, and room air conditioners performed well. The humid summer also supported sales of dehumidifiers in the state. Monthly consumer outreach tables were staffed in different retailer locations throughout the year to engage with customers during their everyday shopping experience and to promote energy efficiency.

In 2019 the program also had the following enhancements:

- Developed a relationship with The Home Depot to promote refrigerator and freezer recycling through the ENERGY STAR® Appliances program.
- Added Low-E Storm window incentives in 2019. Established a promotion with Humphrey's Window and Door Design Gallery in Middletown.

## Home Energy Reports

In its seventh year running, the Rhode Island Home Energy Reports (HER) program continues to encourage 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. 314,682 Rhode Island customers received reports in 2019.

### Overview of Performance

In 2019, the HER program saved customers 24,938 MWh and 111,117 MMBtu, reaching 103% and 96.2% of the company's electric and gas annual energy goals, respectively. The reports not only provide valuable energy efficiency savings tips, but also brings awareness to other energy efficiency offerings.

### Highlights

In 2019, Rhode Island continued to be a leader in behavioral energy efficiency innovation and customer engagement. National Grid provided Non-AMI High Bill Alerts for customers year-round and ran a Target Rank Campaign.

- **Email Non-AMI High Bill Alerts:** Rhode Island sent High Bill Alerts to customers only when it appeared their account may be on track for a higher bill based on factors such as past usage and current weather conditions. A module for customers on low income rate codes received additional program information available to them through National Grid.
- **Target Rank Campaign:** A new six-month experience was developed for the highest electric users that received electronic HERs. The goal of the campaign was to provide smaller, more achievable goals that would allow them to change their neighborhood rank. Customers would see their monthly progress in the target rank eHER.

## Residential New Construction

The Rhode Island Residential New Construction (RNC) program benefits new construction and major renovation of single-family and multi-family homes for market rate and income eligible customers. The program elements include educational outreach, energy modeling & design assistance, in-field technical assistance, insulation and air sealing inspection, third-party blower door and duct blaster testing (building performance testing), installation of ENERGY STAR® bulbs and WaterSense® showerheads, a HERS (Home Energy Rating System) Index rating, energy performance-based incentives, optional ENERGY STAR® Homes verification for projects seeking the EPA label, support for projects seeking additional certifications such as DOE Zero Energy Ready, Passive House/PHIUS, LEED-H and Living Building Challenge.

All projects completed in 2019 were held to the 2017 baseline. Due to the stringency of the 2017 baseline, RNC representatives continued to host technical trainings and work closely with participants to determine and achieve the energy savings opportunities of their project.

The 2018 four-tiered incentive structure for savings over the 2017 Baseline was continued in 2019 with performance levels matching those of 2018.

2018 Tiers	Savings Over 2017 Baseline	2019 Tiers	Savings Over 2017 Baseline
Tier 1	15 – 24%	Tier 1	15 – 24%
Tier 2	25 – 34%	Tier 2	25 – 34%
Tier 3	35 - 44%	Tier 3	35 - 44%
Tier 4	45%	Tier 4	45%

### Overview of Performance

In 2019, the RNC program team continued to work with contractors and homeowners to effectively communicate and achieve the strategies for creating energy efficient homes that exceed the 2017 User Defined Reference home baseline.

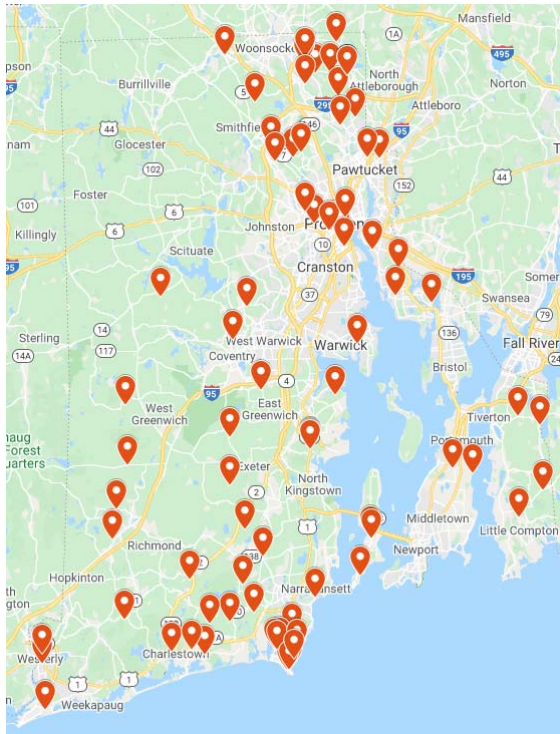
The 2019 RNC program achieved 873 annual MWh of electric savings (115% of its electric savings goal) and 3,499 annual MMBtu of gas savings (74% of its gas savings goal) by completing 639 projects. The program’s overperformance in electric savings and underperformance in gas savings can be attributed to customers choosing high efficiency electric heat instead of gas heat. 2019 metrics indicate that only 38% of completed projects have gas heat compared to 90% of new homes using gas heat just a few years ago. This trend for high efficiency electrically heated homes is expected to continue in the years to come and supports the State’s Greenhouse Gas goals.

The majority (69%) of projects achieved Tier I savings over the program baseline. This is due to the more stringent 2017 baseline that is currently in place for the program. In the past, prior to the adoption of the 2017 baseline, many of these homes would have achieved >25% savings.

### 2019 Completed Projects by Tier

Tiers	2019 Goal	2019 Total
Code Plus	145	29
Tier 1 15-24% savings*	116	440
Tier 2 25-34% savings*	130	155
Tier 3 35 - 44% savings*	35	12
Tier 4 45+%	24	3

\* Based on the 2017 User Defined Reference home



Locations of homes completed in the RNC program in 2019

## Highlights

2019 continued to see a higher than planned number of non-gas heated homes. Several large developers chose to install heat pumps instead of gas heat systems. 62% of completed units were heated by electric air source heat pumps, and 28% heated by gas.

Training and tours continue to be an important element of the RNC program as tools continue to build the energy efficiency workforce and to demonstrate that high efficiency homes are achievable.

- Zero Energy Homes Training. A group of 23 builders, architects, code officials and energy specialists attended the training and afterward toured a single-family zero net energy (ZNE) home being constructed by DeMetrick Housewrights.
- Residential Envelope and Building Science Training. A group of 18 attendees, including 10 students from YouthBuild attended the training and afterward toured a 30-unit energy efficient affordable housing unit (8,000+ sq.ft.) and a retail grocery space complex in the formerly abandoned Louttit Laundry.
- HERS Rater Training. Training, certification and mentoring of Rhode Island based individuals and companies will facilitate the successful transition to a fully open-rater program model in which Rhode Islanders can compete effectively with experienced HERS raters from surrounding states. This effort has resulted in the addition of two Rhode Island companies that have fully certified HERS Raters on staff.



*Pictured: Students in Providence with CCEI's Jeremy Dagold (in front)*



*Pictured: Dave DiResto, Energy Geeks Rating Field Inspector (RFI)*



Developers and students in RI are recognizing the importance of the clean energy future and the role residential new construction has in that future. In 2019, the RNC Program supported the first zero energy ready neighborhood project – Wynfield Place – consisting of three triplex units in Warwick, RI and the “Sheridan Small Homes” Passive House community in Olneyville, RI – designed by graduate students from Rhode Island School of Design (RISD) and ONE Neighborhood Builders. Sheridan Small Homes is intended to be used as prototype for Passive House housing units in fill areas.



*Pictured: First of the nine Wynfield Place homes. Grand Opening was December 2019.*

Two out of the five awards for Outstanding Smart Growth Projects, presented at 2019 RI Smart Growth Awards, were projects enrolled in the RNC Program: 60 King Street, Providence – a 60-unit all-electric mixed housing renovation, (revitalization of the former Imperial Knife Co. factory) and the Greenridge Commons in Burrillville - a 96-unit affordable rental housing development.

The RNC Program worked in collaboration with the RI Office of Energy Resources and the RI Housing to issue and award the Zero Energy for the Ocean State (ZEOS) Request for Proposal (RFP). The RFP awarded \$675K across three project teams to design and construct affordable energy efficient Zero Energy housing units for low and moderate-income residents in Rhode Island. RI Housing and Office of Energy Resources (OER) are leading the effort, with National Grid providing support through the RNC Program.

Significant renovation and rehabilitation efforts continued throughout Rhode Island, many of which involve converting abandoned mill and factory buildings into residences. While several adaptive reuse projects representing hundreds of units have participated in National Grid’s RNC program to date, many of these types of projects want to preserve their historic characteristics, which can make it challenging for them to meet certain RNC program specifications. The decision to convert these types of buildings from one use to another presents a critical opportunity during the life of the building during which design and construction choices can have a major impact on energy efficiency. Due to the inherent complexity of these structures and the potential constraints, RNC applies a set of prescriptive options specifically for these types of buildings with a related tiered incentive structure based on energy savings.



## High Efficiency “HVAC” (Electric and Gas) - Heating, Cooling and Hot Water

The Residential High-Efficiency Heating, Cooling, and Hot Water Programs (electric and gas) are available to all residential customers by offering incentives on high-efficiency equipment, controls, and equipment maintenance. The Programs provide contractor training and incentives to ensure best practices are established and followed for proper equipment sizing, quality installation verification and distribution system improvements.<sup>10</sup> Energy efficient heating, cooling and hot water equipment must be installed by a licensed heating contractor or plumber to allow a customer to be eligible for the incentive.

### Overview of Performance

In 2019, the High-Efficiency Heating, Cooling and Hot Water Programs saved customers 2,406 annual MWh and 35,011 MMBtu, reaching 89% and 125% of the company’s electric and gas goals, respectively. Over 9,000 Rhode Island customers participated in the High-Efficiency Heating and Cooling Program (also referred to as the EnergyStar HVAC program) in 2019.

The program’s lead vendor maintained strong relationships throughout the year with trade allies. Field and outreach support, as well as contractor trainings, were offered to expand on efforts to promote quality installations best practices. Rebate forms and summary sheets were distributed at supply houses and networking events to ensure HVAC industry partners were able to communicate program offerings to their customers. Many HVAC contractors that participate in the HVACs program had booths at the 2019 RI Home Show and promoted the HVAC Programs – a great collaboration to drive awareness and participation in the program.

In the first full-year of implementation, the electrification of heat program – oil/propane/electric resistance to air source heat pumps (ASHPs) – demonstrated tremendous growth through contractor training, technical support, enhanced incentives and coordination through the EnergyWise program.

### Highlights

- The two Annual RI Trade Ally Heating and Cooling Meeting had the largest attendance in history, with over 50% increase compared to 2018.
- A new consolidated 4-hour “HVAC Check” session, offered in combination with an online 1-hour airflow video, was developed to provide a streamlined approach for HVAC Technicians to get certified in AC Check and Mini Split Check. Training classes were offered at various locations around the state.

Training Type	# of Sessions	# of HVAC Companies	# of Approved Contractors
AC and MS Check	10	60	103

- In 2019, National Grid continued to build the market for the high efficiency electric heat program with enhanced incentives for customers to fully or partially displace their oil/propane or electric heat system with Air Source Heat Pumps (AHSP). AHSPs provided retrofit customers with energy

<sup>10</sup> Residential programs do not promote or fund fuel switching. It is only after a customer decides to switch to natural gas that they are eligible for an energy efficiency rebate. At the time the customer switches from another fuel to natural gas, they become eligible for an energy efficiency incentive that covers part of the incremental cost of higher efficiency gas equipment.

efficient space heating (and cooling) solutions. In addition, incentives were available for Integrated Controls to effectively and efficiently prioritize the use of the ASHP as the primary heating source and calling on the oil or propane systems when back up is needed. The electric heat program requires a completed EnergyWise assessment and completed weatherization measures. Customers were also able to apply for 0% financing for up to \$15k over 7 years through the Heat Loan program to help offset the cost of the ASHP system. Since the Rhode Island Heat Pump (Fuel Optimization) initiative began in late 2018 the following achievements were made.

- 10 HVAC Check trainings focused on proper ASHP equipment sizing and selection, installation guidelines, integrated control specifications and homeowner education resulting in 103 contractors being added to the list of Approved Contractors to ensure that ASHP savings are sized accurately, installed correctly, and the equipment is working properly.
- 684 rebates processed (over \$1.63M in rebates), for partial or full displacement of oil/propane/electric resistance heat in a total of 533 homes (506 of which have oil or propane heat).
- 174 fuel optimization loans totaling over \$1.9M (average \$11,000 loan)
- Indirect water heaters were re-introduced to the program to provide customers with another option for energy efficient water heating.
- Heat Pump Water Heaters were positioned to contribute a significant amount of savings to the electric HVAC program in 2019 through promotion of the equipment through upstream channels and the National Grid Marketplace. However, the anticipated participation through these opportunities did not come to fruition due to customers not hiring licensed plumbers or contractors making them ineligible for the HPWH incentive.
- National Grid Marketplace (Ngrid.com/shop) was updated to include instant rebates on smart thermostats, water saving devices and heat pump water heaters.
- 0% financing loans for approved electric and gas HVAC equipment support customers' ability to move forward with energy efficiency upgrades remained available in 2019.

## **Multifamily**

The Rhode Island Multifamily Retrofit program serves market rate and income eligible gas and electric customers as well as commercial gas customers.

### **Overview of Performance**

The Market Rate Multifamily Retrofit program achieved 33% of the electric goal and 91% of the gas goal. The Income Eligible Multifamily Retrofit program achieved 63% of the electric goal and 115% of the gas goal. The C&I Multifamily Gas program had a good year finishing at 101% of goal.

Broadly speaking, the multifamily program performed adequately for the gas goals by identifying numerous opportunities for heating boilers, air sealing, and insulation. In contrast, the income eligible and market rate multifamily areas saw significant underperformance in meeting their electric goals in large part due to continued declines in opportunities for lighting savings, which historically have made up a significant portion of the program's electric savings goals.

The program served a wide audience, with over 1/3 of the all facilities served being complexes with less than 20 dwellings. Of the 353 complexes served in 2019, 216 were apartment complexes and 137 were condominium complexes. In addition, 11 of the facilities served utilized oil, propane or kerosene heating, and their participation in the program contributed to a reduction in fossil fuel usage for heating these facilities.

## **Highlights**

### Targeted Landlord Marketing Campaign:

To boost participation, the program engaged in a “See the Possibilities” marketing campaign targeted at multifamily landlords. This included targeted emails, online banners, and print ads in the Multifamily Executive and NE Real Estate Journal.

### Achieved the program’s 2019 Air Source Heat Pump goal.

The Income Eligible Multifamily program achieved its 2019 goal for Air Source Heat Pump Installations, installing 76 Air Source Heat Pumps in three separate multifamily facilities. For 2020, the multifamily programs have increase their annual electric resistance ASHP goal from 75 in 2019 to 175 in 2020, including a goal of 50 electric resistance ASHPs at market rate multifamily facilities.

## **Residential Connected Solutions**

Connected Solutions is National Grid’s demand reduction program that uses electric active demand reduction strategies to reduce peak electrical demand periods throughout the year. Consumers with eligible controllable equipment can enroll to participate in active demand reduction while all consumers can participate in behavioral demand response. 2019 was the first year that Connected Solutions operated as a program rather than as a pilot.

### **Overview of Performance**

#### Thermostats:

In 2019 over 3,100 residential thermostats were enrolled in this program. The thermostat component 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. Over the course of 12 events this summer, thermostat customers delivered an average of 1.8MW of active demand response curtailment.

#### Batteries:

This is the first year the Company has offered a residential battery-enabled demand response program and fifteen customers enrolled. The customers’ batteries are set to discharge during peak times, reducing load on the grid. Incentives are paid based on the performance of their batteries during peak events. The performance-based approach incentivizes customers and vendors to design, install, and maintain systems that can maximize their discharge for a 2 to 3-hour duration demand response events. Batteries

experienced over 27 events this summer and delivered an average 0.08MW of demand response per event.

#### Behavioral Demand Response:

Starting in the summer of 2018, the Company has sent out emails to all residential and small/medium business customers with an email on file asking them to decrease their electric use on peak times during peak days. In Early 2020, the Company received results from an evaluation that showed there were no measurable savings from behavioral demand response. The Company is not planning on continuing this component in 2020.

### **Community Based Initiative**

In 2019, the Community Initiative engaged the largest number of municipalities since the program's inception, launching campaigns in five municipalities. The cities and towns of Gloucester, Westerly, Portsmouth, Middletown and Newport all participated in the initiative. Specified metrics were again set for these new participants including residential energy assessment goals, weatherization jobs, Wi-Fi thermostats, Small Business projects, homes converted to mini-split heat pumps, and refrigerators recycled. New for 2019, the program also set goals for demand response program participation. All communities had great success and surpassed their stretch goals for home energy assessments, a 25% increase over the prior year's participation, along with many other goals.

The participating communities, along with the Company, engaged residents and small businesses beginning in the summer and running through December. Custom marketing materials were created, along with social media and webpage postings, and letters from municipal leadership. Local events were attended by Company vendors to enroll customers in the EnergyWise home energy assessment program. For small business customers in the communities of Westerly and Newport, the Company and its vendor created a "Main Street" approach, whereby local businesses, on select days, received no cost direct install measures at their place of business and an opportunity for greater measure installations in the near future.

**Top tips for making a positive impact.** nationalgrid

National Grid and Portsmouth can help. Get started with a no-cost home energy assessment. An Energy Specialist will do a complete checkup of your home and recommend ways you can use less energy and keep your home comfortable.

**Help Portsmouth meet its 2019 goals:**

263	Residential energy assessments
148	Wi-Fi thermostats installed
118	Air sealing and insulation projects
120	Refrigerators recycled
5	Homes converted to air source heat pumps
19	Small business projects

Schedule your no-cost Home Energy Assessment today. Visit [myngrid.com/energywise](http://myngrid.com/energywise) or call 1-888-633-7947.

**You may also be eligible for:**

-  **At least 75% off approved insulation improvements up to \$4,000**
-  **No-cost LED light bulbs, faucet aerators, and showerheads**
-  **Rebates and financing available for mini-split heat pumps**
-  **No-cost targeted air sealing**
-  **No-cost recycling of a fridge or freezer, plus a \$50 reward**
-  **Save up to \$75 on a Wi-Fi programmable thermostat**
-  **0% interest heat loan**

These programs are funded by the energy efficiency charge on all customers' gas and electric bills, in accordance with Rhode Island law. ©2019 National Grid. EE7647 (7/19) **We also offer no-cost assessments and other energy-saving solutions for small businesses.**

*Pictured: Marketing material from the Portsmouth Community Initiative*

**Rhode Island Energy Innovation Hub**


The Energy Innovation Hub (Hub) is a community engagement destination designed to provide a hands-on opportunity for customers to learn about energy efficiency, renewable technologies, electric vehicles, state energy goals, and a vision for a clean energy future. The Hub content, and knowledgeable staff, provide information to customers to empower them to take action to reduce their energy use, adopt smart technologies and learn about renewable power and electric vehicles. The space and its exhibits showcase: (a) energy solutions accessible to all customers; (b) innovative advancements for system reliability; and (c) a vision of a sustainable energy future. Visitors learn about technologies available to create smart, energy-efficient homes and businesses, renewable technologies, demand response, electric

vehicles, storm management, and core services that the Company provides. In 2019, the Energy Innovation Hub hosted 1,376 customers via on-site meetings, trainings, tours, events and walk-in customers.

## Residential Energy Efficiency Education Programs

In 2019, National Grid supported two trainings with the National Energy Education Development (NEED) Project. A summary of the trainings follows.

**nationalgrid**




**IMPACT**

At least **6,113** students expected to be reached

**50** workshop attendees

Workshop attendees from **35** different schools in **15** different cities



*Workshop attendees' school location*

# 2019 RHODE ISLAND WORKSHOP DATA

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**WORKSHOP DATES**

3/12/19 · Providence, RI  
11/13/19 · Providence, RI

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**WORKSHOP HIGHLIGHTS**

**3/12/19**

- > 9 evaluation responses
- > At least 1,234 students expected to be reached utilizing curriculum and materials presented at the workshop
- > Majority of attendees teach grades 3-5 (78%)
- > 67% had not attended an energy training program before this workshop
- > 100% agree the workshop increased their energy knowledge and will allow them to increase their students' energy knowledge
- > Energy-themed posttest scores reflect a 75% increase in knowledge gain

**11/13/19**

- > 38 evaluation responses
- > At least 4,879 students expected to be reached utilizing materials provided from the workshop
- > 97% of attendees agree the workshop increased their energy knowledge
- > 100% agree the workshop will allow them to increase their students' energy knowledge
- > Energy-themed posttest scores reflect a 35% increase in knowledge gain

## Income Eligible Services

The Income Eligible Services (IES) program helps reduce electricity and heating costs for residential income eligible customers without any financial obligation from the customer. Income Eligible Services are delivered by Rhode Island's six local Community Action Program (CAP) agencies. The IES Program serves the following customers: homeowners and renters who live in a 1 – 4 dwelling unit building that is heated with electricity, natural gas, oil, wood, coal, or propane; have a household income equal to, or less than, 60% of Rhode Island's State Median Income Levels which are set each program year or enrolled in National Grid's fuel discount rate plans, Electric A-60 rate and/or Gas 11, 13 rates; and customers enrolled in the Low-Income Home Energy Assistance Program (LIHEAP), also known as "fuel assistance. Services offered to Income Eligible Customers include (1) an energy assessment of lighting, appliances, and behavior to determine baseline consumption and potential replacement if applicable, (2) an inspection of existing insulation to identify opportunities for weatherization, and (3) a safety and energy efficiency inspection of the customer's heating/cooling system for potential replacement if eligible. All customers receive all services and equipment upgrades at no cost.

### Overview of Performance

In 2019, the IES program conducted nearly 2,900 energy assessments, and replaced an unprecedented amount of inefficient air conditioners. 2019 was the first full year of the heating electrification program to replace electric resistance or displace oil or propane heating sources with high-efficiency Cold Climate Air Source Heat Pump heating solutions. 12 homes were upgraded from electric resistance to the high efficiency ASHPs which will save customers money. A Process Evaluation was conducted on the IES Program resulting in recommendations for improving the current delivery of the IES program delivery. These recommendations will be implemented in 2020. A Standardization Group was formed to assess the current, and future, state of the RI WAP/IES program to continually improve standardization across RI CAPs. Overall, in 2019, IES achieved 78% of the electric annual energy goal, and the 78% of the gas annual energy goal. 2019 electric savings were lower than expected due to fewer opportunities to replace inefficient light bulbs and appliances and insufficient auditor staffing to meet the goals.

### Income Eligible Program/WAP Collaborative

National Grid's Income Eligible Services are administered along with related and complementary federal, state, and local programs in collaboration with Rhode Island Department of Human Services (DHS), the CAP agencies, and other local agencies. The alignment of IES with these programs allows a leveraging of funds to provide energy services to income eligible customers in Rhode Island. The leveraging of funds, and coordination between the programs listed below, allows more customers to receive comprehensive energy assessments of appliances, weatherization, and heating systems.

- **Low Income Home Energy Assistance Program (LIHEAP)** The Low-Income Home Energy Assistance Program (LIHEAP) block grant is funded through the U.S. Department of Health and Human Services. LIHEAP funds assist income eligible households in meeting the increasing costs of home energy and reduce the severity of any energy-related crisis. Rhode Island's LIHEAP is administered by the Rhode Island Department of Human Services (DHS) Individual and Family Support/Community Services Division. LIHEAP intake and outreach is provided by the six local CAP

agencies. Households are determined eligible for LIHEAP assistance according to income guidelines established by DHS.

- When customers inquire about, or apply for, LIHEAP assistance, the CAP agencies also provide information about the Income Eligible Energy Efficiency Services to help customers to reduce their energy consumption and energy costs.
- LIHEAP funds are leveraged with the IES program funds to provide weatherization and heating system replacements.
- **Weatherization Assistance Program.** The Weatherization Assistance Program (WAP) enables income eligible families to reduce their energy bills (and helps LIHEAP funds go farther) by making their homes more energy efficient, while addressing health and safety concerns. Funds are used to improve the energy performance of income eligible dwellings using the most advanced technologies and testing protocols available in the industry. WAP is funded through annual appropriations from the U.S. Department of Energy's Weatherization Assistance Program and the U.S. Department of Health and Human Services. The state allocates 15% of its annual LIHEAP funding to weatherization.

## Commercial & Industrial Programs

### Overview

In 2019, the Commercial & Industrial (C&I) sector was cost-effective with RI Test B/C ratios of a 4.31 for electric programs and 3.18 for gas programs. The Company spent 113.5% of the electric C&I implementation budget, achieved 94.4% of electric targeted annual energy savings and achieved 90.9% of electric targeted annual demand savings. The Company spent 110.2% of the gas C&I implementation budget and achieved 105.7% of gas targeted annual energy savings. Additional details on spending and savings by program can be found in Attachment 1, tables E-1, E-2, E-3 and Attachment 2, tables G-1, G-2 and G-3.

The electric commercial programs had over 4,100 participants and gas commercial programs had over 1,700 participants in 2019.

### Large Commercial and Industrial Programs

National Grid offered four types of energy efficiency programs for commercial and industrial class customers. Depending on the customer's energy consumption and demand they could be eligible to participate in one or more of the four main energy efficiency programs.

- 1.) Large Commercial and Industrial New Construction:** Focused on offerings that target ground up new construction, major renovations, tenant fit-outs and end of life replacement equipment. The Large Commercial and Industrial New Construction program is eligible to customers with annual electric consumption greater than 1,000,000 kWh per year.
- 2.) Large Commercial and Industrial Retrofit:** Focused on all services and technologies towards retrofits needed for existing buildings. The Large Commercial and Industrial Retrofit program is eligible to customers with annual electric consumption greater than 1,000,000 kWh per year.



- 3.) **Small Business/ Direct Install:** Focused on providing turn-key solutions to many types of small businesses. The Small Business/Direct Install Program is restricted to customers who consume less than 1,000,000 kWh per year,
- 4.) **Active Demand Response Program:** Focused on reducing peak electric demand and associated costs for large and small commercial customers. All customers, regardless of size can participate in the Active Demand Response Program.

In addition to the four main efficiency programs, National Grid established a Market Sector Approach for commercial and industrial programs. The Market Sector approach allowed National Grid to provide customized efficiency solutions that aligned with the customers' needs and therefore increased participation in energy efficiency. The following market sectors were incentivized in 2019: Grocery, Municipal and State Buildings, State Strategic Energy Management Planning, Manufacturing/Industrial, K-12 schools, Hospitality (Restaurants and Lodging), Specialty Building (Farm/Agriculture and Extended Care Facilities), Hospitals, Colleges and Universities, Commercial Real Estate, and Multifamily.

### **Education and Outreach**

National Grid offers training and education to various entities that enable energy efficiency in the marketplace and communities in Rhode Island. These include architects, engineers, lighting professionals and HVAC. In 2019 gas related trainings were held for RI and MA technical staff, sales staff, vendors, and project expeditors. Seminars were also held on topics including ZNE, cannabis, energy efficiency programs, multifamily infiltration reduction, as well as strategic electrification and VRFs. These events are great educational and outreach opportunities for our regional stakeholders.

In Rhode Island, eighteen commercial trainings as part of the Code Compliance Enhancement Initiative were held. A Level I Building Operator Certification (BOC) class was held as well as multiple webinars.

### **Large Commercial and Industrial New Construction**

The Commercial New Construction 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. The program supports both the commercial and industrial new construction projects with proactive technical assistance during design with energy modeling and analysis.

New Construction projects typically have a longer time cycle from inception to construction. The challenge with these projects is addressing energy efficiency in the concept or early stages of the project to maximize the energy savings. When new construction projects participate in energy efficiency program in later stages of design the savings potential drops tremendously. In effort to address this particular challenge, the Company implemented an Accelerated Performance performance-based procurement process whereby the owner set Energy Use Intensity (EUI) goals before a request for proposal is issued to engage a design team. The goal of this demonstration is to achieve deeper energy efficiency savings for New Construction projects. In 2020, the Company hopes to enroll two customers who expressed interest in participating in the Accelerated Performance initiative.

In 2019, the New Construction Program performed well and exceeded its electric and gas annual energy goals. Some examples of comprehensive new construction projects include the University of Rhode Island Engineering Building, Barrington Middle School, and an office campus for large bank headquartered in Rhode Island. New Construction projects also included equipment replacement for large industrial customers and health care customers, among others.

The Commercial New Construction 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. The program supports both the commercial and industrial new construction projects with proactive technical assistance during design with energy modeling and analysis. New Construction projects typically have a longer time cycle from inception to construction. The challenge with these projects is addressing energy efficiency in the concept or early stages of the project to maximize the energy savings. When new construction projects participate in energy efficiency program in later stages of design the savings potential drops tremendously. To address this particular challenge in 2018 the Company launched a new demonstration called Accelerate Performance for New Construction projects. Accelerate Performance is a performance-based procurement process whereby the Company engages with developers and building owners early in the project process and helps the owner set Energy Use Intensity (EUI) goals before an RFP is issued to engage a design team. This goal of this demonstration is to achieve deeper energy efficiency savings for New Construction projects.

## **Large Commercial and Industrial Retrofit**

The Large Commercial Retrofit Program incentivizes the replacement of existing equipment and systems with energy-efficient alternatives when the customer might otherwise not plan on making efficiency investments. The program offered three distinct components that aimed to address specific market barriers and to advance efficiency:

1. **Prescriptive Pathway:** Prescriptive incentives supported trade allies in advancing energy efficiency sales and provide signals to customers to make direct purchases that encouraged the adoption of more efficient and cost-effective options.
2. **Custom Pathway:** Custom incentives provided services to investigate opportunities to increase efficiency and support the steps needed to implement the upgrades.
3. **Upstream Pathway:** Upstream incentives provided an efficient way for customers to receive reduced pricing at the point of sale for energy efficiency equipment.

In 2019, National Grid had several notable developments in the Large Commercial and Industrial space. The Company expanded the retrofit program by adding upstream product offerings and increased customer engagement in the industrial, grocery, and municipal verticals. Additionally, the Company continued its Strategic Energy Management Planning (SEMP) partnerships by renewing one of the six customers to non-binding Memorandum of Understanding's with annual energy reduction goals. In 2020, the Company will look to expand the reach of the SEMIP Initiative with colleges and universities, municipal and State-owned buildings, and hospitals. In 2019, the Company also claimed electric savings for the Strategic Energy Management (SEM)/ Continuous Energy Improvement (CEI) demonstration for industrial

customers. The Rhode Island cohort of industrial customers meet regularly for workshops and energy treasure hunts to uncover operation and maintenance savings.

In 2018 National Grid committed to supporting the Providence Energy Challenge for the first Zero Energy Building (ZEB) in Providence and for energy reduction commitments from commercial customers of 20% by 2025. National Grid is supporting these efforts with automated data uploads for benchmarking buildings in EPA portfolio Manager, and with its Large C&I Retrofit program for energy reduction and the ZEB demonstration offerings.

### **Challenges and Next Steps**

Gathering post inspection data from the vendor installing LED street lighting was a challenge. Controls associated with these street lighting apps are expected to be completed in 2019. There was a settlement between the town of Johnston and National Grid regarding the payment of electricity for street lights on state owned roads. Although this settlement only affects the town of Johnston, many other towns in the process of purchasing their street lights have paused the process due to this issue.

The internal team will focus on ensuring there is an EE component to the school renovations associated with the school improvement bond.

This program also includes an industrial initiative with world-renowned engineering firm Leidos and training for trade allies among many other efforts.

### **Industrial Initiative**

The Industrial Initiative leverages the world-renowned engineering firm Leidos, who partners with industrial customers to implement energy efficiency upgrades. In 2019, the Industrial Initiative delivered substantial savings to Rhode Island manufacturers while also exceeded goals for both electric and gas savings. In 2019, approximately 100 project applications were paid to over 40 unique industrial customers. The program continued to focus on comprehensive custom process measures ranging from installing variable frequency drives to cooling towers. In addition to serving larger industrial customer, Leidos also assisted several smaller customers between 200-400 kW. Project highlights from smaller-scale customers include the installation of an electric molding machine for a packaging manufacturer, and the installation of a new laminator for a food packaging company that expedited the assembly line and reduced energy costs. Project highlights from larger-scale customers include the installation of an energy efficient emissions control system at a manufacturing facility, and a project that resulted in a more efficient steel plate bender for a shipbuilding company.

## Energy Smart Grocer



The EnergySmart Grocer (ESG) initiative delivered cost effective, comprehensive energy savings in the Grocery market segment in 2019 by providing 3,834 annual net MWh and more than 2,500 gross annual MMBtus in. The Company would like to highlight two projects that were completed in 2019 for smaller sized grocery customers.

1. A Market, a staple for the Newport community for over 25 years, recently moved their store three doors down from their previous location. In making this move, they also implemented a comprehensive energy efficiency plan. Included in this upgrade were the store's lighting, HVAC, kitchen equipment, refrigeration equipment and backend refrigeration system.
2. Urban Greens Co-Op in Providence installed night covers on their produce case and doors on a meat case. Additionally, they installed two CaptiveAire kitchen exhaust hoods with Variable Frequency Drives (VFDs). The project saved 4,600 annual gross kWh and 85.8 annual gross MMBtus.

### **Combined Heat and Power (CHP)**

Combined heat and power (CHP) systems are a cost-effective way for customers to achieve energy savings and improve resiliency. Customers who install CHP generate electricity on-site and captures the thermal load for process related needs, thereby eliminating the requirement to procure additional non-electric energy. While the total energy savings from CHP can be substantial, implementing CHP can be challenging due to the long-lead times, complex technical requirements, and substantial capital investments. In 2019, National Grid pursued a 630 kW CHP system at a waste water treatment facility. The treatment facility will leverage its operational byproduct (sludge) as a biomass to fuel the CHP system. While the project made substantial progress in 2019, the CHP system was not able to interconnect before year end.

## Community Initiative

The Rhode Island Community Initiative is the Company's energy efficiency awareness campaign that drives program participation by deep municipal engagement with residents and small businesses through the advocacy of local officials. At the start of the program, the Company works hand-in-hand with municipalities to set annual goals for energy efficiency upgrades and energy efficiency measures installed. These municipalities, in turn, work to achieve the goals with the help of volunteers and promotions at local events. As Communities progress through the program, the Company provides a number of enabling services including, sharing monthly progress reports, conducting monthly calls with municipalities to learn best practices, developing and printing customized outreach materials, and providing support for local events. At the end of the year, municipalities earn grant monies based on achieving the agreed percentage increase in the identified goal. These funds are then utilized for energy savings projects on a municipal property, or on educational energy programs for community members.

In 2019, the following communities took part in the Community Initiative and achieved the following stretch goals. Stretch goals were set at 25% above baseline performance for the previous year, for each community. Note, the Aquidneck Island communities' results were achieved in 4 months although the goals were for a 12-month period.

- Participating Communities and Results Against 25% Stretch:
  - Gloucester: Home Energy Assessments 126%; Weatherization 113%
  - Middletown: Home Energy Assessments 137%; Weatherization 95%
  - Newport: Home Energy Assessments 111%; Weatherization 72%
  - Portsmouth: Home Energy Assessments 112%; Weatherization 104%
  - Westerly: Home Energy Assessments 164%; Weatherization 72%

## Commercial Customer Initiatives

The RI digital application portal (RIDAP), saw its first full year of implementation in 2019, and gave customers and vendors the ability to submit incentive forms electronically without the need to submit multiple forms for the installation of different types of energy efficient equipment.

## Street Lighting

The National Grid Solid-State Street Light Initiative provided energy efficiency incentives for street lighting and controls to municipal customers. There are two options for participating in this initiative, customer owned, and Company owned.

- Customer Owned Street Lighting- Rhode Island municipal customers are now eligible to purchase their own streetlights from National Grid. Incentives are being offered for solid state lighting and controls, as funding allows. In addition to the funding offered by National Grid, the Office of Energy Resources continues to accept applications for street lighting grant funding from communities.
- Company Owned Street Lighting – National Grid filed a company owned street lighting tariff in 2016. If the municipal customer prefers to continue leasing their streetlights from National Grid, the customer will receive the incentive and the Company will claim the savings.

In 2019, the Solid-State Street Lighting Initiative awarded over \$300,000 in incentives to 11 different municipalities, resulting in approximately 1,515 MWh of annual electric energy savings. One of the highlights from the Solid-State Street Lighting Initiative included the Pawtucket streetlight and controls project which resulted in the installation of 6,062 street lighting fixtures and over 10,200 MWh of lifetime electric energy savings.

**Commercial Connected Solutions**

The Company implemented an active demand reduction program in 2019 after having run the program as a pilot in 2017 and 2018. Under the active demand reduction approach, customers agree to reduce their electric use during the system peak. In 2019, the Targeted Dispatch measure of the Commercial Connected Solutions program curtailed and averaged of 31.5 MW with 115 customer accounts participating in one event over the summer.

In December of 2019, the Rhode Island Public Utility Commission clarified that solar and storage over 25 kW can be eligible for net metering so long as the storage is charged from the solar and not from the grid. The company hopes that this change will increase enrolments in the Daily Dispatch measure of the Commercial Connected Solutions program.

**Commercial and Industrial Finance**

For C&I Finance, please see the section of report that speaks specifically to finance mechanisms and activities.

**Commercial and Industrial Demonstrations and Assessments**

Demonstration or Assessment Name	2019 Description Summary	Savings	Elec. Planned Budget	Spend
Performance Based Procurement Demonstration	In 2019 National Grid continued to offer Accelerate Performance to Commercial customers as a path to engage New Construction projects early on. Under this demonstration the Company trained and developed guidelines for the Company’s sales team to engage with customers with this offering. In 2019 two customers signed up for this demonstration with projects that are expected to be completed in 2021. Additionally, another customer indicated interest in the demonstration at	None	\$52,693	\$40,110

	end of 2019, and the Company will continue to pursue this lead.			
Behavior Change through Education of Small/Medium Plant Personnel Assessment	This assessment remained in early stages of development in 2019. Proposals to implement this demonstration were gathered in 2019 from a vendor that specializes in energy efficiency technologies.	None	\$50,948	\$416
Implement Underutilized Energy Efficiency Technologies on Mechanical Power Transmission Systems Demonstration	This demonstration remained in early stages of development in 2019. Proposals to implement this demonstration were gathered in 2019 from a vendor that specializes in energy efficiency technologies.	None	\$75,932	\$239
Lighting Go-To-Market Strategies: Secure Lighting Spec (SLS)	<p>Secure Lighting Spec concept is conceived as partnership with Lighting Manufacturer Reps (LMR) through software integrated into their quotes system to incorporate Energy Efficiency lighting incentives at the time of project specification. SLS's goal is to increase the volume of projects and capture savings.</p> <p>In 2019 two Lighting Manufacturers Reps were identified. Project types for this assessment were identified. Two project types: Design-Build Tenant Fit-Outs &amp; Municipal. Additionally, two software vendors were identified to deliver this solution.</p> <p>This assessment is currently underway to determine potential for feasibility scalability and savings.</p>	None	\$82,116	\$35,878

<p>Lighting Go-To-Market Strategies: Lighting as a Service Assessment</p>	<p>Lighting as a Service assessment, is a business model that explored offering customers and manufacturers best in class lighting equipment, ongoing commissioning and system optimization through a subscription based model.</p> <p>In 2019 the company reached out to two manufacturers to pursue this model and determine savings potential. While initial conversations with manufacturers showed promise, no uptake from customers was demonstrated. The Company at this point will continue to explore future opportunities, but for 2020 has discontinued this assessment, while understanding that our current incentive offerings support providers and customers interested in this business model.</p>			
<p>Lighting Go-To-Market Strategies: One-Fit – Lighting Manufacturer Based Turn-Key lighting design Assessment</p>	<p>One-Fit-Lighting Manufacturer based Turn Key Lighting assessment was proposed to utilize manufacturers lighting design capabilities for projects based on modelling/calculations, such that they would result in energy savings. In 2019 the Company explored this concept in another jurisdiction where the resulting success in a single project was limited. For this reason, the Company did not move forward with this assessment in RI in 2019.</p>			
<p>Automated Window Shade Systems Assessment</p>	<p>In 2019, National Grid conducted a research study to determine the energy savings of installing automated interior window shading</p>	<p>None</p>	<p>\$120,193</p>	<p>\$5,124</p>



	<p>systems in spaces with photo-controlled lighting. The purpose of the study was to determine if this measure could be incorporated within the existing energy efficiency program portfolio. The study conducted included, secondary research and interviews to understand automated window shades market strategies. A simulation study to determine energy savings, economic and market potential in National Grid territory.</p>			
Strategic Energy Management Demonstration (SEM)	<p>In 2019, National Grid recruited 7 customers to participate in the Strategic Energy Management (SEM) demonstration. The goal of the SEM is to activate industrial and manufacturing customers through a multiplicity of interventions including individual and group coaching, to address operational and maintenance measures in the short term and pursue capital measures in the medium term, which are traditionally captured in our existing program offerings. Ultimately, the end goal is to establish a culture of continuous improvement in the customers energy performance over an extended period of time.</p>	<p>In 2019, five of the seven customers participating in the Rhode Island SEM demonstration claimed electric savings totaling 876,974 kWh.</p>	\$360,846	\$172,211
Small Business Heat Pump Demonstration	<p>In 2019, the Company reached out to the current EE small business implementation vendor as well as gathered information from utilities who are currently deploying Heat Pump demonstrations in the NE</p>	None	\$270,846	\$0

	<p>region to better understand the challenges and concerns associated with heat pump installations. The Company also researched incentive structures that may be successful in scaling this type of technology, namely a heating system substitute displacing or replacing an existing source of heat which is not a typical retrofit project type. This initial research will inform the work the Company plans to do in 2020, in collaboration with states like MA.</p>			
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\*There were no residential demonstrations and assessments in 2019

**Small Business Direct Install Program**

National Grid’s Small Business Direct Install program is a retrofit program that provides turnkey services 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. National Grid then completes retrofit installations at the customer’s convenience. In 2019, the program served small businesses of all types including restaurants, non-profits, and small offices.

National Grid 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 that funds are available.

The Company would like to highlight several projects that were completed in 2019 for small business customers.

- RISE provided a major lighting retrofit to Stateline Nissan, saving them over 107,000 annual kWh, or about \$16,000 per year on their electric bill. The customer was very impressed at the impact the upgrade had to their site, especially the showroom where their illumination of the dealer’s inventory has been greatly improved.
- RISE served the RI Society for the Prevention of Cruelty to Animals (SPCA) with a 100% incentive offer as a part of a special initiative to drive projects in the late summer months in RI. This project included a complete retrofit of the interior and exterior lighting, including controls (occupancy sensors), and five WiFi thermostats. This retrofit is expected to save over 24,300 annual kWh. This project is expected to save the SPCA approximately \$3,650 annually in energy costs, which is a significant impact for this type of organization. The SPCA was delighted with the installations and the impact it had on their space. The lighting will better highlight the adoptable pets, allow the vets to have better lighting conditions for the procedures they carry out, and the WiFi thermostats will allow for a more comfortable space.

- RISE completed a large, interior and exterior LED retrofit lighting project at MacColl YMCA in Pawtucket, creating a much better illuminated space for the staff and patrons. This project covered several areas including the gym, kitchen, child care center, and parking area. It was a broad mix of re-lamp/re-ballast and new fixture installs. This project saved over 260,000 annual kWh, or nearly \$39,000 of the customer’s annual electric energy cost.

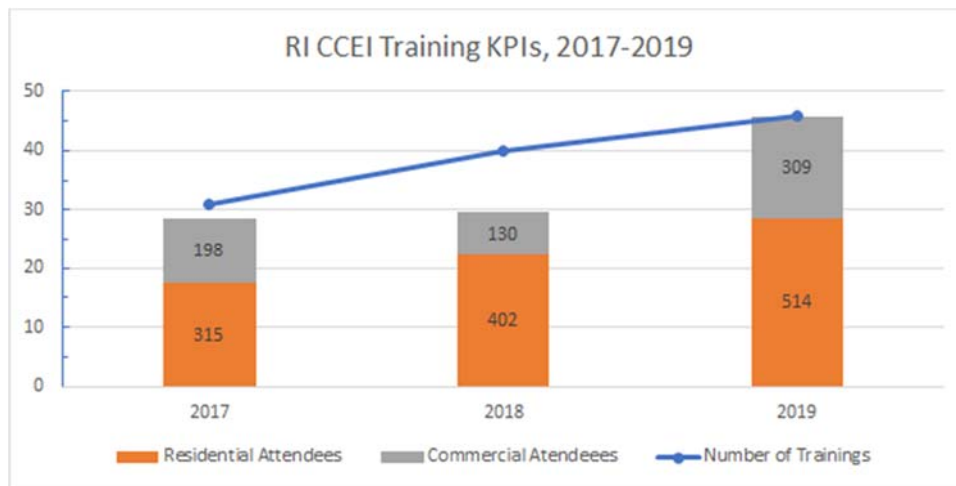
In 2019, National Grid continued to utilize the existing contractor/electrician base through the Customer Directed Option (CDO) where customers are allowed to use their own contractors in conjunction with the expertise of the lead vendor in the Small Business Program. These additional “feet on the street” are helping the program maintain its success even as some segments continue to be successfully served through other paths. In 2019, 30% of savings in the SMB/DI program came from CDO contractors.

## Codes and Standards

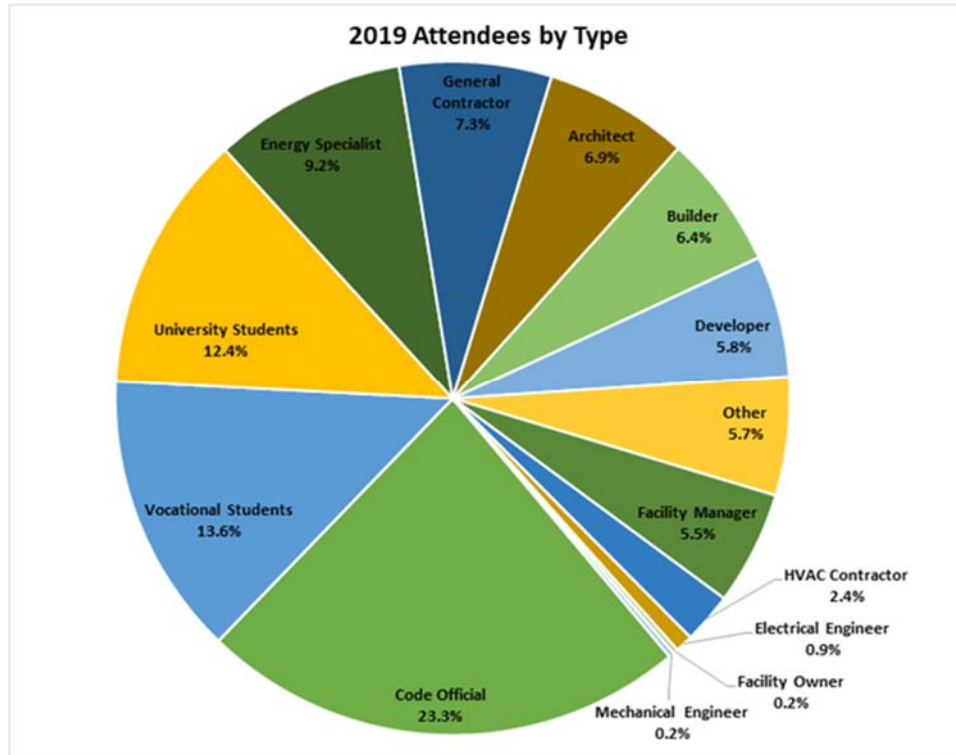
The Codes and Standards initiative provides targeted stakeholder outreach and technical guidance to improve compliance with minimum energy efficiency policies currently in effect and accelerate the improvement of these minimum efficiency requirements. In 2019 the Company continued to expand its energy code compliance support services to a variety of stakeholder groups and directly supported enhancements of the state’s energy code for the first time.

### Overview of Performance

In 2019, the Code Compliance Enhancement Initiative (CCEI) conducted 46 training events across the state with 823 total attendees. Both metrics continue to increase year-over-year.



CCEI trainings continue to draw diverse attendees. While code officials remain the primary audience, student engagement was a particular focus in 2019.



In addition to classroom and on-site trainings, CCEI also provides project-specific technical assistance as well as development and dissemination of energy code documentation/compliance assistance tools.

**Energy Code Development Support:** The Company submitted 11 code change proposals as part of the state’s 2018 IECC adoption process, which began in fall 2019. The primary goal of these proposals is to remove previous amendments to the state’s energy code that weaken its energy savings potential.

**Stretch Code Support:** The Company also continues to support awareness and use of the RI Stretch Code through CCEI, including promotion at every training event and fundamental technical guidance.

## Residential Pilots

### Zero Energy Homes

The Pathway to Zero Energy Pilot (ZE Pilot) is an effort to increase the quantity of low-energy use new construction and major renovations to create an inventory of zero energy homes to study and support the discussions around rate design and infrastructure needs for all-electric homes and on-site renewables.

The Pilot compliments the Residential New Construction (RNC) Program as enrollment in RNC is a prerequisite for eligibility of enhanced services and rebates. The Pilot serves to demonstrate that zero energy homes are being built in RI by RI teams; offer opportunities for RI companies to gain workforce training and qualifications; and provide services and rebates to accelerate performance.

In 2019, the Pathway to the Zero Energy Homes Pilot continued to further increase the professional capabilities of the RI residential home building industry as seen by the increased number of homes that entered into the Pilot.

### Highlights

In 2019 the Pathway to Zero Energy Pilot generated interest and participation in the development of zero energy homes in Rhode Island. Since the inception of the ZE Pilot at the end of 2018, zero energy (ZE) homes in RI have increased from less than four a year to 100 projects enrolled in the ZE Pilot at the end of the year with 21 housing units under construction and 79 housing units in the final design and will begin construction in 2020. Of the 100 homes, 83 are affordable housing, and 17 are market rate.

### Education and awareness

The Education and Awareness component of the Pilot included the following main components:

- A monthly submission to the Rhode Island Builders Association Magazine highlighted past/future training programs, project highlights and teams, stretch code overview, technical features for zero energy homes, and the announcement of the recipients of the Zero Energy for the Ocean State (ZEOS) Demonstration Project funding.
- Eight tours of projects, both in construction and completed, offered attendees to see that zero energy homes are mainstream and built for both market rate and income eligible sectors.
- The “Zero-Energy Runway” was the highlighted feature of the 2019 Home Show and Energy Expo with attendance of nearly 20,000.
- Worked with RI Tech Schools to build a series of kiosks to demonstrate how building design and strategies have changed in the last 30 years and how zero energy homes are currently being built in RI with RI project teams.

### Workforce Development

The Workforce Development element of the ZE Pilot consists of several efforts.

The Zero Energy Advisory Group, eight Rhode Island construction professionals at different stages of participating in the zero-energy building market, continued in 2019. The spirit of the Advisory Group is to

foster professional development and bring attention to the ZE market. The ZE Pilot continued to sponsor members of the Advisory Group to provide peer consulting to advance ZE projects in RI.

A series of infield and classroom trainings demonstrated ZE construction techniques and associated benefits of the techniques in sum.

- 13 residential ZE trainings were held in RI in 2019 with a total 248 participants
- 6 classroom, 160 participants
- 7 infield, 88 participants

With the first ZE Ready neighborhood enrolled in the ZE Pilot, a press event was held for the first completed unit in the Wynfield Estates – with RI with Tech School trainees in attendance.

In an effort to demonstrate the growth of residential and commercial zero energy projects in RI, the first “RI Getting to Zero Conference” was hosted with industry experts who presented technical information, case studies and policy initiatives.

**Project Incentives**

To accelerate performance in the ZE new construction/major renovation market, the following services were provided to project teams:

- Provided Passive House design charettes for two projects
  - Sheridan Small Homes in Providence (currently under construction)
  - Three-family infill project in Central Falls (currently in planning)
- Provided free DOE ZER certification and incentives for a completed single family ZE home in Jamestown.
- Provided free Passive House modeling consulting support and infield construction trainings.
- Partnered with Office of Energy Resources and Rhode Island Housing to develop and award the Zero Energy for the Ocean State (ZEOS) RFP for the development of Zero Energy income eligible (low to moderate income) projects that are replicable.

Pilot	2019 Description Summary	Budget Filed	Budget Spent
Zero Energy Homes	<ul style="list-style-type: none"> <li>• See above Description</li> </ul>	\$222,718	\$2,075

## Commercial and Industrial Pilots

Pilot	2019 Description Summary	Budget Filed	Budget Spend
Zero Energy Buildings	<p><i>Education and awareness:</i> National Grid held a Zero Energy Building Forum at Tiverton Library on November 15<sup>th</sup> 2019. 45 building professionals attended the Forum. Four building professionals presented case studies and technologies on getting to zero net energy use in buildings. New Buildings institute presented on best practices and on current state of Zero Energy Buildings from across the country. The Forum provided AIA and CEU credits to the professionals towards their professional development.</p> <p>National Grid held a Webinar in the fourth quarter titled “Getting to Zero Energy Schools is Achievable”. 89 building professionals attended the webinar and AIA and DEU credits were available for this webinar.</p> <p><i>Marketing:</i> National Grid developed two case studies in 2019 that will up be shared on the National Grid website in 2020.</p> <p><i>Zero Energy Building projects:</i> National Grid Continued to build relationships to seek ZEB project interest with builders, customers and developers. National Grid continued to support the City of Providence RePower PVD initiative for Zero Energy Buildings.</p>	\$197,930	\$39,139
Gas Demand Response	In 2019 the Company introduced an additional DR pilot program called the Extended DR (EDR) pilot program to customers in addition to the Peak Period DR (PPDR) pilot program it ran in the winter of 2017-2018. The EDR calls	\$ 381,126	\$52,254

	<p>events for a 24 hour period, while the PPDR calls events for 3 hours on a peak day.</p> <p>In 2019 the company has two customers enrolled in the PPDR program and one customer enrolled in the EDT program.</p> <p>A total of two one event was called in the winter of 2019-2020. One in December 2019 and one in Feb of 2020. This report outlines the demand reductions from the event in December of 2019. The summary of the event held in Feb, 2020 will be outlined in the Q1 report of 2020 and the Annual Report for 2020.</p> <p>Demand reduction from the PPDR program was 4.1 Dtherms.</p> <p>Demand reduction from the EDR was 314 Dtherms.</p>		
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**Evaluation, Measurement and Verification Studies**

To verify the impacts that programs are having on energy savings, the Company hires third party, independent consulting firms to regularly conduct program evaluations as part of its measurement and verification process. These evaluations include engineering analysis, metering analysis, billing analysis, site visits, surveys, and market studies to realize the actual energy savings that particular measures have. Final reports and one-page graphical summaries of completed evaluations can be found on the Energy Efficiency Resource Management Council’s website (<https://rieermc.ri.gov/plans-reports/evaluation-studies/>)

In 2019, ten evaluation studies were conducted and filed in the 2020 Annual Energy Efficiency Plan. Some highlights include:

**C&I Evaluation Studies**

Impact Evaluation of Program Year 2016 Custom Gas Installations:

- The primary objective of this evaluation study was to provide verification and re-estimation of energy savings for a sample of statistically selected custom gas projects through site-specific



inspection, monitoring, and analysis. This study determined that custom gas projects completed in 2016 had a realization rate of 85%, a decrease in savings claimed by National Grid for custom gas projects. This realization rate will be applied to custom gas projects completed beginning in PY2020.

- Impact Evaluation of PY2016 Custom Electric Installations. The primary objective of this evaluation was to provide verification and re-estimation of energy and demand savings for a sample of custom lighting and non-lighting electric projects through site-specific inspection, monitoring, and analysis. This study determined that custom electric projects completed in 2016 had realization rates of 99.8% for lighting and 65.5% for non-lighting, a decrease in savings claimed by National Grid for custom non-lighting electric projects and an increase in savings claimed for custom lighting electric projects. These realization rates will be applied to custom electric projects completed beginning in PY2020.

### **Residential Evaluation Studies**

#### 2017-2018 Rhode Island Lighting Sales Data Analysis:

- This study examined the market shares obtained from retail locations in Rhode Island. The study compares market share and bulb prices in Rhode Island, the US and various comparison states. Rhode Island's market share for efficient bulbs stood at 59% in 2018 with LEDs alone accounting for 57% of all bulb sales. LED market share grew by 200% in Rhode Island and 400% in non-program areas between 2015 and 2018. Overall, the study suggests that the ENERGY STAR Lighting program still has had an important effect on the long-term evolution of the lighting market but that impact may be dwindling down as transformation of the LED market progresses across the nation.

#### 2019 Process Evaluation of Income Eligible Services Single Family Program:

- This process evaluation assessed the Company's overall delivery of the IES program and identified nine key recommendations to improve program delivery and increase participation. The Company incorporated these recommendations when planning the program in 2020.

#### 2017/2018 Residential Appliance Recycling Savings Update:

- The study estimated gross, adjusted gross and net energy savings for National Grid sponsored refrigerator and freezer recycling program in Rhode Island. The study found that per unit savings for refrigerators and freezers between 2011 to 2017/2018 decreased by 19% and 36%, respectively due to younger and more efficient units recycled. The Company incorporated these findings in planning the program in 2020.

### **Cross-Cutting Evaluation Study**

#### Piggybacking Diagnostic Study:

- This study examined the Rhode Island evaluation practice of leveraging evaluation results from Massachusetts, or "piggybacking." Historically, this has been a common method of achieving cost savings in RI and has been accepted due to the similarity of program designs and regulations in

the two states. This study conducted a formal review of the practice and suggested evidence-based recommendations for when and how to piggyback across the various energy efficiency programs offered in RI.

In addition, several studies from the 2020 Energy Efficiency Program Plan are already underway, some of the highlights include:

#### Impact and Process Evaluation of Residential Retrofit Programs:

- This study comprises impact and process evaluations of several residential retrofit programs such as the EnergyWise Single Family, Energy Wise Multifamily and Income Eligible Multifamily Energy Efficiency Programs. The key objectives of this study are to assess gross and net savings of installed measures and assess the overall effectiveness of program. The impact evaluation effort includes a combination of billing analysis and engineering approaches while the process evaluation includes program stakeholder interviews and participant surveys.

#### Heat Pump Market Assessment Study:

- The goal of this study is to assess the current status of the heat pump market and assess potential for future growth of heat pumps in Rhode Island for displacing electric heat and for fuel switching for space heating and resulting cooling. This effort involves collecting data from heat pump owners, contractors, manufacturers and distributors and reviewing existing research and evaluation in the small commercial and residential markets to understand the current status of both supply-side and demand-side markets, trends, and perceptions.

#### Commercial and Industrial Free-Ridership and Spillover Study

- C&I free-ridership and spillover values are being 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 includes both custom and prescriptive measures from new construction and retrofit programs.

## **New Cost Schedules**

A new component of the 2019 Energy Efficiency Year-End Report is the inclusion of Attachments 1a and 2a. These Attachments were included at the request of the Rhode Island Division of Public Utilities and Carriers (Division) as a courtesy to the Rhode Island Public Utilities Commission (PUC). National Grid collaborated with the Rhode Island Division of Public Utilities and Carriers to develop these cost schedules since the fall of 2019. These new schedules provide an additional level of granularity for the spending occurring through the Company's energy efficiency programs.

In addition to the non-confidential Attachments 1a and 2a being filed in this Year End Report, the Company will also be filing confidential vendor schedules, which detail costs to individual vendors and other external entities. These confidential schedules, which the Company is in the process of finalizing, were also developed in collaboration with the Division through a Non-Disclosure agreement. The

Company also plans to file these confidential schedules with the PUC with a motion for protective treatment. Below is a list of the confidential schedules that the Company plans to provide to the PUC

- **Confidential Vendor Schedule 1 - 2019 Year End Report - Table E-1 - Program Level Cost Breakdown into Subcategories:** A breakout of the electric energy efficiency programs by cost category and sub category, detailing vendor and external entity costs at a program level
- **Confidential Vendor Schedule 2 - 2019 Year End Report - Table G-1 - Program Level Cost Breakdown into Subcategories:** A breakout of the gas energy efficiency programs by cost category and sub category, detailing vendor and external entity costs at a program level
- **Confidential Vendor Schedule 3 - 2019 Rhode Island Energy Efficiency Vendor Costs (Electric and Natural Gas):** A listing of the vendor and external entity costs across both the electric and gas portfolios, broken out by cost category
- **Confidential Vendor Schedule 4 - 2019 Rhode Island Energy Efficiency Vendor Costs >\$1M (Electric and Natural Gas):** A listing of the vendor and external entity costs greater than \$1M across both the electric and gas portfolios in 2019, broken out by cost category, with additional description added of vendor services rendered, and additional vendor details
- **Confidential Vendor Schedule 4a - 2019 Rhode Island Energy Efficiency Vendor Costs >\$1M (Electric):** A listing of the vendor and external entity costs greater than \$1M for the electric portfolio in 2019, broken out by cost category
- **Confidential Vendor Schedule 4b - 2019 Rhode Island Energy Efficiency Vendor Costs >\$1M (Natural Gas):** A listing of the vendor and external entity costs greater than \$1M for the gas portfolio in 2019, broken out by cost category

## System Reliability Procurement

Through System Reliability Procurement (SRP), the Company identifies customer and grid-side opportunities that are safe and reliable, environmentally responsible, cost-effective, and provide the path to lower supply and delivery costs to customers in Rhode Island. As part of meeting this purpose, the Company develops and implements non-wires alternative (NWA) projects.

Non-Wires Alternative (NWA) is the inclusive term for any electrical grid investment that is intended to defer or remove the need to construct or upgrade components of a distribution and/or transmission system, or “wires investment”. NWAs involve identifying distribution and/or transmission needs that have the potential to be deferred by alternative solutions, such as distributed energy resources (DERs), with a specified timeline. These projects are customer-focused and can include measures that are also offered through the Company’s statewide energy efficiency (EE) programs, as part of a targeted EE approach in an NWA portfolio solution.

In calendar year 2019, the Company went to market with the South Kingstown NWA request for proposal (RFP) to procure a viable, cost-effective third-party solution to defer or remove the need for capital investment and line work and reconfiguration on the Kenyon 68F2 and Peacedale 59F3 feeders. The Company evaluated the submitted bid proposals from third-party solution providers in 2019 for South Kingstown. The Company also evaluated the bid proposals submitted for the Narragansett 42F1 and Narragansett 17F2 NWA opportunities, the RFPs of which went to market in December 2018. All NWA

solution bid proposals submitted to National Grid for these three opportunities did not pass evaluation for a feasible solution.

The Company will proceed with investigating alternate solution pathways for Narragansett 42F1 and South Kingstown, which may include refining the parameters of the need, re-engineering the RFP, a Company-sourced proposal, a Company-owned solution, or a partial NWA. The Narragansett 17F2 NWA opportunity is no longer feasible based on timing constraints for sourcing an NWA solution. However, the windows of opportunity for the Narragansett 42F1 NWA and South Kingstown NWA are still open based on their need timing. Therefore, the Company is still actively seeking potential NWA solutions for the South Kingstown and Narragansett 42F1 opportunities.

The Company went live with the Rhode Island System Data Portal (Portal) through the SRP program on June 30, 2018. The Company continued to optimize features and update datasets of the Rhode Island System Data Portal (Portal) through 2019. The Portal is an online, interactive mapping tool that provides information on National Grid's electric distribution system in Rhode Island. The Portal further provides detail on the approximate loading level of lines and substations as well as available hosting capacity for distributed energy resources (DERs) on certain feeders. The Company went live with the Hosting Capacity map resource on September 28, 2018, which is a major update that illustrates how much distributed generation (DG), such as solar or battery storage installations, can be implemented on specific lines and substations. A public landing page for the Portal is located on the customer-facing National Grid website<sup>11</sup>.

The Company continued market engagement and outreach to promote awareness of the Portal for third-party solution providers through its 2019 SRP Marketing and Engagement Plan. This effort aims to increase industry knowledge of the Portal and incentives available through existing Company and state programs for NWA, energy conservation, peak load relief, and renewable energy projects in highly-utilized areas. The Company exceeded all market engagement campaign goals for the Portal except for webinar attendance, as detailed in Appendix 6 of the 2020 SRP Report.

Additional details on 2019 SRP activities and the 2020 SRP Plan can be found in the Company's 2020 System Reliability Procurement Report filed in Docket 4980<sup>12</sup> and approved by the PUC on December 10, 2019.

## Financing

In 2019, the Company offered a variety of finance options to both commercial and residential customers. Since 2011, the Company has managed several revolving loan funds that allow customers to pay for their portion of an energy efficiency project through their monthly bills. The funds allowed most participants to remain cash-flow positive and helped relieve pressure on the Energy Efficiency Program (EEP) charge by reducing incentive budgets. In 2014, the Company began managing a revolving loan fund for state and municipal customers as part of the RI Public Energy Partnership (RI PEP). Those efforts and financial resources associated with them have been redirected into the Efficient Buildings Fund (EBF). In 2015, the

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<sup>11</sup> See Rhode Island System Data Portal. *National Grid US*, National Grid USA Service Company, Inc., 2018, [www.nationalgridus.com/Business-Partners/RI-System-Portal](http://www.nationalgridus.com/Business-Partners/RI-System-Portal).

<sup>12</sup> "Docket No. 4980 - The Narragansett Electric Co. d/b/a National Grid - 2020 System Reliability Procurement Plan (Filed 10/15/19)." *RIPUC*, State of Rhode Island Public Utilities Commission, 16 Dec. 2019, [www.ripuc.ri.gov/eventsactions/docket/4980page.html](http://www.ripuc.ri.gov/eventsactions/docket/4980page.html).

Company extended opportunities for gas projects through the Large Commercial & Industrial (LC&I) gas revolving loan fund. In 2019, National Grid closed a multi-million dollar C-PACE loan and had its most successful year in EBF, in terms of claimed electric savings, to date.

### **Large C&I Revolving Loan Fund**

Through the electric LC&I revolving loan fund, the Company offered \$6.42 million in on-bill financing to 47 Large Commercial customers through 68 loans resulting in electric savings of 9,253 net annual MWh. At the end of 2019, the fund had a balance of \$7.0 million, money that will be available for more loans in 2020 and in the future.

Through the gas LC&I revolving loan fund, the Company offered \$0.9 million in loans to 12 Large Commercial customers resulting in gas savings of 25,328 net annual MMBtu. At the end of 2019, the fund had a balance of \$0.3 million, money that will be available for more loans in 2020 and in the future.

The Company continued to manage a revolving loan fund in support of the RI PEP. No customers participated in this offering in 2019. At the end of 2019, the fund had a balance of \$321,649.

### **Small Business Revolving Loan Fund**

Of the 635 customers that participated in the Small Business Direct Install program, each received financing to cover 30% share of the project costs, either over 24 months at zero (0) percent interest or a lump sum payment with a 15% discount. Overall, the Small Business Revolving Loan fund was able to provide \$1.5 million in loans that led to 12,529 MWh in net annual energy savings. At the end of 2019, the fund had a balance of \$2.55 million.

**Efficient Buildings Fund (EBF):** Since 2015, National Grid, the Rhode Island Office of Energy Resources (OER), and the Rhode Island Infrastructure Bank (RIIB) have worked together to leverage system benefit charge (SBC) funds and drive energy improvements in facilities in cities and towns across Rhode Island.

The seed money to support this unique revolving loan fund came from a \$1.8 million allocation of ratepayer (SBC) funds, mandated by the law, and \$3.0 million in funds from the Regional Greenhouse Gas Initiative (RGGI) controlled by OER. In addition, National Grid, based on a requests from RIIB, and working in conjunction with the Collaborative each program year, agreed to transfer \$5 million in energy efficiency program funds to RIIB in 2019 and \$5.2 million in 2020 to support EBF, subject to PUC approval. These transfers were included in their respective Energy Efficiency Plans and related budgets.

In 2019, the EBF helped support energy efficiency projects in the towns/cities of Pawtucket, Cumberland, West Warwick, and Westerly. 2019 was the most successful year in EBF since inception with 1,858 net annual MWh claimed. The vast majority of these savings came from converting streetlights from less efficient technologies to LED.

### **Commercial Property Assessed Clean Energy (C-PACE):**

In 2019, National Grid worked with a large hotel in Providence to secure \$2.5 million in C-PACE funding to complete several energy efficiency upgrades including a large HVAC project where VRF systems were installed. National Grid has one C-PACE project in progress with the city of Providence. However, no gas

or electric savings were claimed related to this project in 2019. Outreach by the Rhode Island Infrastructure Bank and National Grid will continue in 2020.

National Grid continued to work with RIIB and its program administrator, Sustainable Real Estate Solutions (SRS), to advance the concept of C-PACE in the market, with the Company's salespeople, and among vendors. In 2018, RIIB, SRS, Greenworks Lending, and National Grid co-wrote a presentation for National Grid sales professionals. The presentation, given by Greenworks and SRS, was well received by the National Grid sales team, enhanced their understanding of the mechanism, and cleared up some previous misconceptions. National Grid also hosted SRS and Greenworks Lending at a Project Expeditor (turn key vendors for C&I customers) meeting in August 2018. National Grid joined RIIB and Greenworks on a panel speaking about the benefits of C-PACE on a panel at the RI Infrastructure Summit in September 2018. As of the end of 2018 one small C-PACE project had been completed and a larger one was still in the design phase.

**Ascentium:** In 2019 National Grid continued working with Ascentium Capital, a specialty financing firm who is a leader in equipment and technology financing solutions, to offer customers another way to finance their projects. A simple, rapid approval loan process allows customers to use their incentive to buy down interest on loans (typically to zero percent depending on the term) for up to \$250,000. The company saw some interest in this offering, but no projects were funded in 2019.

#### **Other Commercial Financial Developments**

National Grid is committed to making sure that customers have a robust selection of financial mechanisms that have proven themselves successful in other programs across the United States and Canada. In 2018, National Grid began discussing Metrus Energy's Efficiency as a Service offering. Metrus has completed projects with numerous Fortune 500 companies across the United States. Metrus has restricted this offer to customers with a combined energy gas and electric spend of greater than \$1,000,000 annually. No projects were funded by Metrus in 2019.

#### **Heat Loan**

The HEAT loan provides zero-percent financing to qualified residential customers to address upfront, initial costs associated with energy efficiency upgrades in their homes and spreads the cost over multiple years. The EnergyWise, Multifamily, HVAC, and Connected Solutions programs pay the negotiated interest for the customer cost portion of the loan. There is a lender of last resort, The Capital Good Fund (CGF), that provides financing to customers with less than perfect credit. There were 910 loans processed in 2019 totaling approximately \$5.6 million in project costs. In 2019 the HEAT Loan allowed for a portion of pre-weatherization barriers remediation to be financed and two-dozen customers incorporated those upgrades to their loans.

## **Rhode Island Comprehensive Marketing**

In 2019, National Grid launched new robust, comprehensive programmatic marketing efforts, which drove awareness, interest and participation in the Company's Energy Efficiency programs. These omni-channel marketing efforts include email, mass media (such as radio and print), out of home, social media, and digital and video ads. New customer segmentation research was leveraged to optimize messaging and channel tactics. The National Grid website continued to serve as a source for information on products and services as well as rebates available to customers.

Programmatic marketing campaigns were complemented by targeted campaigns and event sponsorships that drove awareness throughout year. These campaigns such as Earth Day in April and Energy Efficiency Day in October as well as large events such as RI Home Show continued to foster awareness of Energy Efficiency programs for Rhode Island residential and commercial customers. Messages communicated to customers focused on how they can save energy and money as well as improve their business/home with National Grid's Energy Efficiency programs. A diverse channel mix was utilized to reach customers, ranging from email, bill inserts, television, print to social media. According to market research studies conducted, energy efficiency familiarity levels among Rhode Island customers remained strong year over year.

## **Jobs Impacts**

National Grid hired Guidehouse, Inc. to conduct a study of the job impacts from National Grid's energy efficiency programs in 2019. The study estimates the number of full-time equivalent (FTE) employees engaged in all aspects of energy efficiency programs where National Grid provided funding support in 2019. The FTE counts cover a wide range of energy efficiency services, including independent contractors and plumbers, rebate processors, engineers, and National Grid Staff. The study also includes counts of Weatherization Assistance Program (WAP) FTEs that are employed by the Community Action Program agencies that deliver low-income energy efficiency services.

Peregrine determined that 877 full-time equivalent (FTE) employees had work in 2019 supported by investments by National Grid in energy efficiency programs provided to its Rhode Island electricity and natural gas customers. Most of the jobs created as a result of energy efficiency investments were local because they were tied to installation of equipment and other materials.

The study identified 1,151 companies and agencies involved in National Grid's 2019 energy efficiency programs, 71% of which were located in Rhode Island. The companies identified include those whose employees are counted in the FTE analysis, as well as additional companies who assisted customers to secure equipment rebates, for example through the New Construction, Commercial Upstream Lighting, or High Efficiency HVAC programs.

**Full-Time Equivalent (FTE) Employment Supported by  
Energy Efficiency Programs in Rhode Island in 2019**

Programs	Total FTEs
<b>Electric Programs</b>	
Commercial and Industrial	265.0
Residential Income Eligible	65.1
Residential Non-Income Eligible	189.1
<b>Gas Programs</b>	
Commercial and Industrial	28.7
Residential Income Eligible	56.2
Residential Non-Income Eligible	218.1
<b>National Grid EE Staffing</b>	43.3
<b>Total all 2018 Rhode Island FTEs</b>	877.6

The study’s findings were developed through interviews with energy services and equipment vendors and National Grid contractors, as well as through a detailed review of National Grid’s records of all energy efficiency measures installed in homes, apartment buildings, businesses, and industries throughout the state in 2018. Peregrine Energy Group calculated the labor hours required for each installation based on industry standards and discussions with contractor experts.

One FTE equals 1,760 work hours, or the total of one person working 8 hours a day for 220 work days in an average year. Because a “full-time equivalent” employee often represents the labors of more than one person over the course of a year, the number of individual workers employed as result of Rhode Island energy efficiency programs funded by National Grid is far larger than the total of FTEs. The study and a complete list of businesses are included as Attachment 5.

## **Shareholder Incentive**

The Company’s Shareholder Incentive earnings are determined by its performance against the established annual savings goals documented in the 2019 EEPP. Under the current incentive structure, the Company can earn a target based-incentive rate equal to 5.0% of the eligible spending budget in a program year for achieving electric and gas energy savings goals.

Beginning in 2015, the incentive structure was changed for the electric portfolio to promote both energy and demand savings. This structure allows the Company to earn a target-based incentive rate equal to 3.5% of the eligible annual spending budget for achieving MWh savings goals and 1.5% of the annual spending budget for achieving MW savings goals.



For the gas portfolio, where there is no demand savings component, the original target-based incentive rate equal to 5.0% of the eligible annual spending budget for achieving MMBtu savings goals remained in place.

The Shareholder Incentive is earned by sector. An incentive is earned if savings in a sector are between 75% and 125% of the savings goal for the sector. An enhanced incentive up to 125% of the target incentive is available for achieving greater savings than the savings target. All sectors earned an incentive for their 2019 performance. All gas sectors earned over 100% of the target incentive. For electric MWh, all sectors earned over 100% of the target incentive, and for the electric MW, income-eligible and residential earned over 100% of the target.

The Company has earned a total of \$4,870,356 for the implementation of its energy efficiency programs in 2019.

More details on the Company's Shareholder Incentive achievements are included in Attachments 1 and 2 and tables E-4 and G-4.



# Attachment 1

## Electric Summary Table of Year-End Results





**NATIONAL GRID ELECTRIC ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND**  
**Table E-2A**  
**Summary of 2019 Demand Response Benefits and Savings**

	Benefits (000's)													Load Reduction (KW)		MWh Saved		
	Total	Summer Generation	Capacity			Reliability	Dist	Energy			Non Electric Non Resource	Societal Carbon	Summer	Annual	Lifetime			
			Capacity DRIPE	Trans	DRPE			Peak	Off Peak	Energy DRIPE								
																Trans	DRPE	Peak
<b>Non-Income Eligible Residential</b>																		
Residential Connected Solutions	\$852	\$25	\$428	\$200	\$174	\$24		\$0	\$0	\$0	\$0	\$0	\$0	\$0	1880	9	9	
<b>Commercial &amp; Industrial</b>																		
Commercial Connected Solutions	\$12,152	\$309	\$5,181	\$3,346	\$2,910	\$406		\$0	\$0	\$0	\$0	\$0	\$0	\$0	31,500	0	0	
<b>TOTAL</b>	<b>\$13,003</b>	<b>\$334</b>	<b>\$5,609</b>	<b>\$3,546</b>	<b>\$3,083</b>	<b>\$430</b>		<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>33,380</b>	<b>9</b>	<b>9</b>	

**NATIONAL GRID ELECTRIC ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND**  
**Table E-3: Summary of B/C Ratios, Value and Costs (\$000's)**  
**2019 Program Year**

	(1) Benefit/ Cost	(2) Total Value	(3) Program Implementation Expenses	(4) Customer Contribution	(5) Shareholder Incentive
<b>Commercial &amp; Industrial</b>					
Large Commercial New Construction	5.67	\$46,011.0	\$6,487.9	\$1,627.2	
Large Commercial Retrofit	4.75	\$199,231.7	\$27,310.2	\$14,647.9	
Small Business Direct Install	3.29	\$34,104.5	\$7,929.6	\$2,421.7	
Commercial ConnectedSolutions	9.28	\$12,151.7	\$1,308.8		
Commercial Pilots			\$40.1		
Community Based Initiatives - C&I			\$15.7		
Finance Costs			\$5,000.0		
<b>SUBTOTAL</b>	<b>4.31</b>	<b>\$291,498.9</b>	<b>\$48,092.4</b>	<b>\$18,696.7</b>	<b>\$782.7</b>
<b>Income Eligible Residential</b>					
Single Family - Income Eligible Services	2.97	\$28,629.8	\$9,629.6	\$0.0	
Income Eligible Multifamily	3.03	\$8,998.2	\$2,965.5	\$0.0	
<b>SUBTOTAL</b>	<b>2.92</b>	<b>\$37,628.0</b>	<b>\$12,595.1</b>	<b>\$0.0</b>	<b>\$282.7</b>
<b>Non-Income Eligible Residential</b>					
Residential New Construction	3.00	\$4,617.4	\$880.5	\$661.0	
ENERGY STAR® HVAC	1.93	\$16,807.9	\$4,263.5	\$4,463.6	
EnergyWise	2.53	\$46,127.9	\$16,062.8	\$2,161.0	
EnergyWise Multifamily	4.84	\$6,372.3	\$1,213.2	\$102.2	
Home Energy Reports	3.07	\$7,860.4	\$2,562.5	\$0.0	
ENERGY STAR® Lighting	3.18	\$66,209.5	\$13,607.7	\$7,213.8	
Residential Consumer Products	2.92	\$11,325.3	\$2,486.3	\$1,397.2	
Residential ConnectedSolutions	4.99	\$851.6	\$170.8		
Energy Efficiency Education Programs			\$40.0		
Residential Pilots			\$2.1		
Community Based Initiatives - Residential			\$118.3		
Comprehensive Marketing - Residential			\$197.3		
<b>SUBTOTAL</b>	<b>2.68</b>	<b>\$160,172.3</b>	<b>\$41,605.0</b>	<b>\$15,998.7</b>	<b>\$2,224.9</b>
<b>Regulatory</b>					
OER			\$990.3		
EERMC			\$783.6		
<b>SUBTOTAL</b>			<b>\$1,773.9</b>		
<b>TOTAL</b>	<b>3.44</b>	<b>\$489,299.2</b>	<b>\$104,066.4</b>	<b>\$34,695.5</b>	<b>\$3,290.2</b>

**Notes:**

- (1) RI Test B/C Ratio = (Energy + Capacity + Resource Benefits + Economic Benefits + Carbon Benefits + NOx Benefits) / (Program Implementation + Customer Contribution + Shareholder Incentive)
- (2) Year-End Value Total from Table E-2.
- (3) Year-End Implementation Expenses by Program from Table E-1 including Finance Costs.
- (4) Shareholder incentives from Table E-4.

**NATIONAL GRID ELECTRIC ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND**  
**Table E-4: National Grid 2019 EE Incentive Calculation**

Energy Incentive Rate: 3.50%							
Sector	(1) Approved Spending Budget	(2) Target Incentive	(3) Annual kWh Savings Goal	(3a) Actual Spending	(3b) % of Approved Spending	(3c) Budget adjusted target kWh savings	(4) Threshold kWh Savings
Income Eligible Residential	\$15,077,632	\$527,717	6,960,964	\$ 12,595,147	83.5%	6,960,964	5,220,723
Non-Income Eligible Residential	\$42,876,941	\$1,500,693	91,677,196	\$ 41,432,062	96.6%	91,677,196	68,757,897
Commercial & Industrial	\$39,892,348	\$1,396,232	96,038,410	\$ 46,702,019	117.1%	112,432,281	84,324,210
<b>Total</b>	<b>\$97,846,921</b>	<b>\$3,424,642</b>	<b>194,676,571</b>	<b>\$ 100,729,228</b>	<b>102.9%</b>	<b>211,070,441</b>	<b>158,302,831</b>

Sector	(5) Actual kWh	(6) % of Target Savings	(7) Savings Eligible for Incentive	(8) Total Earned Incentive	(9) % of Target Incentive Achieved
Income Eligible Residential	4,956,196	71.2%	0	\$ -	0.0%
Non-Income Eligible Residential	94,521,905	103.1%	94,521,905	\$ 1,547,259	103.1%
Commercial & Industrial	90,680,829	80.7%	90,680,829	\$ 585,876	42.0%
<b>Total</b>	<b>190,158,931</b>	<b>90.1%</b>	<b>185,202,734</b>	<b>\$ 2,133,135</b>	<b>62.3%</b>

Demand Incentive Rate: 1.50%							
Sector	(1) Approved Spending Budget	(2) Target Incentive	(3) Annual kW Savings Goal	(3a) Actual Spending	(3b) % of Approved Spending	(3c) Budget adjusted target kW savings	(4) Threshold kW Savings
Income Eligible Residential	\$15,077,632	\$226,164	1,039	\$ 12,595,147	83.5%	868	651
Non-Income Eligible Residential	\$42,876,941	\$643,154	13,898	\$ 41,432,062	96.6%	13,898	10,424
Commercial & Industrial	\$39,892,348	\$598,385	15,180	\$ 46,702,019	117.1%	17,772	13,329
<b>Total</b>	<b>\$97,846,921</b>	<b>\$1,467,704</b>	<b>30,117</b>	<b>\$ 100,729,228</b>	<b>102.9%</b>	<b>32,538</b>	<b>24,403</b>

Sector	(5) Actual kW	(6) % of Target Savings	(7) Savings Eligible for Incentive	(8) Total Earned Incentive	(9) % of Target Incentive Achieved
Income Eligible Residential	1,157	133.3%	1,085	\$ 282,706	125.0%
Non-Income Eligible Residential	14,643	105.4%	14,643	\$ 677,622	105.4%
Commercial & Industrial	13,796	77.6%	13,796	\$ 196,775	32.9%
<b>Total</b>	<b>29,595</b>	<b>91.0%</b>	<b>29,524</b>	<b>\$ 1,157,102</b>	<b>78.8%</b>

**Notes**

(1) Budget from 2019 EEP. Includes Implementation; excludes Regulatory Costs, Residential and Commercial Pilots, Assessments, and Shareholder Incentive.

(2) Equal to the incentive rate (3.5% for Energy, 1.5% for Demand) x Column (1)

(3) Approved savings goal from 2019 EEP

(3a) Actual spending includes actual Implementation Expenses from Table E-1. It excludes Regulatory Costs, Residential and Commercial Pilots, Assessments, Residential and Commercial Connected Solutions, and Shareholder Incentive.

(3b) Column (3a) / Column (1)

(3c) Column (3) \* (3b), only if 100% of Target Savings were achieved in Column (3)

(4) 75% of Target kWh Savings

(5) Year End Savings from Table E-1

(6) Column (6) / Column (3c)

(7) If Column (7) is less than 75%, Column (8) = 0,

If Column (7) is between 75% and 125%, Column (8) = Column 6;

If Column (7) is greater than 125%, Column (8) = 125% of Column (3c) due to the incentive cap.

(8) The shareholder is calculated as follow, where SB is the Spending Budget in the sector:

From 75% of savings to 100% of savings: Shareholder Incentive = SB x (0.15 x % of savings achieved - 0.10)

x 0.7 for energy savings

x 0.3 of demand savings

From 100% of savings to 125% of savings: Shareholder Incentive = SB x (0.05 x % of savings achieved)

(9) Column (9) / Column (2)



**TABLE E-5**  
**OVERALL ANALYSIS OF ELECTRIC ENERGY EFFICIENCY FUND BALANCE**

	<b>JANUARY</b>	<b>FEBRUARY</b>	<b>MARCH</b>	<b>APRIL</b>	<b>MAY</b>	<b>JUNE</b>	<b>TOTAL</b>
1. Start Of Period Balance	\$192,039	\$5,206,642	\$8,286,236	\$14,696,777	\$15,336,044	\$17,237,817	\$192,039
2. Revenue	\$10,909,844	\$8,696,483	\$9,045,252	\$8,790,888	\$8,530,846	\$9,022,122	\$54,995,436
3. Monthly EE Expenses	\$5,900,477	\$5,629,977	\$2,662,544	\$8,187,992	\$6,668,521	\$5,459,276	\$34,508,788
4. Cash Flow Over/(Under)	\$5,009,367	\$3,066,507	\$6,382,708	\$602,897	\$1,862,325	\$3,562,845	\$20,486,648
5. End Of Period Balance Before Interest	\$5,201,406	\$8,273,149	\$14,668,943	\$15,299,673	\$17,198,369	\$20,800,662	\$20,678,688
6. Interest	\$5,236	\$13,087	\$27,833	\$36,371	\$39,448	\$46,122	\$168,096
7. End Of Period Balance After Interest	\$5,206,642	\$8,286,236	\$14,696,777	\$15,336,044	\$17,237,817	\$20,846,784	\$20,846,784
	<b>JULY</b>	<b>AUGUST</b>	<b>SEPTEMBER</b>	<b>OCTOBER</b>	<b>NOVEMBER</b>	<b>DECEMBER</b>	<b>YEAR END TOTAL</b>
8. Start Of Period Balance	\$20,846,784	\$25,709,848	\$28,919,575	\$29,347,148	\$28,897,405	\$31,674,735	\$192,039
9. Revenue <sup>19</sup>	\$10,329,441	\$9,718,889	\$7,965,610	\$7,605,646	\$7,691,922	\$12,132,883	\$110,439,827
10. Monthly EE Expenses	\$5,522,759	\$6,575,320	\$7,608,599	\$8,125,924	\$4,987,948	\$36,819,026	\$104,148,363
11. Cash Flow Over/(Under)	\$4,806,683	\$3,143,569	\$357,010	(\$520,279)	\$2,703,975	(\$24,686,143)	\$6,291,463
12. End Of Period Balance Before Interest	\$25,653,467	\$28,853,417	\$29,276,585	\$28,826,869	\$31,601,380	\$6,988,592	\$6,483,503
13. Interest	\$56,382	\$66,158	\$70,563	\$70,536	\$73,355	\$46,879	\$551,969
14. End Of Period Balance After Interest	\$25,709,848	\$28,919,575	\$29,347,148	\$28,897,405	\$31,674,735	\$7,035,471	<b>\$7,035,471</b>
15. 2019 Incentive							<b>\$3,290,237</b>
16. Ending Balance after Incentive							<b>\$3,745,234</b>
17. Income Eligible Subsidization							<b>\$0</b>
18. Ending Balance after Subsidization							<b>\$3,745,234</b>
1. Previous year's ending balance							
2. Business Objects queries for revenues							
3. SAP queries for expenses							
4. Line 2 minus Line 3							
5. Line 1 plus Line 4							
6. Interest applied							
7. Line 5 plus Line 6							
8. Previous month's ending balance							
9. Business Objects queries for revenues							
10. SAP queries for expenses							
11. Line 9 minus Line 10							
12. Line 8 plus Line 11							
13. Interest applied							
14. Line 12 plus Line 13							
15. Estimated 2019 Incentive plus prior period true-ups							

**NATIONAL GRID ELECTRIC ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND**  
**Table E-6: National Grid 2019 Revolving Loan Funds**

**Large C&I Electric Revolving Loan Fund**

**Small Business Electric Revolving Loan Fund**

<u>Income Statement</u>		<u>Income Statement</u>	
(1) 2019 Funds Available	\$10,018,017	(1) 2019 Funds Available	\$1,919,057
(2) 2019 Loan budget	\$10,000,000	(2) 2019 Loan Budget	\$3,000,000
(3) Committed	\$2,342,333	(3) Committed	\$0
(4) Paid	\$6,424,194	(4) Paid	\$1,514,725
(5) <u>Repayments</u>	<u>\$5,771,920</u>	(5) <u>Repayments</u>	<u>\$2,152,331</u>
(6) <u>Available 12/31/19</u>	<u>\$7,023,410</u>	(6) <u>Available 12/31/19</u>	<u>\$2,556,663</u>
(7) Outstanding loan volume	\$8,161,431	(7) Outstanding loan volume	\$1,184,581
(8) Loan defaults during period (\$)	\$0	(8) Loan defaults during period (\$)	\$0
(9) Arrears over 120 days at period end (\$)	\$7,815	(9) Arrears over 120 days at period end (\$)	\$52,904
<u>Program Impact</u>		<u>Program Impact</u>	
(10) Number of loans	68	(10b) Participants	635
(10b) Participants	47	(11) Annual Savings (Gross MWh)	12,185
(11) Annual Savings (Gross MWh)	12,083	(12) Annual Savings (Net MWh)	12,529
(12) Annual Savings (Net MWh)	9,253	(13) Lifetime Savings (Gross MWh)	148,271
(13) Lifetime Savings (Gross MWh)	145,272	(14) Lifetime Savings (Net MWh)	153,097
(14) Lifetime Savings (Net MWh)	114,599	(15) Annual Savings (Gross kW)	1,730
(15) Annual Savings (Gross kW)	1,118	(16) Annual Saving (Net kW)	1,519
(16) Annual Saving (Net kW)	1,573	(17) Total associated incentive volume (\$)	\$7,139,203
(17) Total associated incentive volume (\$)	\$3,206,008	(18) Total annual estimated energy cost savings (\$)	\$1,667,986
(18) Total annual estimated energy cost savings (\$)	\$1,933,703		

**Rhode Island Public Energy Partnership (RI PEP)**

<u>Income Statement</u>	
(1) 2019 Funds Available	\$66,060
(2) 2019 Budget	\$0
(3) Committed	\$0
(4) Paid	\$0
(4a) Funds Returned to OER	\$0
(5) <u>Repayments</u>	<u>\$255,589</u>
(6) <u>Available 12/31/19</u>	<u>\$321,649</u>
(7) Outstanding loan volume	\$194,821
(8) Loan defaults during period (\$)	0
(9) Arrears over 120 days at period end (\$)	0
<u>Program Impact</u>	
(10) Number of loans	0
(10b) Participants	0
(11) Annual Savings (Gross MWh)	0
(12) Annual Savings (Net MWh)	0
(13) Lifetime Savings (Gross MWh)	0
(14) Lifetime Savings (Net MWh)	0
(15) Annual Savings (Gross kW)	0
(16) Annual Saving (Net kW)	0
(17) Total associated incentive volume (\$)	\$0
(18) Total annual estimated energy cost savings (\$)	\$0

Notes

- 1 Amount available as of January 1, 2019.
- 2 Budget adopted by Sales Team for 2019 operations. Budget includes projections of repayments made during 2019.
- 3 As of December 31, 2019.
- 4 As of December 31, 2019. This includes all projects paid through December 31, 2019 and the OBR associated with those projects. OBR payment are processed once the associated incentive has been paid usually in batches.
- 4a Funds returned to RI OER.
- 5 As of December 31, 2019
- 6 Fund balance as of December 31, 2019. Committed funds are subtracted from this amount.
- 7 Total outstanding loan balance. Loans lent out that still need to be paid back. This includes loans from previous years.
- 8 Total loan value in default during period.
- 9 Total loan value in arrears for over 120 days as of December 31, 2019.
- 10 As of December 31, 2019
- 10b Unique customer names for large business (one customer name can have multiple sub accounts as is in the case of a franchise). Customer accounts used for small business (not adjusted for net-to-gross).
- 11 As of December 31, 2019
- 12 As of December 31, 2019
- 13 As of December 31, 2019
- 14 As of December 31, 2019
- 15 As of December 31, 2019
- 16 As of December 31, 2019
- 17 Incentives paid out with loans.
- 18 Estimated energy cost savings to loan fund participants.

# NATIONAL GRID ELECTRIC ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND

## Table E-7: 2019 Heat Loans

	Single Family EnergyWise	Multifamily	HVAC	Batteries
(1) Number of loans	910	11	129	2
(2) Loan amount	\$5,613,572	\$95,754	\$1,423,208	\$21,000
(3) Measures				
Pre-Weatherization	24			
Weatherization	540			
Heatsystems	509			
DHW	36			
(4) Percentage of weatherization in loans	59%			

Notes

- 1 Equals the number of participants. As of December 31, 2019
- 2 Total amount of loans dispersed in 2019.
- 3 Measures financed through loans.
- 4 Percentage of Heat Loan recipients that went through with weatherization after audit.

**Attachment 1a**  
**Electric Costs Schedules**

Attachment 1a  
Electric Costs Schedules



**Schedule 1 - Program and Sector Cost Summary**

**By Report Category**

(a) (b) (c) (d) (e)  
 (Schedule 4) (Schedule 5) (Schedule 6) (Schedule 7) (Schedule 8)  
 col a col a col a col a col a

	(a) (Schedule 4) col a	(b) (Schedule 5) col a	(c) (Schedule 6) col a	(d) (Schedule 7) col a	(e) (Schedule 8) col a
	Program Planning & Admin.	Marketing	Cost of services and product rebates/incentives provided to customers (1)	STAT	Evaluation & Research
<b>Total Costs</b>					
Residential New Construction (Electric)	\$880,501	\$124	\$591,963	\$205,635	\$14,614
ENERGY STAR® HVAC (Electric)	\$4,263,529	\$131,104	\$3,649,045	\$401,541	\$7,826
EnergyWise (Electric)	\$16,062,764	\$297,331	\$13,822,481	\$1,605,274	\$37,343
EnergyWise Multifamily (Electric)	\$1,213,192	\$83,236	\$850,637	\$178,058	\$18,930
Home Energy Reports (Electric)	\$2,562,476	\$545	\$2,484,123	\$5,499	\$3,568
ENERGY STAR® Lighting (Electric)	\$13,607,678	\$285,911	\$12,306,556	\$362,969	\$102,746
Residential Consumer Products (Electric)	\$2,486,337	\$444,371	\$1,440,065	\$500,046	\$13,510
Residential ConnectedSolutions (Electric)	\$170,776	\$4,991	\$57,616	\$101,401	\$0
Energy Efficiency Education Programs (Electric)	\$40,000	\$0	\$0	\$0	\$0
Residential Pilots (Electric)	\$2,126	\$0	\$0	\$0	\$0
Community Based Initiatives - Residential (Electric)	\$118,331	\$9,253	\$48,931	\$0	\$0
Comprehensive Marketing - Residential (Electric)	\$197,254	\$3,809	\$0	\$0	\$0
Other Residential Programs (Electric)	\$0	\$0	\$0	\$0	\$0
<b>Subtotal Non-Income Eligible Residential</b>	<b>\$41,604,965</b>	<b>\$1,804,788</b>	<b>\$35,251,417</b>	<b>\$3,360,423</b>	<b>\$198,537</b>
Single Family - Income Eligible Services (Electric)	\$9,629,632	\$257,373	\$7,829,142	\$1,407,194	\$111,265
Income Eligible Multifamily (Electric)	\$2,965,515	\$871	\$2,466,607	\$373,617	\$36,636
<b>Subtotal Income Eligible Residential</b>	<b>\$12,595,147</b>	<b>\$25,528</b>	<b>\$10,295,750</b>	<b>\$1,780,812</b>	<b>\$147,901</b>
Large Commercial New Construction (Electric)	\$6,487,905	\$232,032	\$4,727,379	\$1,166,502	\$122,661
Large Commercial Retrofit (Electric)	\$27,310,200	\$1,061,987	\$22,147,682	\$3,478,610	\$412,876
Small Business Direct Install (Electric)	\$7,929,589	\$300,370	\$7,139,203	\$144,110	\$84,314
Commercial ConnectedSolutions (Electric)	\$1,308,815	\$13,383	\$1,061,718	\$230,983	\$0
Commercial Pilots (Electric)	\$40,110	\$0	\$0	\$38,967	\$0
Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	\$0	\$0
Community Based Initiatives - C&I (Electric)	\$15,743	\$0	\$11,319	\$0	\$0
Finance Costs (Electric)	\$5,000,000	\$0	\$5,000,000	\$0	\$0
Other C&I Programs (Electric)	\$0	\$0	\$0	\$0	\$0
<b>Subtotal Commercial &amp; Industrial</b>	<b>\$48,092,362</b>	<b>\$710,967</b>	<b>\$40,087,301</b>	<b>\$5,059,171</b>	<b>\$619,851</b>
<b>TOTAL All Sectors</b>	<b>\$102,292,474</b>	<b>\$2,541,283</b>	<b>\$85,634,468</b>	<b>\$10,200,406</b>	<b>\$966,289</b>

<b>System Reliability Procurement (Electric)</b>	\$45,512	\$14,374	\$31,927	\$0	\$698
<b>Regulatory (Electric)</b>	\$1,773,882	\$1,567,507	\$0	\$175	\$206,200
<b>Other Costs Not Listed Above (Electric)</b>	\$82,007	\$0	\$82,007	\$0	\$0

**Schedule 2 - Labor and Employee Expenses**

	(a) (b)+(c)	(b) (e)+(h)	(c) (f)+(i)	(d) (e)+(f)	(e) (g)	(f) (h)+(i)	(h)	(i)	
	Total National Grid Labor + Expenses	National Grid Direct Labor + Expenses	National Grid Allocated Labor + Expenses	Total National Grid Labor	National Grid Direct Labor	National Grid Allocated Labor	Total National Grid Employee Expenses	National Grid Direct Employee Expenses	National Grid Allocated Employee Expenses
1	Residential New Construction (Electric)	\$67,439	\$31,211	\$36,228	\$64,834	\$30,434	\$34,400	\$777	\$1,827
2	ENERGY STAR® HVAC (Electric)	\$69,708	\$23,808	\$45,899	\$66,013	\$22,505	\$43,508	\$1,303	\$2,392
3	EnergyWise (Electric)	\$251,926	\$40,097	\$211,829	\$238,859	\$38,043	\$200,817	\$2,054	\$11,013
4	EnergyWise Multifamily (Electric)	\$80,350	\$23,971	\$56,379	\$76,818	\$23,327	\$53,491	\$644	\$2,887
5	Home Energy Reports (Electric)	\$48,227	\$2,778	\$45,449	\$45,706	\$2,690	\$43,016	\$88	\$2,433
6	ENERGY STAR® Lighting (Electric)	\$220,128	\$26,469	\$193,658	\$207,139	\$23,745	\$183,394	\$2,724	\$10,264
7	Residential Consumer Products (Electric)	\$85,780	\$33,281	\$52,499	\$80,270	\$30,485	\$49,785	\$2,796	\$2,713
8	Residential Connected Solutions (Electric)	\$12,133	\$7,605	\$4,529	\$11,707	\$7,425	\$4,281	\$179	\$247
9	Energy Efficiency Education Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	Community Based Initiatives - Residential (Electric)	\$11,942	\$11,942	\$0	\$11,764	\$11,764	\$0	\$178	\$0
12	Comprehensive Marketing - Residential (Electric)	\$8,844	\$785	\$8,059	\$7,708	\$0	\$1,136	\$785	\$351
13	Other Residential Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-Income Eligible Residential</b>	<b>\$856,476</b>	<b>\$201,947</b>	<b>\$654,529</b>	<b>\$810,819</b>	<b>\$190,417</b>	<b>\$620,402</b>	<b>\$11,530</b>	<b>\$34,127</b>
15	Single Family - Income Eligible Services (Electric)	\$220,485	\$26,011	\$194,473	\$209,740	\$25,042	\$184,698	\$970	\$9,775
16	Income Eligible Multifamily (Electric)	\$82,159	\$22,871	\$59,288	\$78,487	\$22,227	\$56,261	\$645	\$3,027
17	<b>Subtotal Income Eligible Residential</b>	<b>\$302,644</b>	<b>\$48,883</b>	<b>\$253,761</b>	<b>\$288,227</b>	<b>\$47,268</b>	<b>\$240,959</b>	<b>\$1,614</b>	<b>\$12,802</b>
18	Large Commercial New Construction (Electric)	\$550,713	\$187,055	\$363,658	\$510,666	\$167,795	\$342,871	\$19,260	\$20,787
19	Large Commercial Retrofit (Electric)	\$1,781,997	\$718,208	\$1,063,788	\$1,692,298	\$686,763	\$1,005,535	\$31,445	\$58,253
20	Small Business Direct Install (Electric)	\$358,855	\$79,398	\$279,456	\$345,695	\$78,244	\$267,451	\$1,155	\$12,005
21	Commercial Connected Solutions (Electric)	\$67,351	\$25,751	\$41,599	\$63,693	\$24,813	\$38,879	\$938	\$2,720
22	Commercial Pilots (Electric)	\$971	\$971	\$0	\$0	\$0	\$971	\$971	\$0
23	Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	Finance Costs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	Other C&I Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$2,759,886</b>	<b>\$1,011,384</b>	<b>\$1,748,502</b>	<b>\$2,612,352</b>	<b>\$957,615</b>	<b>\$1,654,737</b>	<b>\$53,769</b>	<b>\$93,765</b>
28	<b>TOTAL All Sectors</b>	<b>\$3,919,006</b>	<b>\$1,262,213</b>	<b>\$2,656,793</b>	<b>\$3,711,398</b>	<b>\$1,195,300</b>	<b>\$2,516,098</b>	<b>\$66,913</b>	<b>\$140,695</b>
	<b>System Reliability Procurement (Electric)</b>	<b>\$15,540</b>	<b>\$15,540</b>	<b>\$0</b>	<b>\$15,530</b>	<b>\$15,530</b>	<b>\$0</b>	<b>\$11</b>	<b>\$0</b>
	<b>Regulatory (Electric)</b>	<b>\$175</b>	<b>\$175</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$175</b>	<b>\$175</b>	<b>\$0</b>
	<b>Other Costs Not Listed Above (Electric)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>



Schedule 3 - Expenses Categorized as Vendor Costs in Company's Systems <sup>1</sup>

	(a)	(b)	(c) (a) - (b)	(d)	(e)	(f) (d) + (e)	(g) (c) + (f)
	Total payments for services and product rebates/incentives for customers .2 (also referred to as "Rebates and Other Customer Incentives")	Rebate/Incentive Payments Made Directly to Customers by National Grid and Rebates Paid to PEX's to Whom Customer Rebates were Assigned	Payments for Services and Product Rebates/Incentives for customers which are made to vendors and then provided to customers (excluding costs included in col. b)3	Direct "External Costs"4 from Vendor Services	"External Costs" from Vendors Originating from an Allocation	Total of Vendor Costs Categorized as "External Costs" from Service Vendors (excluding costs included in columns a, b & c)	Total Payments made to Vendors, Excluding Rebate/Incentive Payments Made Directly to Customers by National Grid (col. b)
1 Residential New Construction (Electric)	\$591,963	\$0	\$591,963	\$203,307	\$17,168	\$220,475	\$812,438
2 ENERGY STAR® HVAC (Electric)	\$3,649,045	\$0	\$3,649,045	\$518,452	\$25,173	\$543,625	\$4,192,670
3 EnergyWise (Electric)	\$13,822,481	\$0	\$13,822,481	\$1,866,661	\$118,813	\$1,985,474	\$15,807,955
4 EnergyWise Multifamily (Electric)	\$850,637	\$0	\$850,637	\$253,514	\$27,199	\$280,713	\$1,131,350
5 Home Energy Reports (Electric)	\$2,484,123	\$0	\$2,484,123	\$5,425	\$24,680	\$30,105	\$2,514,229
6 ENERGY STAR® Lighting (Electric)	\$12,306,556	\$0	\$12,306,556	\$961,602	\$118,072	\$1,079,674	\$13,386,230
7 Residential Consumer Products (Electric)	\$1,440,065	\$0	\$1,440,065	\$915,028	\$43,996	\$959,024	\$2,399,089
8 Residential ConnectedSolutions (Electric)	\$57,616	\$0	\$57,616	\$98,753	\$2,059	\$100,812	\$158,428
9 Energy Efficiency Education Programs (Electric)	\$0	\$0	\$0	\$40,000	\$0	\$40,000	\$40,000
10 Residential Pilots (Electric)	\$0	\$0	\$0	\$2,126	\$0	\$2,126	\$2,126
11 Community Based Initiatives - Residential (Electric)	\$48,931	\$0	\$48,931	\$57,459	\$0	\$57,459	\$106,390
12 Comprehensive Marketing - Residential (Electric)	\$0	\$0	\$0	\$165,182	\$23,228	\$188,410	\$188,410
13 Other Residential Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14 <b>Subtotal Non-income Eligible Residential</b>	<b>\$35,251,417</b>	<b>\$0</b>	<b>\$35,251,417</b>	<b>\$5,087,508</b>	<b>\$400,388</b>	<b>\$5,487,896</b>	<b>\$40,739,314</b>
15 Single Family - Income Eligible Services (Electric)	\$7,829,142	\$0	\$7,829,142	\$1,481,235	\$95,002	\$1,576,237	\$9,405,379
16 Income Eligible Multifamily (Electric)	\$2,466,607	\$0	\$2,466,607	\$387,261	\$28,401	\$415,662	\$2,882,269
17 <b>Subtotal Income Eligible Residential</b>	<b>\$10,295,750</b>	<b>\$0</b>	<b>\$10,295,750</b>	<b>\$1,868,496</b>	<b>\$123,403</b>	<b>\$1,991,899</b>	<b>\$12,287,648</b>
18 Large Commercial New Construction (Electric)	\$4,727,379	\$1,618,190	\$3,109,188	\$1,089,038	\$118,038	\$1,207,076	\$4,316,265
19 Large Commercial Retrofit (Electric)	\$22,147,682	\$1,905,587	\$20,242,095	\$2,981,486	\$391,607	\$3,373,092	\$23,615,187
20 Small Business Direct Install (Electric)	\$7,139,203	\$0	\$7,139,203	\$269,543	\$161,044	\$430,587	\$7,569,790
21 Commercial ConnectedSolutions (Electric)	\$1,061,718	\$0	\$1,061,718	\$171,971	\$7,357	\$179,328	\$1,241,046
22 Commercial Pilots (Electric)	\$0	\$0	\$0	\$39,139	\$0	\$39,139	\$39,139
23 Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24 Community Based Initiatives - C&I (Electric)	\$11,319	\$0	\$11,319	\$4,424	\$0	\$4,424	\$15,743
25 Finance Costs (Electric)	\$5,000,000	\$0	\$5,000,000	\$0	\$0	\$0	\$5,000,000
26 Other C&I Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27 <b>Subtotal Commercial &amp; Industrial</b>	<b>\$40,087,301</b>	<b>\$3,523,777</b>	<b>\$36,563,524</b>	<b>\$4,555,600</b>	<b>\$678,046</b>	<b>\$5,233,646</b>	<b>\$41,797,170</b>
28 <b>TOTAL All Sectors</b>	<b>\$85,634,468</b>	<b>\$3,523,777</b>	<b>\$82,110,691</b>	<b>\$11,511,604</b>	<b>\$1,201,836</b>	<b>\$12,713,441</b>	<b>\$94,824,132</b>
System Reliability Procurement (Electric)	\$0	\$0	\$0	\$29,972	\$0	\$29,972	\$29,972
Regulatory (Electric)	\$0	\$0	\$0	\$1,773,707	\$0	\$1,773,707	\$1,773,707
Other Costs Not Listed Above (Electric)	\$82,007	\$82,007	\$0	\$0	\$0	\$0	\$82,007

<sup>1</sup> The Company's accounting system treats all payments made directly to customers and vendors as one category of vendor expenses. Rebates paid to customers through service contracts with vendors are included in the service cost of the vendor.

<sup>2</sup> This category has formally been labeled in prior year annual reports as "Rebates and Other Customer Incentives" in annual reports.

<sup>3</sup> This cost category includes service costs for customers plus rebates/incentives processed and paid to customers by the vendor, but excludes rebates paid directly to customers by the Company in col (b).

<sup>4</sup> The term "External Costs" has been used in Company reports to identify a subset of vendor costs not included in "Rebates and Other Customer Incentives".

**Schedule 4- Program Planning & Administration**

	(a) (b)+(e)+(f)	(b) (c)+(d)	(c)	(d)	(e) (f)+(g)	(f)	(g)	(h) (i)+(j)	(i)	(j)	(k) (l)+(m)	(l)	(m)
	Total Costs	Total National Grid Labor Costs	National Grid Direct Labor	National Grid Allocated Labor	Total National Grid Employee Expenses	National Grid Direct Employee Expenses	National Grid Allocated Employee Expenses	External Services Costs	Direct External Services Costs	External Services Costs Originating from an Allocation	Other Costs (if any)	Other Direct Costs	Other Costs Originating from an Allocation
1	Residential New Construction (Electric)	\$68,165	\$50,081	\$22,935	\$27,146	\$601	\$1,397	\$15,886	\$59	\$15,827	\$0	\$0	\$0
2	ENERGY STAR® HVAC (Electric)	\$74,014	\$51,112	\$16,093	\$35,979	\$87	\$2,064	\$20,521	\$900	\$20,452	\$0	\$0	\$0
3	EnergyWise Multifamily (Electric)	\$300,334	\$190,189	\$112,654	\$168,435	\$2,037	\$9,909	\$98,201	\$0	\$98,201	\$0	\$0	\$0
4	Home Energy Reports (Electric)	\$82,332	\$54,497	\$12,654	\$44,844	\$510	\$2,462	\$24,863	\$468	\$24,396	\$1	\$0	\$0
5	ENERGY STAR® Lighting (Electric)	\$68,741	\$42,862	\$12,690	\$40,172	\$88	\$2,363	\$23,428	\$7	\$23,421	\$0	\$0	\$0
6	ENERGY STAR® Lighting (Electric)	\$285,911	\$175,556	\$12,893	\$162,663	\$10,891	\$9,569	\$99,477	\$4,641	\$94,837	\$2	\$0	\$0
7	Residential Consumer Products (Electric)	\$88,345	\$59,486	\$22,455	\$37,031	\$4,607	\$2,178	\$24,253	\$2,663	\$21,590	\$0	\$0	\$0
8	Residential Connected Solutions (Electric)	\$6,768	\$4,706	\$1,212	\$3,494	\$0	\$206	\$1,856	\$7	\$1,849	\$0	\$0	\$0
9	Energy Efficiency Education Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Electric)	\$2,126	\$0	\$0	\$0	\$0	\$0	\$2,126	\$2,126	\$0	\$0	\$0	\$0
11	Community Based Initiatives - Residential (Electric)	\$9,253	\$9,196	\$9,196	\$0	\$57	\$0	\$0	\$0	\$0	\$0	\$0	\$0
12	Comprehensive Marketing - Residential (Electric)	\$3,809	\$2,320	\$0	\$2,320	\$136	\$136	\$1,353	\$0	\$1,353	\$0	\$0	\$0
13	Other Residential Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-income Eligible Residential</b>	<b>\$989,798</b>	<b>\$640,005</b>	<b>\$121,822</b>	<b>\$518,183</b>	<b>\$7,120</b>	<b>\$30,484</b>	<b>\$312,196</b>	<b>\$10,270</b>	<b>\$301,925</b>	<b>-\$6</b>	<b>\$0</b>	<b>-\$6</b>
15	Single Family - Income Eligible Services (Electric)	\$257,373	\$164,646	\$21,607	\$143,039	\$918	\$8,415	\$83,395	\$0	\$83,395	\$2	\$0	\$0
16	Income Eligible Multifamily (Electric)	\$87,784	\$57,826	\$12,664	\$45,172	\$510	\$2,662	\$26,686	\$291	\$26,395	\$1	\$0	\$0
17	<b>Subtotal Income Eligible Residential</b>	<b>\$345,157</b>	<b>\$222,572</b>	<b>\$34,261</b>	<b>\$188,211</b>	<b>\$1,428</b>	<b>\$11,078</b>	<b>\$110,081</b>	<b>\$291</b>	<b>\$109,790</b>	<b>-\$2</b>	<b>\$0</b>	<b>-\$2</b>
18	Large Commercial New Construction (Electric)	\$239,332	\$135,742	\$25,045	\$110,697	\$641	\$3,635	\$99,293	\$20,127	\$79,167	\$20	\$0	\$20
19	Large Commercial Retrofit (Electric)	\$1,061,987	\$392,450	\$34,721	\$357,730	\$186	\$11,747	\$657,538	\$401,703	\$255,835	\$66	\$0	\$66
20	Small Business Direct Install (Electric)	\$300,370	\$170,219	\$9,565	\$160,655	\$0	\$5,276	\$124,845	\$9,951	\$114,894	\$30	\$0	\$30
21	Commercial Connected Solutions (Electric)	\$13,383	\$9,367	\$3,727	\$5,640	\$216	\$186	\$3,799	\$25	\$3,774	\$1	\$0	\$1
22	Commercial Pilots (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	Finance Costs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	Other C&I Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$1,615,072</b>	<b>\$707,779</b>	<b>\$73,057</b>	<b>\$634,722</b>	<b>\$21,701</b>	<b>\$20,844</b>	<b>\$885,475</b>	<b>\$431,806</b>	<b>\$443,670</b>	<b>\$117</b>	<b>\$0</b>	<b>\$117</b>
28	<b>TOTAL All Sectors</b>	<b>\$2,950,028</b>	<b>\$1,570,356</b>	<b>\$229,140</b>	<b>\$1,341,216</b>	<b>\$71,811</b>	<b>\$62,405</b>	<b>\$1,307,753</b>	<b>\$442,368</b>	<b>\$865,385</b>	<b>\$108</b>	<b>\$0</b>	<b>\$108</b>
	<b>System Reliability Procurement (Electric)</b>	<b>\$14,374</b>	<b>\$14,371</b>	<b>\$14,371</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Regulatory (Electric)</b>	<b>\$1,567,507</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,567,507</b>	<b>\$1,567,507</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Other Costs Not Listed Above (Electric)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

Schedule 5 - Marketing

	(a) (b)+(c)+(d)+(e)	(b) (c)-(d)	(c)	(d)	(e) (f)-(g)	(f)	(g)	(h) (i)-(j)	(i)	(j)	(k) (l)-(m)	(l)	(m)
	Total Costs	Total National Grid Labor Costs	National Grid Direct Labor	National Grid Allocated Labor	Total National Grid Employee Expenses	National Grid Direct Employee Expenses	National Grid Allocated Employee Expenses	External Services Costs	Direct External Services Costs	External Services Costs Originating from an Allocation	Other Costs (if any)	Other Direct Costs	Other Costs Originating from an Allocation
1	Residential New Construction (Electric)	\$124	\$0	\$24	\$1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	ENERGY STAR® HVAC (Electric)	\$131,104	\$3,975	\$1,061	\$1,105	\$1,123	\$421	\$124,903	\$120,596	\$4,307	\$0	\$0	\$0
3	ENERGY STAR® HVAC (Electric)	\$297,331	\$16,898	\$4,056	\$178	\$17	\$161	\$276,199	\$259,734	\$16,466	\$0	\$0	\$0
4	EnergyWise Multifamily (Electric)	\$83,236	\$1,696	\$4,929	\$17	\$0	\$17	\$81,523	\$79,783	\$1,740	\$0	\$0	\$0
5	Home Energy Reports (Electric)	\$545	\$107	\$0	\$4	\$0	\$0	\$433	\$0	\$433	\$0	\$0	\$0
6	ENERGY STAR® Lighting (Electric)	\$549,495	\$14,307	\$9,261	\$1,614	\$1,413	\$201	\$533,574	\$513,088	\$20,486	\$0	\$0	\$0
7	Residential Consumer Products (Electric)	\$444,371	\$13,989	\$8,029	\$5,559	\$3,68	\$211	\$430,194	\$407,624	\$22,569	\$0	\$0	\$0
8	Residential Connected Solutions (Electric)	\$4,991	\$85	\$0	\$3	\$0	\$3	\$4,903	\$4,559	\$344	\$0	\$0	\$0
9	Energy Efficiency Education Programs (Electric)	\$40,000	\$0	\$0	\$0	\$0	\$0	\$40,000	\$40,000	\$0	\$0	\$0	\$0
10	Residential Pilots (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	Community Based Initiatives - Residential (Electric)	\$60,147	\$2,668	\$0	\$120	\$120	\$0	\$57,459	\$57,459	\$0	\$0	\$0	\$0
12	Comprehensive Marketing - Residential (Electric)	\$193,445	\$5,388	\$0	\$1,000	\$785	\$214	\$187,057	\$165,182	\$21,876	\$0	\$0	\$0
13	Other Residential Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-Income Eligible Residential</b>	<b>\$1,804,788</b>	<b>\$63,753</b>	<b>\$41,999</b>	<b>\$4,692</b>	<b>\$3,826</b>	<b>\$865</b>	<b>\$1,736,344</b>	<b>\$1,648,025</b>	<b>\$88,319</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
15	Single Family - Income Eligible Services (Electric)	\$24,657	\$4,698	\$3,434	\$1,263	\$0	\$0	\$19,909	\$14,781	\$5,128	\$0	\$0	\$0
16	Income Eligible Multifamily (Electric)	\$871	\$92	\$0	\$92	\$0	\$4	\$774	\$399	\$376	\$0	\$0	\$0
17	<b>Subtotal Income Eligible Residential</b>	<b>\$25,528</b>	<b>\$4,790</b>	<b>\$3,434</b>	<b>\$1,356</b>	<b>\$0</b>	<b>\$4</b>	<b>\$20,684</b>	<b>\$15,180</b>	<b>\$5,504</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
18	Large Commercial New Construction (Electric)	\$232,032	\$6,820	\$1,912	\$4,908	\$205	\$393	\$224,615	\$222,360	\$2,255	\$0	\$0	\$0
19	Large Commercial Retrofit (Electric)	\$209,045	\$9,306	\$5,619	\$3,687	\$643	\$295	\$196,801	\$197,107	\$1,694	\$0	\$0	\$0
20	Small Business Direct Install (Electric)	\$261,593	\$15,915	\$11,419	\$4,496	\$0	\$360	\$245,318	\$243,252	\$2,066	\$0	\$0	\$0
21	Commercial Connected Solutions (Electric)	\$2,731	\$84	\$0	\$84	\$7	\$0	\$2,600	\$2,600	\$40	\$0	\$0	\$0
22	Commercial Pilots (Electric)	\$1,142	\$0	\$0	\$0	\$0	\$0	\$1,142	\$1,142	\$0	\$0	\$0	\$0
23	Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Electric)	\$4,424	\$0	\$0	\$0	\$0	\$0	\$4,424	\$4,424	\$0	\$0	\$0	\$0
25	Finance Costs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	Other C&I Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$710,967</b>	<b>\$32,125</b>	<b>\$18,950</b>	<b>\$1,902</b>	<b>\$848</b>	<b>\$1,054</b>	<b>\$676,940</b>	<b>\$670,886</b>	<b>\$6,054</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
28	<b>TOTAL All Sectors</b>	<b>\$2,541,283</b>	<b>\$100,668</b>	<b>\$64,883</b>	<b>\$6,648</b>	<b>\$4,674</b>	<b>\$1,974</b>	<b>\$2,433,967</b>	<b>\$2,334,091</b>	<b>\$99,877</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>System Reliability Procurement (Electric)</b>	<b>\$31,927</b>	<b>\$1,937</b>	<b>\$1,937</b>	<b>\$0</b>	<b>\$11</b>	<b>\$0</b>	<b>\$29,980</b>	<b>\$29,980</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Regulatory (Electric)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Other Costs Not Listed Above (Electric)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

**Schedule 6 - Cost of services and product rebates/incentives provided to customers (1)**

Annual threshold > \$100,000 for evaluation of allocation between Col. (b) vs. Col. (c)  
 Default Assumption, expenses allocated to Col. (c)

	(a) (b)+(c)	(b)	(c)	(d)
	Total payments for services and product rebates/incentives for customers which are paid directly to a customer or provided to customer via a vendor	Rebate/Incentive Payments Directly Paid to Customers	Payments for Services and Product Rebates/Incentives for customers which are made to vendors and then provided to customers	Description of External Payments
1 Residential New Construction (Electric)	\$591,963	\$0	\$591,963	Payments are made to external vendor(s) that are then used to provide rebates to customers for approved energy efficiency products that are installed in new customer dwellings. Payments also include a home performance testing service at no cost to the customer.
2 ENERGY STAR® HVAC (Electric)	\$3,649,045	\$0	\$3,649,045	Payments are made to external vendor(s) that are then used to provide rebates to customers for approved energy efficiency HVAC products that are installed in rate payer customer dwellings. Payments are also made to external vendor(s) that are then used to provide zero interest loans to customers for approved energy efficiency HVAC products.
3 EnergyWise (Electric)	\$13,822,481	\$0	\$13,822,481	Payments are made to external vendor(s) that are then used to discount approved energy efficiency products that are installed in single family customer dwellings. Payments also include a service to customers in the form of no cost energy assessments. Payments are also made to external vendor(s) that are then used to provide zero interest loans to customers for weatherization.
4 EnergyWise Multifamily (Electric)	\$850,637	\$0	\$850,637	Payments are made to external vendors that are then used to discount approved energy efficiency products that are installed in multifamily customer dwellings. Payments also include a service to customers in the form of no cost energy assessments. Payments are also made to external vendor(s) that are then used to provide zero interest loans to customers for weatherization.
5 Home Energy Reports (Electric)	\$2,484,123	\$0	\$2,484,123	Payments include costs associated with the delivery of the program. The HER program does not feature direct customer incentives or rebates. Instead the funds in this category are utilized in the production and delivery of Home Energy Reports. The costs associated with this effort are categorized as 'Rebates and Other Incentives' because the reports drive customer actions to change energy consumption behaviors, resulting in energy cost savings to those customers and benefits to all customers.
6 ENERGY STAR® Lighting (Electric)	\$12,306,556	\$0	\$12,306,556	Payments are made to external vendors that are then used to discount approved EnergyStar Lighting Products. Customers then purchase these EnergyStar Lighting products at a discounted price.
7 Residential Consumer Products (Electric)	\$1,440,065	\$0	\$1,440,065	Payments are made to external vendors that are then used to discount approved EnergyStar Appliance products. Customers then purchase these EnergyStar Appliance products at a discounted price. Payments are also made to external vendor(s) that are then used to provide rebates to customers who purchase approved EnergyStar Appliance products.
8 Residential ConnectedSolutions (Electric)	\$57,616	\$0	\$57,616	Payments are made to external vendor(s) that are then used to pay customers an incentive for participation in the program. In some cases, customers have elected to receive their incentive payment directly from National Grid, in these cases the Company directly pays the customer the incentive.
9 Energy Efficiency Education Programs (Electric)	\$0	\$0	\$0	N/A
10 Residential Pilots (Electric)	\$0	\$0	\$0	Payments can vary depending on the pilot. In 2018 the only Residential Electric was the Zero Energy Homes pilot. For this pilot, payments are made to external vendor(s) that are then used to provide rebates to customers for approved energy efficiency products that are installed in new customer dwellings. Payments also include a home performance testing service at no cost to the customer.
11 Community Based Initiatives - Residential (Electric)	\$48,931	\$0	\$48,931	Payments are made to external vendors that are then used to discount approved energy efficiency products for communities participating in the Community Based Initiative.
12 Comprehensive Marketing - Residential (Electric)	\$0	\$0	\$0	N/A
13 Other Residential Programs (Electric)	\$0	\$0	\$0	N/A
14 <b>Subtotal Non-Income Eligible Residential</b>	<b>\$35,251,417</b>	<b>\$0</b>	<b>\$35,251,417</b>	
15 Single Family - Income Eligible Services (Electric)	\$7,829,142	\$0	\$7,829,142	Payments are made to external vendors that are then used to cover 100% of the cost for approved energy efficiency products that are installed in single family income eligible customer dwellings. Payments also include a no cost service to customers in the form of no cost energy assessments.
16 Income Eligible Multifamily (Electric)	\$2,466,607	\$0	\$2,466,607	Payments are made to external vendors that are then used to cover 100% of the cost for approved energy efficiency products that are installed in multifamily customer dwellings. Payments also include a no cost service to customers in the form of no cost energy assessments.
17 <b>Subtotal Income Eligible Residential</b>	<b>\$10,295,750</b>	<b>\$0</b>	<b>\$10,295,750</b>	
18 Large Commercial New Construction (Electric)	\$4,727,379	\$1,618,190	\$3,109,189	Payments are made to external vendor(s) that are then used to discount approved energy efficiency products that are installed in customer facilities. Payments are also made directly to customers for the installation of approved energy efficiency measures.
19 Large Commercial Retrofit (Electric)	\$22,147,682	\$1,905,587	\$20,242,095	Payments are made to external vendor(s) that are then used to discount approved energy efficiency products that are installed in customer facilities. Payments are also made directly to customers for the installation of approved energy efficiency measures.
20 Small Business Direct Install (Electric)	\$7,139,203	\$0	\$7,139,203	Payments are made to external vendor(s) that are then used to discount approved energy efficiency products that are installed in customer facilities. Payments are also made directly to customers for the installation of approved energy efficiency measures. Payments also include no cost services to customers including no cost energy assessments.
21 Commercial ConnectedSolutions (Electric)	\$1,061,718	\$0	\$1,061,718	Payments are made to external vendor(s) that are then used to pay customers an incentive for participation in the program. The external vendor(s) retain a portion of the incentive payments.
22 Commercial Pilots (Electric)	\$0	\$0	\$0	Payments can vary depending on the pilot. In 2018 the only Commercial Electric pilot was the Zero Energy Buildings pilot. For this pilot, incentive payments are made directly to customers. Payments also include building verification and certification for Zero Buildings, at no cost to the customer.
23 Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	N/A
24 Community Based Initiatives - C&I (Electric)	\$11,319	\$0	\$11,319	Payments can either be made directly to a municipality or payments can be made to external vendor(s) that are then used to discount approved energy efficiency products for communities participating in the Community Based Initiative.
25 Finance Costs (Electric)	\$5,000,000	\$0	\$5,000,000	Payments made to the Rhode Island Infrastructure Bank are leveraged and lent to municipalities to cover the municipality's net costs of an energy efficiency project. Costs may include energy efficiency equipment and related services.
26 Other C&I Programs (Electric)	\$0	\$0	\$0	N/A
27 <b>Subtotal Commercial &amp; Industrial</b>	<b>\$40,087,301</b>	<b>\$3,523,777</b>	<b>\$36,563,524</b>	
28 <b>TOTAL All Sectors</b>	<b>\$85,634,468</b>	<b>\$3,523,777</b>	<b>\$82,110,691</b>	
System Reliability Procurement (Electric)	\$0	\$0	\$0	
Regulatory (Electric)	\$0	\$0	\$0	
<b>Other Costs Not Listed Above (Electric)</b>	<b>\$82,007</b>		<b>\$82,007</b>	

(1) In the 2019 Energy Efficiency Annual Plan filing, this cost category was referred to as "Rebates and Other Incentives"

**Schedule 7 - Sales, Technical Assistance & Training (STAT)**

	(a) (b) He (b) H(k)	(b) (c) H(d)	(c) (e)	(d) (f) H(g)	(e) (g) H(h)	(f) (i)	(g) (j) H(i)	(h) (k) H(j)	(i) (l)	(k) (m) H(k)	(l) (n)	(m) (o)	
	Total Costs	Total National Grid Labor Costs	National Grid Direct Labor	National Grid Allocated Labor	Total National Grid Employee Expenses	National Grid Direct Employee Expenses	National Grid Allocated Employee Expenses	External Services Costs	Direct External Services Costs	External Services Costs Originating from an Allocation	Other Costs (if any)	Other Direct Costs	Other Costs Originating from an Allocation
1	Residential New Construction (Electric)	\$2,005,635	\$2,042	\$0	\$2,042	\$0	\$110	\$202,850	\$203,248	-\$398	\$624	\$0	\$624
2	ENERGY STAR HVAC (Electric)	\$401,541	\$3,770	\$0	\$3,770	\$31	\$203	\$386,384	\$397,101	-\$717	\$1,152	\$0	\$1,152
3	EnergyWise (Electric)	\$1,605,274	\$8,246	-\$609	\$9,435	\$508	\$208	\$1,593,056	\$1,594,850	-\$1,794	\$2,884	\$0	\$2,884
4	EnergyWise Multifamily (Electric)	\$178,058	\$4,884	\$0	\$4,884	\$263	\$263	\$171,417	\$172,346	-\$929	\$1,493	\$0	\$1,493
5	Home Energy Reports (Electric)	\$5,499	\$69	\$0	\$69	\$4	\$4	\$5,405	\$5,418	-\$13	\$21	\$0	\$21
6	ENERGY STAR Lighting (Electric)	\$362,969	\$4,324	\$0	\$4,324	\$233	\$233	\$357,090	\$357,913	-\$822	\$1,322	\$0	\$1,322
7	Residential Consumer Products (Electric)	\$300,046	\$4,808	\$0	\$4,808	\$259	\$259	\$493,510	\$494,424	-\$914	\$1,470	\$0	\$1,470
8	Residential Connected Solutions (Electric)	\$101,401	\$6,916	\$6,213	\$703	\$217	\$38	\$94,053	\$94,187	-\$134	\$215	\$0	\$215
9	Energy Efficiency Education Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	Community Based Initiatives - Residential (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
12	Comprehensive Marketing - Residential (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
13	Other Residential Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-income Eligible Residential</b>	<b>\$3,360,423</b>	<b>\$35,641</b>	<b>\$5,604</b>	<b>\$30,036</b>	<b>\$1,828</b>	<b>\$1,617</b>	<b>\$3,313,774</b>	<b>\$3,319,486</b>	<b>-\$5,713</b>	<b>\$9,181</b>	<b>\$0</b>	<b>\$9,181</b>
15	Single Family - Income Eligible Services (Electric)	\$1,407,194	\$12,332	\$0	\$12,332	\$664	\$664	\$1,390,428	\$1,392,774	-\$2,345	\$3,770	\$0	\$3,770
16	Income Eligible Multifamily (Electric)	\$373,617	\$3,558	\$0	\$3,558	\$192	\$192	\$368,780	\$369,457	-\$677	\$1,088	\$0	\$1,088
17	<b>Subtotal Income Eligible Residential</b>	<b>\$1,780,812</b>	<b>\$15,891</b>	<b>\$0</b>	<b>\$15,891</b>	<b>\$856</b>	<b>\$856</b>	<b>\$1,769,208</b>	<b>\$1,762,230</b>	<b>-\$6,922</b>	<b>\$4,857</b>	<b>\$0</b>	<b>\$4,857</b>
18	Large Commercial New Construction (Electric)	\$1,166,502	\$356,175	\$199,898	\$216,317	\$34,868	\$16,454	\$772,742	\$749,879	\$22,863	\$2,717	\$0	\$2,717
19	Large Commercial Retrofit (Electric)	\$3,478,610	\$1,229,961	\$643,654	\$586,307	\$75,212	\$44,596	\$2,166,073	\$2,103,562	\$62,510	\$7,364	\$0	\$7,364
20	Small Business Direct Install (Electric)	\$144,110	\$130,235	\$57,260	\$72,975	\$6,706	\$1,155	\$6,255	-\$1,526	\$7,780	\$915	-\$2	\$917
21	Commercial Connected Solutions (Electric)	\$230,983	\$54,241	\$21,087	\$33,155	\$3,435	\$908	\$25,528	\$169,346	\$3,543	\$417	\$0	\$417
22	Commercial Pilots (Electric)	\$38,967	\$0	\$0	\$0	\$971	\$971	\$37,996	\$37,996	\$0	\$0	\$0	\$0
23	Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	Finance Costs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	Other C&I Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$5,059,171</b>	<b>\$1,770,612</b>	<b>\$861,960</b>	<b>\$908,753</b>	<b>\$121,192</b>	<b>\$69,128</b>	<b>\$3,195,954</b>	<b>\$3,059,058</b>	<b>\$96,896</b>	<b>\$11,413</b>	<b>-\$2</b>	<b>\$11,415</b>
28	<b>TOTAL All Sectors</b>	<b>\$10,200,406</b>	<b>\$1,822,143</b>	<b>\$867,464</b>	<b>\$954,680</b>	<b>\$123,875</b>	<b>\$71,601</b>	<b>\$8,228,936</b>	<b>\$8,140,775</b>	<b>\$88,161</b>	<b>\$25,451</b>	<b>-\$2</b>	<b>\$25,453</b>
	System Reliability Procurement (Electric)	\$1,487	-\$1,476	-\$1,476	\$0	\$0	\$0	-\$11	-\$11	\$0	\$0	\$0	\$0
	Regulatory (Electric)	\$175	\$0	\$0	\$0	\$175	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	<b>Other Costs Not Listed Above (Electric)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

**Schedule 8 - Evaluation & Market Research**

	(a) (b) Total Costs	(b) (c)-(d) Total National Grid Labor Costs	(c) (e) National Grid Direct Labor	(d) (f) National Grid Allocated Labor	(e) (g) Total National Grid Employee Expenses	(f) (h) National Grid Direct Employee Expenses	(g) (i) National Grid Allocated Employee Expenses	(h) (j) External Services Costs	(i) (k) Direct External Services Costs	(j) (l) External Services Costs Originating from an Allocation	(k) (m) Other Costs (if any)	(l) (n) Other Direct Costs	(m) (o) Other Costs Originating from an Allocation
1	Residential New Construction (Electric)	\$14,614	\$12,687	\$5,188	\$2,016	\$177	\$119	\$1,631	\$0	\$1,631	\$0	\$0	\$0
2	ENERGY STAR® HVAC (Electric)	\$7,826	\$6,094	\$2,497	\$3,598	\$62	\$88	\$1,866	\$455	\$1,131	\$0	\$0	\$0
3	EnergyWise (Electric)	\$37,343	\$18,891	\$0	\$18,891	\$433	\$433	\$18,017	\$12,078	\$5,940	\$0	\$0	\$0
4	EnergyWise Multifamily (Electric)	\$18,930	\$15,741	\$9,406	\$6,335	\$135	\$146	\$2,909	\$917	\$1,992	\$0	\$0	\$0
5	Home Energy Reports (Electric)	\$3,568	\$2,668	\$0	\$2,668	\$61	\$61	\$839	\$0	\$839	\$0	\$0	\$0
6	ENERGY STAR® Lighting (Electric)	\$102,746	\$12,952	\$1,591	\$11,361	\$0	\$262	\$89,533	\$85,961	\$3,572	\$0	\$0	\$0
7	Residential Consumer Products (Electric)	\$13,510	\$2,387	\$0	\$2,387	\$0	\$55	\$11,068	\$10,317	\$751	\$0	\$0	\$0
8	Residential Connected Solutions (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Energy Efficiency Education Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	Community Based Initiatives - Residential (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
12	Comprehensive Marketing - Residential (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
13	Other Residential Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-Income Eligible Residential</b>	<b>\$198,537</b>	<b>\$71,420</b>	<b>\$20,992</b>	<b>\$50,428</b>	<b>\$373</b>	<b>\$1,161</b>	<b>\$125,583</b>	<b>\$109,727</b>	<b>\$15,856</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
15	Single Family - Income Eligible Services (Electric)	\$111,265	\$28,064	\$0	\$28,064	\$51	\$646	\$82,504	\$73,680	\$8,824	\$0	\$0	\$0
16	Income Eligible Multifamily (Electric)	\$36,636	\$16,911	\$9,573	\$7,338	\$135	\$169	\$19,421	\$17,114	\$2,307	\$0	\$0	\$0
17	<b>Subtotal Income Eligible Residential</b>	<b>\$147,901</b>	<b>\$44,975</b>	<b>\$9,573</b>	<b>\$35,402</b>	<b>\$1,001</b>	<b>\$815</b>	<b>\$101,925</b>	<b>\$90,794</b>	<b>\$11,131</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
18	Large Commercial New Construction (Electric)	\$122,661	\$11,929	\$980	\$10,949	\$0	\$306	\$110,427	\$96,873	\$13,554	\$0	\$0	\$0
19	Large Commercial Retrofit (Electric)	\$412,876	\$60,581	\$2,769	\$57,812	\$1,614	\$1,614	\$350,681	\$279,113	\$71,568	\$0	\$0	\$0
20	Small Business Direct Install (Electric)	\$84,314	\$29,326	\$0	\$29,326	\$819	\$819	\$54,169	\$17,865	\$36,304	\$0	\$0	\$0
21	Commercial Connected Solutions (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	Commercial Pilots (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	Finance Costs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	Other C&I Programs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$619,851</b>	<b>\$101,836</b>	<b>\$3,749</b>	<b>\$98,087</b>	<b>\$0</b>	<b>\$2,739</b>	<b>\$515,277</b>	<b>\$393,850</b>	<b>\$121,426</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
28	<b>TOTAL All Sectors</b>	<b>\$966,289</b>	<b>\$218,230</b>	<b>\$34,314</b>	<b>\$183,916</b>	<b>\$559</b>	<b>\$4,715</b>	<b>\$742,784</b>	<b>\$594,371</b>	<b>\$148,413</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	System Reliability Procurement (Electric)	\$698	\$698	\$698	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Regulatory (Electric)	\$206,200	\$0	\$0	\$0	\$0	\$0	\$206,200	\$206,200	\$0	\$0	\$0	\$0
	<b>Other Costs Not Listed Above (Electric)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

**Schedule 9 - Shared Cross-Jurisdictional Costs (Non-Labor)**  
 (Non-Labor Services/Costs that are Shared with Other Jurisdictions and are Allocated to Rhode Island)

>\$100,000 only for Rhode Island

(a) (b) (b) (b) (c) (c) (c) (c) (d) (e) (f)

Description of Service/Cost	Total Cost Used as Basis for Allocation	(b) (c)(a)		(c) (c)		(c) (c)		(d) (e)		Description of Allocation Methodology
		Total Allocated to Rhode Island	Total Allocated to RI-ELEC	Total Allocated to RI-GAS	% to Rhode Island	% to RI-ELEC	% to RI-GAS	% to Mass.	% to New York	
1 Charged to DSM - InDemand Support & Releases	\$671,023	\$127,347	\$93,336	\$34,011	19%	14%	5%	67%	14%	Based on Overall Jurisdictional 2019 EE Budgets - ALL RI; ALL UPSTATE NY, ALL MA; ALL DOWNSTATE NY
2 Charged to DSM - InDemand Support & Releases	\$1,864,332	\$364,952	\$268,218	\$96,734	20%	14%	5%	80%	0%	Based on Overall Jurisdictional 2019 EE Budgets - ALL RI; ALL MA

**Schedule 10 - Methods for Allocating Costs >\$500,000 Across Rhode Island Programs/Sectors**

	(a)	(b)	(c)	(d)	(f)
Description of Cost Allocated	Total Cost Allocated	Allocation to Non-Eligible Residential Programs	Allocation to Eligible Residential Programs	Allocation to C&I Programs	Description of Allocation Methodology
1					
2	\$10,925	\$0	\$6,123	\$4,802	Based on PP&A Budgets of Programs Designated To Receive Allocations
3	\$361,553	\$0	\$202,647	\$158,907	Based on PP&A Budgets of Programs Designated To Receive Allocations
4					
5					
6	\$1,340,965	\$188,274	\$518,080	\$634,612	Based on PP&A Budgets of Programs Designated To Receive Allocations
7	\$36,286	\$1,356	\$21,755	\$13,176	Based on Marketing Budgets of Programs Designated To Receive Allocations
8	\$955,133	\$15,978	\$30,202	\$908,953	Based on STAT Budgets of Programs Designated To Receive Allocations
9	\$183,916	\$35,402	\$50,428	\$98,087	Based on Evaluation & Marketing Research Budgets of Programs Designated To Receive Allocations
10	<b>\$2,516,300</b>	<b>\$241,009</b>	<b>\$620,464</b>	<b>\$1,654,827</b>	



**Attachment 2**  
**Gas Summary Tables**  
**Year-End Results**

## Attachment 2

### Gas Summary Table of Year-End Results

**NATIONAL GRID ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND**  
**Table G-1: Summary of 2019 Target and Year End Results**

Sector and Program	(1) Energy Savings (MMBtu)		(2) Customer Participation		(3) Approved Budget		(4) Implementation Expenses (\$ 000)		(5) Energy Savings (Lifetime)	
	Approved Target	Pct Achieved	Actual	Pct Achieved	Approved Target	Actual	Approved Budget	Actual	Planned	Actual
<b>Commercial &amp; Industrial</b>										
Large Commercial New Construction	42,536	111.1%	47,261	111.1%	187	63	\$ 2,389.2	\$ 2,823.9	708,462	762,360
Large Commercial Retrofit	155,049	104.4%	161,814	104.4%	70	94	\$ 4,214.0	\$ 4,890.1	1,385,654	1,312,385
Small Business Direct Install	2,559	114.8%	2,938	114.8%	65	106	\$ 124.4	\$ 93.7	21,163	33,233
Commercial & Industrial Multifamily	10,829	101.4%	10,979	101.4%	2,289	1,530	\$ 918.4	\$ 997.0	155,667	169,025
Commercial Pilots							\$ 381.1	\$ 52.3		
Community Based Initiatives - C&I							\$ 13.0	\$ 3.8		
<b>SUBTOTAL</b>	<b>210,974</b>	<b>105.7%</b>	<b>222,992</b>	<b>105.7%</b>	<b>2,611</b>	<b>1,793</b>	<b>\$ 8,040.1</b>	<b>\$ 8,860.6</b>	<b>2,270,945</b>	<b>2,277,003</b>
<b>Income Eligible Residential</b>										
Single Family - Income Eligible Services	9,178	78.6%	7,212	78.6%	820	596	\$ 5,012.8	\$ 3,765.0	183,560	144,244
Income Eligible Multifamily	20,487	115.8%	23,719	115.8%	3,500	2,298	\$ 2,932.7	\$ 3,154.9	359,611	360,850
<b>SUBTOTAL</b>	<b>29,665</b>	<b>104.3%</b>	<b>30,931</b>	<b>104.3%</b>	<b>4,320</b>	<b>2,894</b>	<b>\$ 7,945.5</b>	<b>\$ 6,919.9</b>	<b>543,171</b>	<b>505,094</b>
<b>Non-Income Eligible Residential</b>										
Energy Star® HVAC	27,960	125.2%	35,011	125.2%	1,830	3,306	\$ 2,164.9	\$ 2,397.8	476,141	574,064
EnergyWise	27,806	119.5%	33,230	119.5%	2,300	4,495	\$ 8,466.3	\$ 9,291.8	668,615	758,022
EnergyWise Multifamily	16,043	91.5%	14,687	91.5%	4,000	1,008	\$ 1,677.5	\$ 1,022.1	255,276	233,735
Home Energy Reports	115,520	96.2%	111,117	96.2%	107,414	138,129	\$ 447.9	\$ 420.1	115,520	111,117
Residential New Construction	4,741	73.8%	3,499	73.8%	313	240	\$ 737.6	\$ 610.0	96,976	68,112
Comprehensive Marketing - Residential							\$ 73.7	\$ 43.9		
Community Based Initiatives - Residential							\$ 39.0	\$ 35.5		
<b>SUBTOTAL</b>	<b>192,069</b>	<b>102.9%</b>	<b>197,544</b>	<b>102.9%</b>	<b>115,858</b>	<b>147,178</b>	<b>\$ 13,606.8</b>	<b>\$ 13,821.2</b>	<b>1,612,528</b>	<b>1,745,050</b>
<b>Regulatory</b>										
EERMC							\$ 235.5	\$ 235.5		
OER							\$ 304.2	\$ 304.6		
<b>SUBTOTAL</b>							<b>\$ 539.7</b>	<b>\$ 540.0</b>		
<b>TOTAL</b>	<b>432,708</b>	<b>104.3%</b>	<b>451,466</b>	<b>104.3%</b>	<b>122,789</b>	<b>151,864</b>	<b>\$ 30,132.2</b>	<b>\$ 30,141.7</b>	<b>4,426,644</b>	<b>4,527,147</b>

NOTES  
(1)(4) Targets from Docket 4888 - Attachment 6, Table G-7 (gas).  
(3) Pct Achieved is Column (2)/ Column (1).  
(4) Participation was planned and is reported in 'net' terms which takes into account free-ridership and spillover.  
(6) Pct Achieved is Column (5)/ Column (4).  
(9) Pct Achieved is Column (8)/ Column (7).  
(12) Pct Achieved is Column (11) / Column (10)  
(14) \$/lifetime MMBtu = Column (8)\*1000/Column (11)

**NATIONAL GRID NATURAL GAS ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND**  
**Table G-2: Summary of Value and MMBTU Saved by Program**  
**2019 Program Year**

	Value (\$000)					MMBTU Gas Saved	
	(1) Total Value	(2) Natural Gas Benefits	(3) Non-Gas Benefits	Economic Benefits	NOx Benefits	(5) Annual	(6) Lifetime
<b>Commercial &amp; Industrial</b>							
Large Commercial New Construction	\$16,869	\$11,055	\$3,775	\$1,581	\$457	47,261	762,360
Large Commercial Retrofit	\$25,799	\$19,010	\$3,263	\$2,738	\$787	161,814	1,312,385
Commercial & Industrial Multifamily	\$4,463	\$2,546	\$1,258	\$558	\$101	10,979	169,025
Small Business Direct Install	\$874	\$481	\$321	\$52	\$20	2,938	33,233
<b>SUBTOTAL</b>	<b>\$48,005</b>	<b>\$33,092</b>	<b>\$8,616</b>	<b>\$4,931</b>	<b>\$1,366</b>	<b>222,992</b>	<b>2,277,003</b>
<b>Income Eligible Residential</b>							
Single Family - Income Eligible Services	\$11,478	\$2,287	\$6,437	\$2,673	\$81	7,212	144,244
Income Eligible Multifamily	\$9,831	\$5,747	\$1,642	\$2,240	\$202	23,719	360,850
<b>SUBTOTAL</b>	<b>\$21,309</b>	<b>\$8,034</b>	<b>\$8,079</b>	<b>\$4,913</b>	<b>\$283</b>	<b>30,931</b>	<b>505,094</b>
<b>Non-Income Eligible Residential</b>							
Energy Star® HVAC	\$11,278	\$9,066	\$509	\$1,702	\$321	35,011	574,064
EnergyWise	\$22,542	\$11,953	\$3,992	\$6,597	\$424	33,230	758,022
EnergyWise Multifamily	\$9,022	\$3,630	\$4,666	\$726	\$131	14,687	233,735
Home Energy Reports	\$1,975	\$1,677	\$0	\$298	\$62	111,117	111,117
Residential New Construction	\$1,605	\$1,071	\$101	\$433	\$38	3,499	68,112
<b>SUBTOTAL</b>	<b>\$46,422</b>	<b>\$27,397</b>	<b>\$9,268</b>	<b>\$9,757</b>	<b>\$977</b>	<b>197,544</b>	<b>1,745,050</b>
<b>TOTAL</b>	<b>\$115,736</b>	<b>\$68,524</b>	<b>\$25,963</b>	<b>\$19,600</b>	<b>\$2,626</b>	<b>451,466</b>	<b>4,527,147</b>

**Notes:**

- (1) Total Benefits equal Natural Gas Benefits plus Non-Gas Benefits plus Economic Benefits plus NOx Benefits. Carbon value is embedded in Natural Gas Benefits.  
(3) Non-Gas Benefits include electric benefits and non-resource benefits (excluding Economic and NOx benefits listed separately)

**NATIONAL GRID NATURAL GAS ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND**  
**Table G-3: Summary of B/C Ratios, Value and Costs (\$000's)**  
**2019 Program Year**

	(1)	(2)	(3)	(4)	(5)
	<b>Benefit/ Cost</b>	<b>Total Value</b>	<b>Program Implementation Expenses</b>	<b>Customer Contribution</b>	<b>Shareholder Incentive</b>
<b>Commercial &amp; Industrial</b>					
Large Commercial New Construction	2.53	\$16,869.4	\$2,823.9	\$3,833.0	
Large Commercial Retrofit	3.91	\$25,798.8	\$4,890.1	\$1,704.6	
Small Business Direct Install	7.33	\$873.9	\$93.7	\$25.5	
Commercial & Industrial Multifamily	3.53	\$4,463.1	\$997.0	\$268.3	
Commercial Pilots			\$52.3		
Community Based Initiatives - C&I			\$3.8		
<b>SUBTOTAL</b>	<b>3.18</b>	<b>\$48,005.3</b>	<b>\$8,860.6</b>	<b>\$5,831.5</b>	<b>\$404.8</b>
<b>Income Eligible Residential</b>					
Single Family - Income Eligible Services	3.05	\$11,478.1	\$3,765.0	\$0.0	
Income Eligible Multifamily	3.12	\$9,831.3	\$3,154.9	\$0.0	
<b>SUBTOTAL</b>	<b>2.88</b>	<b>\$21,309.3</b>	<b>\$6,919.9</b>	<b>\$0.0</b>	<b>\$475.6</b>
<b>Non-Income Eligible Residential</b>					
Energy Star® HVAC	1.98	\$11,277.6	\$2,397.8	\$3,297.9	
EnergyWise	2.00	\$22,542.2	\$9,291.8	\$1,993.5	
EnergyWise Multifamily	7.96	\$9,021.6	\$1,022.1	\$110.6	
Home Energy Reports	4.70	\$1,975.1	\$420.1	\$0.0	
Residential New Construction	1.38	\$1,605.2	\$610.0	\$551.7	
Community Based Initiatives - Residential			\$35.5		
Comprehensive Marketing - Residential			\$43.9		
<b>SUBTOTAL</b>	<b>2.27</b>	<b>\$46,421.6</b>	<b>\$13,821.2</b>	<b>\$5,953.7</b>	<b>\$699.7</b>
<b>Regulatory</b>					
EERMC			\$235.5		
OER			\$304.6		
<b>SUBTOTAL</b>			<b>\$540.0</b>		
<b>TOTAL</b>	<b>2.66</b>	<b>\$115,736.2</b>	<b>\$30,141.7</b>	<b>\$11,785.1</b>	<b>\$1,580.1</b>

Notes:

- (1) RI Test B/C Ratio = (Natural Gas Benefits + Non-Gas Benefits + Economic Benefits + Carbon Benefits + NOx Benefits) / (Program Implementation + Customer Contribution + Shareholder Incentive)
- (2) Year-End Value Total from Table G-2.
- (3) Year-End Implementation Expenses by Program from Table G-1.
- (5) Shareholder incentives from Table G-4.

**NATIONAL GRID NATURAL GAS ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND**  
**Table G-4: National Grid 2019 EE Incentive Calculation**

Incentive Rate: 5.00%

	(1)	(2)	(3)	(3a)	(3b)	(3c)	(4)
Sector	Approved Spending Budget	Target Incentive	Annual Savings Goal (MMBTU)	Actual Spending	% of Approved Spending	Budget Adjusted target MMBtu Savings	Threshold MMBtu Savings
Income Eligible Residential	\$ 7,945,536	\$ 397,277	29,665	\$ 6,919,894	87.1%	25,836	19,377
Non-Income Eligible Residential	\$ 13,606,849	\$ 680,342	192,069	\$ 13,821,202	101.6%	192,069	144,052
Commercial & Industrial	\$ 7,659,023	\$ 382,951	210,974	\$ 8,808,369	115.0%	210,974	158,230
<b>Total</b>	<b>\$ 29,211,408</b>	<b>\$ 1,460,570</b>	<b>432,708</b>	<b>\$ 29,549,465</b>	<b>101.2%</b>	<b>428,879</b>	<b>321,659</b>

	(5)	(6)	(7)	(8)	(9)
Sector	Actual MMBtu	% of Target Savings	Savings Eligible for Incentive	Earned Savings Incentive	% of Target Incentive Achieved
Income Eligible Residential	30,931	119.7%	30,931	\$475,618	119.7%
Non-Income Eligible Residential	197,544	102.9%	197,544	\$699,735	102.9%
Commercial & Industrial	222,992	105.7%	222,992	\$404,766	105.7%
<b>Total</b>	<b>451,466</b>	<b>105.3%</b>	<b>451,466</b>	<b>\$1,580,119</b>	<b>108.2%</b>

**Notes:**

- (1) Budget from 2019 EEPP. Includes Implementation; excludes Regulatory Costs, Residential and Commercial Pilots, Assessments, and Shareholder Incentive.
- (2) Equal to the incentive rate (5.0%) x Column (1).
- (3) Approved savings goal from 2019 EEPP
- (3a) Actual spending includes actual Implementation Expenses from Table G-1. It excludes Regulatory Costs, Residential and Commercial Pilots, Assessments, and Shareholder Incentive.
- (3b) Column (3a) / Column (1)
- (3c) Column (3) \* (3b), only if 100% of Target Savings were achieved in Column (3)
- (4) 75% of Target MMBtu Savings
- (5) Year End Savings from Table G-1
- (6) Column (5) / Column (3c)
- (7) If Column (6) is less than 75%, Column (8) = 0;  
 If Column (6) is between 75% and 125%, Column (7) = Column 5;  
 If Column (6) is greater than 125%, Column (7) = 125% of Column (3c) due to the incentive cap.
- (8) The shareholder incentive will be calculated as follow, where SB is the Spending Budget in the sector:  
 From 75% of savings to 100% of savings: Shareholder Incentive = SB x (0.15 x % of savings achieved - 0.10)  
 From 100% of savings to 125% of savings: Shareholder Incentive = SB x (0.05 x % of savings achieved)
- (9) Column (9) / Column (2)

**TABLE G-5**  
**OVERALL ANALYSIS OF NATURAL GAS ENERGY EFFICIENCY FUND BALANCE**

	<b>JANUARY</b>	<b>FEBRUARY</b>	<b>MARCH</b>	<b>APRIL</b>	<b>MAY</b>	<b>JUNE</b>	<b>TOTAL</b>
1. Start Of Period Balance	\$7,841,600	\$10,253,944	\$11,852,674	\$14,232,181	\$13,699,445	\$12,549,677	\$7,841,600
2. Revenue	\$4,681,213	\$2,869,843	\$3,085,202	\$1,876,366	\$1,238,107	\$802,205	\$14,552,935
3. Monthly EE Expenses	\$2,295,220	\$1,303,305	\$743,680	\$2,449,776	\$2,426,098	\$2,001,318	\$11,219,396
4. Cash Flow Over/(Under)	\$2,385,993	\$1,566,539	\$2,341,522	(\$573,411)	(\$1,187,992)	(\$1,199,113)	\$3,333,539
5. End Of Period Balance Before Interest	\$10,227,593	\$11,820,482	\$14,194,196	\$13,658,770	\$12,511,453	\$11,350,564	\$11,175,138
6. Interest	\$26,351	\$32,192	\$37,985	\$40,674	\$38,224	\$34,855	\$210,281
7. End Of Period Balance After Interest	\$10,253,944	\$11,852,674	\$14,232,181	\$13,699,445	\$12,549,677	\$11,385,419	\$11,385,419
	<b>JULY</b>	<b>AUGUST</b>	<b>SEPTEMBER</b>	<b>OCTOBER</b>	<b>NOVEMBER</b>	<b>DECEMBER</b>	<b>YEAR END TOTAL</b>
8. Start Of Period Balance	\$11,385,419	\$10,241,266	\$8,653,102	\$7,892,802	\$7,005,871	\$8,011,833	\$7,841,600
9. Revenue	\$631,243	\$643,210	\$663,962	\$1,093,692	\$2,443,372	\$3,143,292	\$23,171,706
10. Monthly EE Expenses	\$1,806,889	\$2,256,926	\$1,445,950	\$1,999,223	\$1,454,597	\$9,958,760	\$30,141,742
11. Cash Flow Over/(Under)	(\$1,175,646)	(\$1,613,716)	(\$781,988)	(\$905,531)	\$988,774	(\$6,815,468)	(\$6,970,036)
12. End Of Period Balance Before Interest	\$10,209,773	\$8,627,550	\$7,871,114	\$6,987,271	\$7,994,645	\$1,196,365	\$871,564
13. Interest	\$31,493	\$25,552	\$21,688	\$18,600	\$17,188	\$10,551	\$335,353
14. End Of Period Balance After Interest	\$10,241,266	\$8,653,102	\$7,892,802	\$7,005,871	\$8,011,833	\$1,206,916	<b>\$1,206,916</b>
15. 2019 Incentive							<b>\$1,580,119</b>
16. Ending Balance after Incentive							<b>(\$373,202)</b>
17. Income Eligible Subsidization							<b>\$0</b>
18. Ending Balance after Subsidization							<b>(\$373,202)</b>
1. Previous year's ending balance							
2. Business Objects queries for revenues							
3. SAP queries for expenses							
4. Line 2 minus Line 3							
5. Line 1 plus Line 4							
6. Interest applied							
7. Line 5 plus Line 6							
8. Previous month's ending balance							
9. Business Objects queries for revenues							
10. SAP queries for expenses							
11. Line 9 minus Line 10							
12. Line 8 plus Line 11							
13. Interest applied							
14. Line 12 plus Line 13							
15. Estimated 2019 Incentive plus prior period true-ups							

**NATIONAL GRID GAS ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND**  
**Table G-6: National Grid 2019 Revolving Loan Funds**

Large C&I Gas Revolving Loan Fund			Rhode Island Public Energy Partnership (RI PEP) Gas		
<u>Income Statement</u>			<u>Income Statement</u>		
(1)	2019 Funds Available	\$1,195,976	(1)	2019 Funds Available	\$413
(2)	2019 Loan budget	\$1,100,000	(4)	Paid	\$0
(3)	Committed	\$718,692	(4a)	Funds Returned to OER	\$0
(4)	Paid	\$913,037	(5)	<u>Repayments</u>	\$1,652
(5)	<u>Repayments</u>	\$739,958	(6)	<u>Available 12/31/19</u>	\$2,065
(6)	<u>Available 12/31/19</u>	\$304,205	(7)	Outstanding loan volume	\$2,478
(7)	Outstanding loan volume	\$1,698,477	(8)	Loan defaults during period (\$)	\$0
(8)	Loan defaults during period (\$)	\$0	(9)	Arrears over 120 days at period end (\$)	\$0
(9)	Arrears over 120 days at period end (\$)	\$1,806			
 <u>Program Impact</u>			 <u>Program Impact</u>		
(10)	Number of loans	16	(10)	Number of loans	
(10b)	Participants	12	(10b)	Participants	0
(11)	Annual Savings (Gross MMBtu)	28,398	(11)	Savings (MMBtu)	0
(12)	Annual Savings (Net MMBtu)	25,328			
(13)	Lifetime Savings (Gross MMBtu)	318,700			
(14)	Lifetime Savings (Net MMBtu)	295,678			
(17)	Total associated incentive volume (\$)	\$441,578			
(18)	Total annual estimated energy cost savings (\$)	\$658,145			

Notes

- 1 Amount available as of January 1, 2019.
- 2 Budget adopted by Sales Team for 2019 operations. Budget includes projections of repayments made during 2019.
- 3 As of December 31, 2019. Committed in 2019 but to be paid in 2020. Savings not included in 2019.
- 4 As of December 31, 2019. This includes all project paid in 2019 and the OBR associated with those projects. OBR payment are processed once the associated incentive has been paid usually in batches.
- 5 As of December 31, 2019
- 6 Fund balance as of December 31, 2019. Committed funds are subtracted from this amount.
- 7 Total outstanding loan balance. Loans lent out that still need to be paid back. This includes loans from previous years.
- 8 Total loan value in default during period.
- 9 Total loan value in arrears for over 120 days as of December 31, 2019.
- 10 As of December 31, 2019
- 10b Unique customer names for large business (one customer name can have multiple sub accounts as is in the case of a franchise).
- 11 As of December 31, 2019
- 12 As of December 31, 2019
- 13 As of December 31, 2019
- 14 As of December 31, 2019
- 15 As of December 31, 2019
- 16 As of December 31, 2019
- 17 Incentives paid out with loans.
- 18 Estimated energy cost savings to loan fund participants.





Attachment 2a  
Gas Costs Schedules



**Schedule 1a - Program and Sector Cost Summary**

**By Report Category**

(a) (b) (c) (d) (e)  
 (Schedule 4) (Schedule 5) (Schedule 6) (Schedule 7) (Schedule 8)  
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	Total Costs	Program Planning & Admin.	Marketing	Cost of services and product rebates/incentives provided to customers (1)	STAT	Evaluation & Research
1	Residential New Construction (Gas)	\$610,047	\$31,537	\$403,456	\$165,425	\$9,305
2	ENERGY STAR® HVAC (Gas)	\$2,397,829	\$77,458	\$2,096,509	\$109,445	\$2,239
3	EnergyWise (Gas)	\$9,291,781	\$169,700	\$7,779,174	\$1,260,136	\$7,501
4	EnergyWise Multifamily (Gas)	\$1,022,124	\$53,677	\$800,011	\$137,223	\$6,965
5	Home Energy Reports (Gas)	\$420,080	\$16,219	\$399,730	\$1,940	\$2,103
6	ENERGY STAR® Lighting (Gas)	\$0	\$0	\$0	\$0	\$0
7	Residential Consumer Products (Gas)	\$0	\$0	\$0	\$0	\$0
8	Residential Connected Solutions (Gas)	\$0	\$0	\$0	\$0	\$0
9	Energy Efficiency Education Programs (Gas)	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Gas)	\$0	\$0	\$0	\$0	\$0
11	Community Based Initiatives - Residential (Gas)	\$35,480	\$3,669	\$13,489	\$0	\$0
12	Comprehensive Marketing - Residential (Gas)	\$43,860	\$295	\$0	\$0	\$11
13	Other Residential Programs (Gas)	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-Income Eligible Residential</b>	<b>\$13,821,202</b>	<b>\$352,555</b>	<b>\$11,492,369</b>	<b>\$1,674,170</b>	<b>\$28,123</b>
15	Single Family - Income Eligible Services (Gas)	\$3,764,937	\$114,200	\$2,889,327	\$709,447	\$40,547
16	Income Eligible Multifamily (Gas)	\$3,154,938	\$70,456	\$2,665,208	\$411,442	\$6,377
17	<b>Subtotal Income Eligible Residential</b>	<b>\$6,919,894</b>	<b>\$184,656</b>	<b>\$5,554,535</b>	<b>\$1,120,889</b>	<b>\$46,924</b>
18	Large Commercial New Construction (Gas)	\$2,823,864	\$89,474	\$1,670,074	\$725,805	\$210,940
19	Large Commercial Retrofit (Gas)	\$4,890,060	\$358,826	\$2,844,172	\$1,150,989	\$301,262
20	Small Business Direct Install (Gas)	\$93,710	\$6,365	\$47,401	\$15,077	\$5,400
21	Commercial Connected Solutions (Gas)	\$0	\$0	\$0	\$0	\$0
22	Commercial Pilots (Gas)	\$52,254	\$0	\$52,254	\$0	\$0
23	Comprehensive Marketing C&I (Gas)	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Gas)	\$3,773	\$0	\$3,773	\$0	\$0
25	Commercial & Industrial Multifamily (Gas)	\$996,961	\$29,253	\$799,239	\$157,199	\$2,459
26	Finance Costs (Gas)	\$0	\$0	\$0	\$0	\$0
27	Other C&I Programs (Gas)	\$0	\$0	\$0	\$0	\$0
28	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$8,860,623</b>	<b>\$483,919</b>	<b>\$5,416,913</b>	<b>\$2,049,069</b>	<b>\$520,061</b>
29	<b>TOTAL All Sectors</b>	<b>\$29,601,719</b>	<b>\$1,021,130</b>	<b>\$22,463,816</b>	<b>\$4,844,128</b>	<b>\$595,108</b>

<b>Regulatory (Gas)</b>	\$540,023	\$471,048	\$0	\$0	\$175	\$68,800
<b>Other Costs Not Listed Above (Gas)</b>	\$0	\$0	\$0	\$0	\$0	\$0

**Schedule 2 - Labor and Employee Expenses**

(a) (b) (c) (d) (e) (f) (g) (h) (i)  
 (b)+(c) (e)+(h) (f)+(i) (e)+(f) (e) (h)+(i) (h)+(i)

	(a) Total National Grid Labor + Expenses	(b) National Grid Direct Labor + Expenses	(c) National Grid Allocated Labor + Expenses	(d) Total National Grid Labor	(e) National Grid Direct Labor	(f) National Grid Allocated Labor	(g) Total National Grid Employee Expenses	(h) National Grid Direct Employee Expenses	(i) National Grid Allocated Employee Expenses
1	Residential New Construction (Gas)	\$35,426	\$19,915	\$34,637	\$19,583	\$15,055	\$788	\$333	\$455
2	ENERGY STAR® HVAC (Gas)	\$78,261	\$41,394	\$74,875	\$39,316	\$35,559	\$3,367	\$2,078	\$1,309
3	EnergyWise (Gas)	\$138,600	\$22,991	\$115,610	\$22,780	\$111,777	\$4,044	\$211	\$3,833
4	EnergyWise Multifamily (Gas)	\$50,243	\$20,097	\$48,599	\$19,524	\$29,075	\$1,644	\$573	\$1,070
5	Home Energy Reports (Gas)	\$13,010	\$2,739	\$12,271	\$2,651	\$9,924	\$435	\$88	\$347
6	ENERGY STAR® Lighting (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	Residential Consumer Products (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	Residential Connected Solutions (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Energy Efficiency Education Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	Community Based Initiatives - Residential (Gas)	\$4,977	\$4,977	\$4,977	\$4,977	\$0	\$0	\$0	\$0
12	Comprehensive Marketing - Residential (Gas)	\$5,248	\$288	\$4,961	\$0	\$4,767	\$481	\$288	\$193
13	Other Residential Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-Income Eligible Residential</b>	<b>\$325,765</b>	<b>\$112,401</b>	<b>\$213,365</b>	<b>\$108,831</b>	<b>\$206,157</b>	<b>\$10,778</b>	<b>\$3,570</b>	<b>\$7,208</b>
15	Single Family - Income Eligible Services (Gas)	\$102,824	\$24,545	\$78,279	\$99,956	\$75,797	\$2,869	\$386	\$2,482
16	Income Eligible Multifamily (Gas)	\$56,264	\$15,232	\$41,032	\$54,288	\$39,621	\$1,976	\$565	\$1,411
17	<b>Subtotal Income Eligible Residential</b>	<b>\$159,088</b>	<b>\$39,777</b>	<b>\$119,311</b>	<b>\$38,876</b>	<b>\$115,418</b>	<b>\$4,845</b>	<b>\$951</b>	<b>\$3,894</b>
18	Large Commercial New Construction (Gas)	\$286,952	\$171,660	\$115,292	\$161,989	\$112,168	\$12,795	\$9,671	\$3,124
19	Large Commercial Retrofit (Gas)	\$596,376	\$391,617	\$204,759	\$371,737	\$199,587	\$25,053	\$19,880	\$5,172
20	Small Business Direct Install (Gas)	\$30,589	\$23,421	\$7,168	\$23,421	\$6,982	\$186	\$0	\$186
21	Commercial Connected Solutions (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	Commercial Pilots (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	Comprehensive Marketing C&I (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	Commercial & Industrial Multifamily (Gas)	\$37,750	\$12,564	\$25,185	\$36,639	\$24,607	\$1,110	\$532	\$578
26	Finance Costs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	Other C&I Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$951,666</b>	<b>\$599,261</b>	<b>\$352,405</b>	<b>\$569,178</b>	<b>\$343,344</b>	<b>\$39,144</b>	<b>\$30,083</b>	<b>\$9,061</b>
29	<b>TOTAL All Sectors</b>	<b>\$1,436,520</b>	<b>\$751,439</b>	<b>\$1,381,753</b>	<b>\$716,835</b>	<b>\$664,918</b>	<b>\$54,767</b>	<b>\$34,604</b>	<b>\$20,162</b>
	<b>Regulatory (Gas)</b>	<b>\$175</b>	<b>\$175</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$175</b>	<b>\$0</b>	<b>\$0</b>
	<b>Other Costs Not Listed Above (Gas)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

**Schedule 3 - Expenses Categorized as Vendor Costs in Company's Systems <sup>1</sup>**

	(a)	(b)	(c) (a) - (b)	(d)	(e)	(f) (d) + (e)	(g) (c) + (f)
	Total payments for services and product rebates/incentives for customers .2 (also referred to as "Rebates and Other Customer Incentives")	Rebate/Incentive Payments Made Directly to Customers by National Grid and Rebates Paid to PEX's to Whom Customer Rebates were Assigned	Payments for Services and Product Rebates/Incentives for customers which are made to vendors and then provided to customers (excluding costs included in col. b)3	Direct "External Costs" <sup>4</sup> from Vendor Services	"External Costs" from Vendors Originating from an Allocation	Total of Vendor Costs Categorized as "External Costs" from Service Vendors (excluding costs included in columns a, b & c)	Total Payments made to Vendors, Excluding Rebate/Incentive Payments Made Directly to Customers by National Grid (col. b)
1 Residential New Construction (Gas)	\$403,456	\$0	\$403,456	\$164,217	\$6,948	\$171,165	\$574,621
2 ENERGY STAR® HVAC (Gas)	\$2,096,509	\$0	\$2,096,509	\$202,294	\$20,765	\$223,059	\$2,319,568
3 EnergyWise (Gas)	\$7,779,174	\$0	\$7,779,174	\$1,309,691	\$64,316	\$1,374,008	\$9,153,181
4 EnergyWise Multifamily (Gas)	\$800,011	\$0	\$800,011	\$156,839	\$15,031	\$171,871	\$971,882
5 Home Energy Reports (Gas)	\$399,730	\$0	\$399,730	\$1,912	\$5,428	\$7,340	\$407,070
6 ENERGY STAR® Lighting (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7 Residential Consumer Products (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8 Residential ConnectedSolutions (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9 Energy Efficiency Education Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10 Residential Pilots (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11 Community Based Initiatives - Residential (Gas)	\$13,489	\$0	\$13,489	\$17,014	\$0	\$17,014	\$30,503
12 Comprehensive Marketing - Residential (Gas)	\$0	\$0	\$0	\$35,767	\$2,844	\$38,611	\$38,611
13 Other Residential Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14 <b>Subtotal Non-Income Eligible Residential</b>	<b>\$11,492,369</b>	<b>\$0</b>	<b>\$11,492,369</b>	<b>\$1,887,735</b>	<b>\$115,332</b>	<b>\$2,003,068</b>	<b>\$13,495,436</b>
15 Single Family - Income Eligible Services (Gas)	\$2,889,327	\$0	\$2,889,327	\$733,386	\$39,419	\$772,805	\$3,662,132
16 Income Eligible Multifamily (Gas)	\$2,665,208	\$0	\$2,665,208	\$410,646	\$22,820	\$433,466	\$3,098,674
17 <b>Subtotal Income Eligible Residential</b>	<b>\$5,554,535</b>	<b>\$0</b>	<b>\$5,554,535</b>	<b>\$1,144,032</b>	<b>\$62,239</b>	<b>\$1,206,271</b>	<b>\$6,760,806</b>
18 Large Commercial New Construction (Gas)	\$1,670,074	\$728,285	\$941,789	\$811,962	\$54,877	\$866,839	\$1,808,628
19 Large Commercial Retrofit (Gas)	\$2,844,172	\$663,910	\$2,180,263	\$1,334,688	\$114,823	\$1,449,511	\$3,629,774
20 Small Business Direct Install (Gas)	\$47,401	\$0	\$47,401	\$12,339	\$3,382	\$15,721	\$63,122
21 Commercial ConnectedSolutions (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22 Commercial Pilots (Gas)	\$52,254	\$0	\$52,254	\$0	\$0	\$0	\$52,254
23 Comprehensive Marketing C&I (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24 Community Based Initiatives - C&I (Gas)	\$3,773	\$0	\$3,773	\$0	\$0	\$0	\$3,773
25 Commercial & Industrial Multifamily (Gas)	\$799,239	\$0	\$799,239	\$145,162	\$14,810	\$159,973	\$959,212
26 Finance Costs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27 Other C&I Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28 <b>Subtotal Commercial &amp; Industrial</b>	<b>\$5,416,913</b>	<b>\$1,392,194</b>	<b>\$4,024,718</b>	<b>\$2,304,152</b>	<b>\$187,892</b>	<b>\$2,492,044</b>	<b>\$6,516,762</b>
29 <b>TOTAL All Sectors</b>	<b>\$22,463,816</b>	<b>\$1,392,194</b>	<b>\$21,071,621</b>	<b>\$5,335,919</b>	<b>\$365,464</b>	<b>\$5,701,383</b>	<b>\$26,773,004</b>
<b>Regulatory (Gas)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$539,848</b>	<b>\$539,848</b>	<b>\$539,848</b>	<b>\$539,848</b>
<b>Other Costs Not Listed Above (Gas)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

<sup>1</sup> The Company's accounting system treats all payments made directly to customers and vendors as one category of vendor expenses. Rebates paid to customers through service contracts with vendors are included in the service cost of the vendor.

<sup>2</sup> This category has formally been labeled in prior year annual reports as "Rebates and Other Customer Incentives" in annual reports.

<sup>3</sup> This cost category includes service costs for customers plus rebates/incentives processed and paid to customers by the vendor, but excludes rebates paid directly to customers by the Company in col (b).

<sup>4</sup> The term "External Costs" has been used in Company reports to identify a subset of vendor costs not included in "Rebates and Other Customer Incentives".



Schedule 5 - Marketing

	(a) (b)(1)-(b)(4)	(b) (c)-(d)	(c) (e)	(d) (f)-(g)	(e) (h)-(i)	(f) (j)-(k)	(g) (l)-(m)	(h) (n)-(o)	(i) (p)-(q)	(j) (r)-(s)	(k) (t)-(u)	(l) (v)-(w)	(m) (x)-(y)
	Total Costs	Total National Grid Labor Costs	National Grid Direct Labor	National Grid Allocated Labor	Total National Grid Employee Expenses	National Grid Direct Employee Expenses	National Grid Allocated Employee Expenses	External Services Costs	Direct External Services Costs	External Services Costs Originating from an Allocation	Other Costs (if any)	Other Direct Costs	Other Costs Originating from an Allocation
1	Residential New Construction (Gas)	\$324	\$197	\$199	\$8	\$0	\$8	\$119	\$0	\$119	\$0	\$0	\$0
2	ENERGY STAR® HVAC (Gas)	\$112,179	\$15,086	\$7,573	\$7,513	\$850	\$306	\$95,937	\$91,455	\$4,482	\$0	\$0	\$0
3	EnergyWise (Gas)	\$75,270	\$10,491	\$5,042	\$5,049	\$199	\$199	\$64,579	\$61,656	\$2,923	\$0	\$0	\$0
4	EnergyWise Multifamily (Gas)	\$24,289	\$3,396	\$1,415	\$1,980	\$0	\$0	\$20,767	\$19,996	\$1,271	\$0	\$0	\$0
5	Home Energy Reports (Gas)	\$88	\$54	\$0	\$54	\$0	\$0	\$32	\$32	\$0	\$0	\$0	\$0
6	ENERGY STAR® Lighting (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	Residential Consumer Products (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	Residential Connected Solutions (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Energy Efficiency Education Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	Community Based Initiatives - Residential (Gas)	\$18,322	\$1,308	\$1,308	\$0	\$0	\$0	\$17,014	\$17,014	\$0	\$0	\$0	\$0
12	Comprehensive Marketing - Residential (Gas)	\$43,533	\$4,580	\$0	\$4,580	\$288	\$186	\$38,500	\$35,767	\$2,732	\$0	\$0	\$0
13	Other Residential Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-Income Eligible Residential</b>	<b>\$273,985</b>	<b>\$35,112</b>	<b>\$15,736</b>	<b>\$19,376</b>	<b>\$1,137</b>	<b>\$789</b>	<b>\$236,947</b>	<b>\$225,388</b>	<b>\$11,559</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
15	Single Family - Income Eligible Services (Gas)	\$11,437	\$4,365	\$3,434	\$931	\$0	\$38	\$7,034	\$6,478	\$555	\$0	\$0	\$0
16	Income Eligible Multifamily (Gas)	\$1,454	\$644	\$0	\$644	\$0	\$26	\$783	\$399	\$384	\$0	\$0	\$0
17	<b>Subtotal Income Eligible Residential</b>	<b>\$12,891</b>	<b>\$5,010</b>	<b>\$3,434</b>	<b>\$1,575</b>	<b>\$0</b>	<b>\$64</b>	<b>\$7,817</b>	<b>\$6,877</b>	<b>\$940</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
18	Large Commercial New Construction (Gas)	\$127,571	\$8,958	\$836	\$8,122	\$43	\$207	\$118,363	\$116,792	\$1,570	\$0	\$0	\$0
19	Large Commercial Retrofit (Gas)	\$234,811	\$17,474	\$5,186	\$12,288	\$471	\$314	\$216,552	\$214,716	\$2,376	\$0	\$0	\$0
20	Small Business Direct Install (Gas)	\$19,467	\$12,548	\$11,421	\$1,126	\$0	\$29	\$6,891	\$6,673	\$218	\$0	\$0	\$0
21	Commercial Connected Solutions (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	Commercial Pilots (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	Comprehensive Marketing C&I (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Gas)	\$8,811	\$5,410	\$4,724	\$686	\$18	\$18	\$3,383	\$3,251	\$133	\$0	\$0	\$0
25	Commercial & Industrial Multifamily (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	Finance Costs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	Other C&I Programs (Gas)	\$390,660	\$44,390	\$22,167	\$22,223	\$514	\$568	\$345,189	\$340,892	\$4,296	\$0	\$0	\$0
28	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$677,536</b>	<b>\$84,511</b>	<b>\$41,337</b>	<b>\$43,774</b>	<b>\$1,082</b>	<b>\$1,420</b>	<b>\$589,953</b>	<b>\$573,158</b>	<b>\$16,795</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
29	<b>TOTAL All Sectors</b>	<b>\$991,521</b>	<b>\$120,013</b>	<b>\$57,173</b>	<b>\$63,150</b>	<b>\$2,219</b>	<b>\$2,213</b>	<b>\$726,900</b>	<b>\$709,033</b>	<b>\$17,867</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	Regulatory (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Other Costs Not Listed Above (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0



**Schedule 6 - Cost of services and product rebates/incentives provided to customers (1)**

Annual threshold > \$100,000 for evaluation of allocation between Col. (b) vs. Col. (c)

Default Assumption, expenses allocated to Col. (c)

	(a) (b)+(c)	(b)	(c)	(d)
	Total payments for services and product rebates/incentives for customers which are paid directly to a customer or provided to customer via a vendor	Rebate/Incentive Payments Directly Paid to Customers	Payments for Services and Product Rebates/Incentives for customers which are made to vendors and then provided to customers	Description of External Payments
1 Residential New Construction (Gas)	\$403,456	\$0	\$403,456	Payments are made to external vendor(s) that are then used to provide rebates to customers for approved energy efficiency products that are installed in new customer dwellings. Payments also include a home performance testing service at no cost to the customer.
2 ENERGY STAR® HVAC (Gas)	\$2,096,509	\$0	\$2,096,509	Payments are made to external vendor(s) that are then used to provide rebates to customers for approved energy efficiency HVAC products that are installed in rate payer customer dwellings.
3 EnergyWise (Gas)	\$7,779,174	\$0	\$7,779,174	Payments are made to external vendor(s) that are then used to discount approved energy efficiency products that are installed in single family customer dwellings. Payments also include a service to customers in the form of no cost energy assessments.
4 EnergyWise Multifamily (Gas)	\$800,011	\$0	\$800,011	Payments are made to external vendors that are then used to discount approved energy efficiency products that are installed in multifamily customer dwellings. Payments also include a service to customers in the form of no cost energy assessments.
5 Home Energy Reports Gas)	\$399,730	\$0	\$399,730	Payments include costs associated with the delivery of the program. The HER program does not feature direct customer incentives or rebates. Instead the funds in this category are utilized in the production and delivery of Home Energy Reports. The costs associated with this effort are categorized as "Rebates and Other Incentives" because the reports drive customer actions to change energy consumption behaviors, resulting in energy cost savings to those customers and benefits to all customers.
6 ENERGY STAR® Lighting (Gas)	\$0	\$0	\$0	N/A
7 Residential Consumer Products (Gas)	\$0	\$0	\$0	N/A
8 Residential ConnectedSolutions (Gas)	\$0	\$0	\$0	N/A
9 Energy Efficiency Education Programs (Gas)	\$0	\$0	\$0	N/A
10 Residential Pilots (Gas)	\$0	\$0	\$0	N/A
11 Community Based Initiatives - Residential (Gas)	\$13,489	\$0	\$13,489	Payments can either be made directly to a community or payments can be made to external vendor(s) that are then used to discount approved energy efficiency products for communities participating in the Community Based Initiative.
12 Comprehensive Marketing - Residential (Gas)	\$0	\$0	\$0	N/A
13 Other Residential Programs (Gas)	\$0	\$0	\$0	N/A
14 Subtotal Non-Income Eligible Residential	\$11,492,369	\$0	\$11,492,369	
15 Single Family - Income Eligible Services (Gas)	\$2,889,327	\$0	\$2,889,327	Payments are made to external vendors that are then used to cover 100% of the cost for approved energy efficiency products that are installed in single family income eligible customer dwellings. Payments also include a no cost service to customers in the form of no cost energy assessments.
16 Income Eligible Multifamily (Gas)	\$2,665,208	\$0	\$2,665,208	Payments are made to external vendors that are then used to cover 100% of the cost for approved energy efficiency products that are installed in multifamily customer dwellings. Payments also include a no cost service to customers in the form of no cost energy assessments.
17 Subtotal Income Eligible Residential	\$5,554,535	\$0	\$5,554,535	
18 Large Commercial New Construction (Gas)	\$1,670,074	\$728,285	\$941,789	Payments are made to external vendor(s) that are then used to discount approved energy efficiency products that are installed in customer facilities. Payments are also made directly to customers for the installation of approved energy efficiency measures.
19 Large Commercial Retrofit (Gas)	\$2,844,172	\$663,910	\$2,180,263	Payments are made to external vendor(s) that are then used to discount approved energy efficiency products that are installed in customer facilities. Payments are also made directly to customers for the installation of approved energy efficiency measures.
20 Small Business Direct Install (Gas)	\$47,401	\$0	\$47,401	Payments are made to external vendor(s) that are then used to discount approved energy efficiency products that are installed in customer facilities. Payments are also made directly to customers for the installation of approved energy efficiency measures. Payments also include no cost services to customers including no cost energy assessments.
21 Commercial ConnectedSolutions (Gas)	\$0	\$0	\$0	N/A
22 Commercial Pilots (Gas)	\$52,254	\$0	\$52,254	Incentive payments are made directly to customers for participation in this program.
23 Comprehensive Marketing C&I (Gas)	\$0	\$0	\$0	N/A
24 Community Based Initiatives - C&I (Gas)	\$3,773	\$0	\$3,773	Payments can either be made directly to a municipality or payments can be made to external vendor(s) that are then used to discount approved energy efficiency products for communities participating in the Community Based Initiative.
25 Commercial & Industrial Multifamily (Gas)	\$799,239	\$0	\$799,239	N/A
26 Finance Costs (Gas)	\$0	\$0	\$0	N/A
27 Other C&I Programs (Gas)	\$0	\$0	\$0	N/A
28 Subtotal Commercial & Industrial	\$5,416,913	\$1,392,194	\$4,024,718	
29 TOTAL All Sectors	\$22,463,816	\$1,392,194	\$21,071,621	
Regulatory (Gas)	\$0	\$0	\$0	
Other Costs Not Listed Above (Gas)	\$0	\$0	\$0	

(1) In the 2019 Energy Efficiency Annual Plan filing, this cost category was referred to as "Rebates and Other Incentives"

**Schedule 7 - Sales, Technical Assistance & Training (STAT)**

	(a) (b) He H+(b)H(k)	(b) (c) H+(d)	(c) (e)	(d) (f)+(g)	(e) (f)	(g) (h)	(f) (i)	(h) (j)+(k)	(i) (l)	(j) (m)	(k) (n)+(o)	(l) (p)	(m) (q)
	Total Costs	Total National Grid Labor Costs	National Grid Direct Labor	National Grid Allocated Labor	Total National Grid Employee Expenses	National Grid Direct Employee Expenses	National Grid Allocated Employee Expenses	External Services Costs	Direct External Services Costs	External Services Costs Originating from an Allocation	Other Costs (if any)	Other Direct Costs	Other Costs Originating from an Allocation
1	Residential New Construction (Gas)	\$1,033	\$0	\$1,033	\$7	\$0	\$7	\$164,385	\$164,138	\$247	\$0	\$0	\$0
2	ENERGY STAR® HVAC (Gas)	\$1,368	\$0	\$1,368	\$117	\$107	\$9	\$107,961	\$107,633	\$327	\$0	\$0	\$0
3	ENERGYWISE (Gas)	\$8,407	-\$120	\$8,528	\$57	\$8,471	\$57	\$1,251,672	\$1,249,641	\$2,031	\$0	\$0	\$0
4	EnergyWise Multifamily (Gas)	\$137,223	\$2,042	\$139,265	\$13	\$137	\$2	\$135,168	\$134,697	\$471	\$0	\$0	\$0
5	Home Energy Reports (Gas)	\$1,940	\$28	\$1,968	\$0	\$1,940	\$28	\$1,911	\$1,905	\$7	\$0	\$0	\$0
6	ENERGY STAR® Lighting (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	Residential Consumer Products (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	Residential Connected Solutions (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Energy Efficiency Education Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	Community Based Initiatives - Residential (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
12	Comprehensive Marketing - Residential (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
13	Other Residential Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-income Eligible Residential</b>	<b>\$1,674,170</b>	<b>\$12,878</b>	<b>-\$9</b>	<b>\$12,887</b>	<b>\$107</b>	<b>\$87</b>	<b>\$1,661,097</b>	<b>\$1,658,014</b>	<b>\$3,083</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
15	Single Family - Income Eligible Services (Gas)	\$709,447	\$5,698	\$0	\$5,698	\$0	\$5,698	\$703,711	\$702,348	\$1,363	\$0	\$0	\$0
16	Income Eligible Multifamily (Gas)	\$411,442	\$1,930	\$12	\$1,942	\$12	\$1,930	\$409,487	\$409,025	\$462	\$0	\$0	\$0
17	<b>Subtotal Income Eligible Residential</b>	<b>\$1,120,889</b>	<b>\$7,628</b>	<b>\$0</b>	<b>\$7,628</b>	<b>\$12</b>	<b>\$51</b>	<b>\$4,113,197</b>	<b>\$4,111,373</b>	<b>\$1,825</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
18	Large Commercial New Construction (Gas)	\$725,805	\$203,004	\$154,695	\$48,309	\$9,414	\$1,659	\$511,727	\$501,420	\$10,308	\$0	\$0	\$0
19	Large Commercial Retrofit (Gas)	\$1,150,989	\$413,237	\$355,545	\$57,692	\$19,409	\$1,981	\$716,362	\$704,052	\$12,310	\$0	\$0	\$0
20	Small Business Direct Install (Gas)	\$15,077	\$14,444	\$11,999	\$2,445	\$0	\$84	\$549	\$27	\$522	\$0	\$0	\$0
21	Commercial Connected Solutions (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	Commercial Pilots (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	Comprehensive Marketing C&I (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	Commercial & Industrial Multifamily (Gas)	\$157,199	\$13,420	\$6,288	\$7,132	\$406	\$745	\$143,134	\$141,612	\$1,522	\$0	\$0	\$0
26	Finance Costs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	Other C&I Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$2,049,069</b>	<b>\$644,105</b>	<b>\$528,528</b>	<b>\$115,577</b>	<b>\$29,224</b>	<b>\$3,969</b>	<b>\$1,371,772</b>	<b>\$1,347,111</b>	<b>\$24,661</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
29	<b>TOTAL All Sectors</b>	<b>\$4,844,128</b>	<b>\$664,611</b>	<b>\$528,519</b>	<b>\$136,092</b>	<b>\$29,343</b>	<b>\$4,107</b>	<b>\$4,146,066</b>	<b>\$4,116,497</b>	<b>\$29,569</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	Regulatory (Gas)	\$175	\$0	\$0	\$0	\$175	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Other Costs Not Listed Above (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

**Schedule 8 - Evaluation & Market Research**

	(a) (b) He + (b) + (k)	(b) (c) + (d)	(c) (e)	(d)	(e) (f) + (g)	(f)	(g)	(h) (i) + (j)	(i)	(j) (k) + (m)	(k)	(l)	(m)
	Total Costs	Total National Grid Labor Costs	National Grid Direct Labor	National Grid Allocated Labor	Total National Grid Employee Expenses	National Grid Direct Employee Expenses	National Grid Allocated Employee Expenses	External Services Costs	Direct External Services Costs	External Services Costs Originating from an Allocation	Other Costs (If any)	Other Direct Costs	Other Costs Originating from an Allocation
1	Residential New Construction (Gas)	\$9,305	\$3,155	\$4,889	\$175	\$74	\$101	\$1,086	\$0	\$1,086	\$0	\$0	\$0
2	ENERGY STAR® HVAC (Gas)	\$2,239	\$793	\$1,163	\$24	\$0	\$24	\$958	\$0	\$958	\$0	\$0	\$0
3	EnergyWise (Gas)	\$7,501	\$6,012	\$6,226	\$123	\$0	\$123	\$1,364	\$0	\$1,364	\$0	\$0	\$0
4	EnergyWise Multifamily (Gas)	\$6,965	\$5,639	\$3,614	\$108	\$63	\$45	\$1,218	\$755	\$463	\$0	\$0	\$0
5	Home Energy Reports (Gas)	\$2,103	\$1,692	\$0	\$35	\$0	\$35	\$376	\$0	\$376	\$0	\$0	\$0
6	ENERGY STAR® Lighting (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	Residential Consumer Products (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	Residential Connected Solutions (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Energy Efficiency Education Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	Community Based Initiatives - Residential (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
12	Comprehensive Marketing - Residential (Gas)	\$11	\$9	\$0	\$0	\$0	\$0	\$2	\$0	\$2	\$0	\$0	\$0
13	Other Residential Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-Income Eligible Residential</b>	<b>\$28,123</b>	<b>\$23,352</b>	<b>\$7,248</b>	<b>\$16,004</b>	<b>\$138</b>	<b>\$330</b>	<b>\$4,304</b>	<b>\$750</b>	<b>\$3,554</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
15	Single Family - Income Eligible Services (Gas)	\$40,547	\$12,851	\$0	\$282	\$17	\$265	\$27,414	\$24,560	\$2,854	\$0	\$0	\$0
16	Income Eligible Multifamily (Gas)	\$6,377	\$4,887	\$2,808	\$98	\$55	\$43	\$1,393	\$931	\$462	\$0	\$0	\$0
17	<b>Subtotal Income Eligible Residential</b>	<b>\$46,924</b>	<b>\$17,738</b>	<b>\$2,808</b>	<b>\$14,931</b>	<b>\$72</b>	<b>\$308</b>	<b>\$28,806</b>	<b>\$25,491</b>	<b>\$3,316</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
18	Large Commercial New Construction (Gas)	\$210,940	\$10,362	\$249	\$10,113	\$0	\$457	\$200,121	\$193,063	\$7,058	\$0	\$0	\$0
19	Large Commercial Retrofit (Gas)	\$301,262	\$21,837	\$0	\$24,837	\$986	\$986	\$278,439	\$263,200	\$15,240	\$0	\$0	\$0
20	Small Business Direct Install (Gas)	\$5,400	\$497	\$0	\$0	\$0	\$0	\$4,903	\$4,534	\$369	\$0	\$0	\$0
21	Commercial Connected Solutions (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	Commercial Pilots (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
23	Comprehensive Marketing C&I (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	Commercial & Industrial Multifamily (Gas)	\$2,459	\$1,796	\$1,020	\$776	\$22	\$35	\$606	\$65	\$541	\$0	\$0	\$0
26	Finance Costs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	Other C&I Programs (Gas)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
28	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$520,061</b>	<b>\$34,492</b>	<b>\$1,269</b>	<b>\$33,223</b>	<b>\$22</b>	<b>\$1,500</b>	<b>\$484,048</b>	<b>\$460,862</b>	<b>\$23,186</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
29	<b>TOTAL All Sectors</b>	<b>\$595,108</b>	<b>\$75,582</b>	<b>\$11,425</b>	<b>\$64,158</b>	<b>\$221</b>	<b>\$2,137</b>	<b>\$557,158</b>	<b>\$487,102</b>	<b>\$30,058</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Regulatory (Gas)</b>	<b>\$68,800</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$68,800</b>	<b>\$68,800</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Other Costs Not Listed Above (Gas)</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>

**Schedule 9 - Shared Cross-Jurisdictional Costs (Non-Labor)**  
 (Non-Labor Services/Costs that are Shared with Other Jurisdictions and are Allocated to Rhode Island)

>\$100,000 only for Rhode Island

(a) (b) (b) (b) (c) (c) (c) (c) (d) (e) (f)

Description of Service/Cost	Total Cost Used as Basis for Allocation	(b) (c)(a)		(c) (c)		(c) (c)		(d) (e)		Description of Allocation Methodology
		Total Allocated to Rhode Island	Total Allocated to RI-ELEC	Total Allocated to RI-GAS	% to Rhode Island	% to RI-ELEC	% to RI-GAS	% to Mass.	% to New York	
1 Charged to DSM - InDemand Support & Releases	\$671,023	\$127,347	\$93,336	\$34,011	19%	14%	5%	67%	14%	Based on Overall Jurisdictional 2019 EE Budgets - ALL RI; ALL UPSTATE NY, ALL MA; ALL DOWNSTATE NY
2 Charged to DSM - InDemand Support & Releases	\$1,864,332	\$364,952	\$268,218	\$96,734	20%	14%	5%	80%	0%	Based on Overall Jurisdictional 2019 EE Budgets - ALL RI; ALL MA

**Schedule 10 - Methods for Allocating Costs >\$500,000 Across Rhode Island Programs/Sectors**

	(a)	(b)	(c)	(d)	(f)
Description of Cost Allocated	Total Cost Allocated	Allocation to Non-Eligible Residential Programs	Allocation to Eligible Residential Programs	Allocation to C&I Programs	Description of Allocation Methodology
1					
2	\$6,367	\$0	\$3,568	\$2,798	Based on PP&A Budgets of Programs Designated to Receive Allocations
3	\$130,745	\$0	\$73,281	\$57,464	Based on PP&A Budgets of Programs Designated to Receive Allocations
4					
5					
6	\$421,495	\$91,284	\$157,890	\$172,321	Based on PP&A Budgets of Programs Designated to Receive Allocations
7	\$43,174	\$1,575	\$19,376	\$22,223	Based on Marketing Budgets of Programs Designated to Receive Allocations
8	\$136,092	\$7,628	\$12,887	\$115,577	Based on STAT Budgets of Programs Designated to Receive Allocations
9	\$64,158	\$14,931	\$16,004	\$33,223	Based on Evaluation & Market Research Budgets of Programs Designated to Receive Allocations
10	<b>\$664,918</b>	<b>\$115,418</b>	<b>\$206,157</b>	<b>\$343,344</b>	



## Attachment 3

### Case Studies and Evaluation Summaries



# Municipal Energy-Efficiency Upgrades that Pay for Themselves



ENERGY AUDIT



LED LIGHTING



HVAC SYSTEMS



WEATHERIZATION

The City of Pawtucket was able to save energy and money without any out-of-pocket expenses by working with National Grid, the Rhode Island Office of Energy Resources and the Rhode Island Infrastructure Bank.

It all started with an energy audit. When the City of Pawtucket decided to embark on a path to lower energy use, they turned to National Grid for a no-cost energy audit of all of their various facilities, including the city hall, public libraries, Leon A. Mathieu Senior Center and more.

The audit identified many significant energy-efficiency improvements, ranging from streetlight LED conversions and LED lighting upgrades at every facility to weatherization, air sealing, a building management system at four facilities, and HVAC system replacements, including boilers and centralized control systems.

Implementing all of the recommended energy-efficiency measures would cost \$4.4 million. National Grid and the Rhode Island Office of Energy Resources calculated the savings that could be achieved by each upgrade. Converting streetlights to LEDs was expected to deliver the largest cost savings.

Officials from the City of Pawtucket decided to utilize the shorter payback period of the streetlight LED retrofits to support upgrades such as new energy-efficient boilers.

This comprehensive approach not only decreases energy use but also increases indoor air quality and comfort. Plus, it helps more than the city—lower carbon emissions help preserve the planet for future generations.

*“We’ve got nothing but positive feedback and I will tell you that National Grid has been a great partner and continues to be very supportive”*

– Don Grebien, mayor of Pawtucket



*Pawtucket's town hall was one of the city's facilities that had a National Grid no-cost energy audit.*

DRAFT

See all the possibilities  
at [ngrid.com/business](http://ngrid.com/business)

**nationalgrid**





The City of Pawtucket's investment in building management systems helped to significantly reduce energy costs.

"These projects create a lot of local jobs, and engaging the local vendor networks to provide services is something we're very proud of," said Nathan Cleveland, programming services officer at the Rhode Island Office of Energy Resources.

### Upgrades That Pay for Themselves

The key challenge for the City of Pawtucket was how to pay for these large infrastructure projects, but National Grid and the Rhode Island Infrastructure Bank were able to offer a solution.

The City of Pawtucket received \$500,000 in incentives from National Grid to reduce the cost of upgrades as well as a very-low-interest loan from Rhode Island Infrastructure Bank that reduced the borrowing cost compared with a municipal bond.

This resulted in a smaller loan payment that could easily be covered by the savings achieved through the energy-efficiency improvements. So, the city didn't have to spend any money to receive all of the benefits.



### \$6.3M in Savings Over the First 13 Years

This project was a huge success for the community, with savings exceeding costs immediately upon completion. And, once the loan is fully paid in 13 years, the city will reap even more rewards.

The City of Pawtucket was also recognized by Rhode Island's governor with the "Lead by Example Clean Energy Award" for setting the example in adopting and implementing clean energy measures that help the state transition to a cleaner, low-carbon energy economy.

"This is one of the first comprehensive energy-efficiency projects in Rhode Island, and we are proud of the results that it has achieved for the community," said Jerry Drummond, lead energy-efficiency representative for state and municipal agencies at National Grid. "The energy-efficiency measures not only generated a positive cash flow for the city and improved building comfort, but also helped the environment through lower emissions. So everyone benefits."

"Partnering with National Grid was so easy," said Joseph Morais, project leader, Engineering Division, Department of



Officials from the City of Pawtucket decided to utilize the shorter payback period of the streetlight LED retrofits to support upgrades such as new energy-efficient boilers.

Public Works for the City of Pawtucket. "From the energy audit all the way to implementation, they were right beside us making recommendations and finding incentives. Working together with the Rhode Island Office of Energy Resources and Rhode Island Infrastructure Bank, we were able to improve the efficiency, comfort and health of our buildings while reducing operating expenses."

"We've got nothing but positive feedback and I will tell you that National Grid has been a great partner and continues to be very supportive," said Don Grebien, mayor of Pawtucket.

See all the possibilities  
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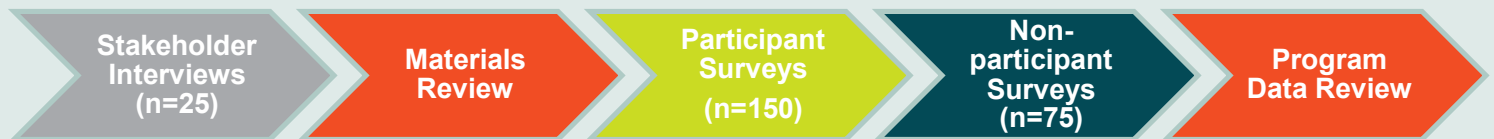
# EXECUTIVE SUMMARY

## Process Evaluation: Income Eligible Services (IES) Single Family Program










National Grid offers IES to help income eligible customers in Rhode Island improve the efficiency of their homes. Participants receive a range of energy efficiency updates, including heating systems, insulation, appliances and lighting at 100% incentive. In 2018, National Grid completed more than 4,000 IES home energy assessments and installed more than 60,000 energy efficiency measures.

This process evaluation focused on identifying opportunities to improve the way IES program is delivered. This evaluation complements Cadeo's impact evaluation of IES in 2018 and was undertaken to inform National Grid's 2020 energy efficiency plan.

### Activities



### Recommendations

-  **1. Explore an expedited home assessment approach.** The current approach takes too long and limits the total number of customers National Grid can serve.
-  **2. Pilot Hancock mobile application.** It's possible an available mobile application could expedite assessors' data collection responsibilities and allow them to serve more customers.
-  **3. Set data-driven expectations about participation timelines.** Assessors are not consistently setting expectations with customers about the time between their home assessment and when they will receive their efficiency upgrades.
-  **4. Explore opportunities to reduce installation timelines and increase contactor capacity.** National Grid is not currently meeting its internal target for insulating participants' homes following their assessment and should identify opportunities to weatherize homes faster.
-  **5. Implement post-installation survey.** Changing the timing and focus of the current follow-up survey would help National Grid resolve issues associated with installed measures.
-  **6. Increase direct engagement with landlords.** Most IES participants own their home. To better serve renters, National Grid should explore more direct engagement with landlords.
-  **7. Prioritize rebuilding the state's home energy assessor capacity.** Statewide, IES lost six assessors last year; National Grid should take steps to encourage assessor retention.
-  **8. Clarify waiver process.** Some stakeholders expressed confusion about the waiver process and need more guidance from IES.
-  **9. Collect additional data.** National Grid should work with IES stakeholders to collect specific additional data that would improve future evaluations.

# Rhode Island Lighting Sales Data Analysis

Analyzing Market Trends for Light Bulbs

NMR conducted a study to examine light bulb market shares obtained from retail locations in Rhode Island. The study compares market share and bulb prices in Rhode Island, the United States, and various comparison areas with different levels of lighting program activity. The report explores 2018 market share by bulb type, shape, and ENERGY STAR® status; compares bulb prices; and considers trends in market share from 2015 to 2018. Although the sales data suggest that the ENERGY STAR Lighting Program still has positive effects, the impact may be dwindling as transformation of the LED market progresses across the nation.

## Key Findings



Rhode Island's market share for efficient bulbs (LEDs + CFLs) stood at 59% in 2018. LEDs alone accounted for 57% of all bulb sales.

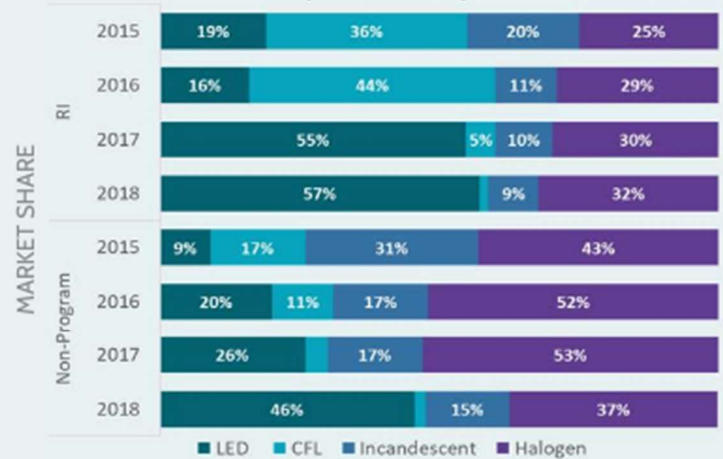


Non-program LED market share grew substantially in 2018.

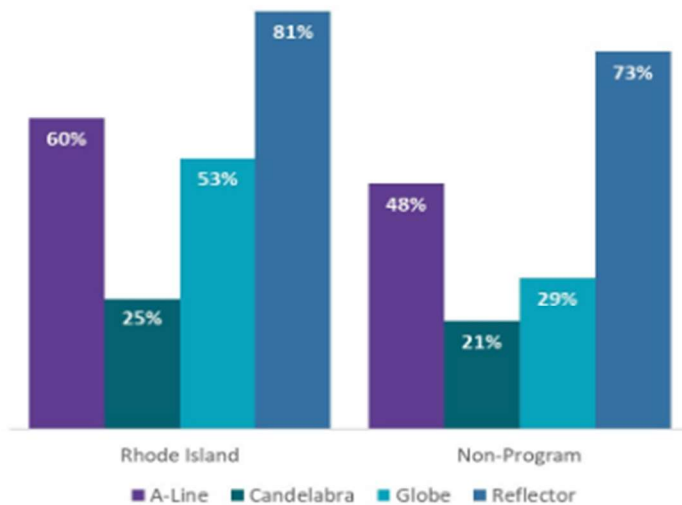


LED market share grew by 200% in Rhode Island and 400% in non-program areas between 2015 and 2018.

Rhode Island and Non-Program Market Share by Bulb Technology (All Channels)



LED Market Share by Bulb Shape



LED reflector sales were high in the areas examined, suggesting that the market is nearly transformed.



A-line sales were near or above 50% in all areas, pointing towards strong progress on transformation.



Globe market share was above 50% in Rhode Island, but less than 30% in non-program areas.



Candelabra market share was low across the board, suggesting that transformation is a long way off.

## Data Sources



Consortium for Retail Energy Efficiency Data



NEMA shipment

# Rhode Island Shelf Stocking Study


NMR analyzed light bulb stocking and pricing data collected by Lockheed Martin in the autumns of 2016–2018 to investigate the impact of National Grid’s residential lighting program on the retail market.

## Sample Summary

2016–2018

**53–55**  
stores 

**49–64k**  
packages 

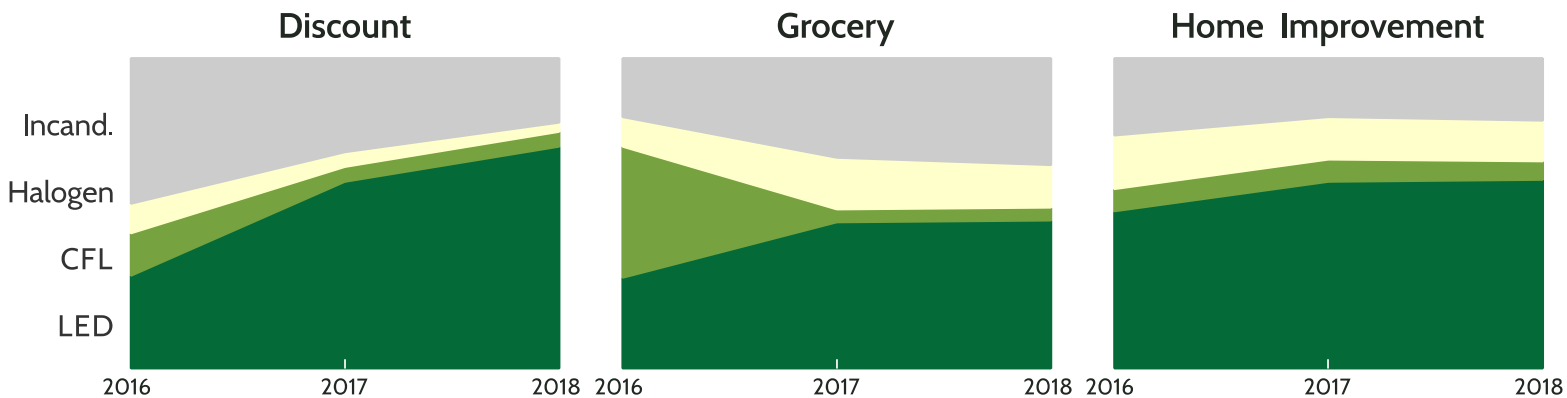
**112–172k**  
bulbs 

**2.2–3.1k**  
models 

## Key Conclusions

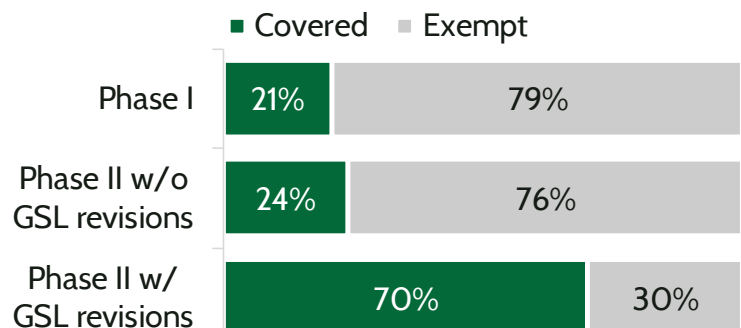
- The current DOE proposal (Phase II w/o GSL revisions) would save consumers little energy, leaving open the possibility of continued program intervention.
- LED prices have decreased year over year, while other bulb prices have increased.
- Efficient bulbs (LEDs & CFLs) are increasingly available, except in some store types like groceries.
- As LEDs become more available and their prices fall, other program approaches may be required to help late-adopters switch to this more efficient technology.

## Participant Stocking Practices



## EISA: Energy Independence and Security Act of 2007

Congress established energy efficiency standards for general use lighting (GSL) with EISA, instructing the Department of Energy to periodically revise these standards. The first update (Phase II) is expected in 2020, but is currently contested. Two scenarios were analyzed, and their impacts shown at right.





# RI Appliance Recycling

Evaluating the Energy Savings from an Appliance Recycling Program

NMR conducted a study to estimate gross, adjusted gross, and net energy savings for a NGRID sponsored refrigerator and freezer recycling program in Rhode Island. In comparison to 2011 program estimates, the current program resulted in lower savings, driven down by younger and more efficient units recycled through the program. Efficiency gains for refrigerators were somewhat offset by the prevalence of side-by-side door configuration, primary usage, and larger size. Results will be used to inform energy efficiency planning for 2020.

## Main Takeaways

### Implications

Year over year savings will decline due to the diminishing supply of older and less efficient units that get recycled through the program.

### Recommendation

NMR recommends that National Grid adopt the savings for use in program planning.

### Point of Guidance

Biennial (every other year) *quick hits* studies similar to this one will allow National Grid to provide more accurate savings estimates in program planning.

## Key Findings

### Comparison of Savings



VS.



The per-unit savings for refrigerators and freezers decreased between 2011 and 2017/2018 by 19% and 36%, respectively. The current program recycles younger units that were manufactured under increased federal efficiency standards, and therefore use less energy than those recycled in 2011.



VS.



Rhode Island and Massachusetts exhibited similar refrigerators savings in 2018, but Rhode Island's freezers savings fell below those of Massachusetts, largely reflecting the younger age of freezers in Rhode Island.

### 2017/2018 Impact Factors

Gross Energy Savings	1,004 kWh
Adjusted Gross Savings	883 kWh
Net Energy Savings	389 kWh

### Appliance Characteristics

<b>18</b> yrs Average Age	<b>19</b> cu.ft Average Size
<b>52%</b> Primary Units	<b>69%</b> Top Freezer Units



REFRIGERATORS

Gross Energy Savings	724 kWh
Adjusted Gross Savings	492 kWh
Net Energy Savings	278 kWh

<b>22</b> yrs Average Age	<b>16</b> cu.ft Average Size
<b>88%</b> Secondary Units	<b>76%</b> Upright Units



FREEZERS



Attachment 4  
Year-End Participation Memo

## 2019 Year-End Participation Memo

### I. Participation Overview

National Grid recognizes the importance of program participation in designing efficiency services, reaching diverse markets, meeting customer demand, and finding all efficiency opportunities. Complementary to the gas and electric savings that the Company seeks to achieve each year, participation contextualizes the impact of efficiency. It reveals who is benefiting from the programs and how. The objective of this memo is to measure unique participants, participation over time, and total customers reached over time.

The Company offers several types of services that enable customers to participate in a variety of ways and this complicates how to measure participation. Programs and initiatives such as EnergyWise and EnergySmart Grocer (ESG) retrofit a home or business in a deep way which may include a technical assessment and multiple measures are installed. The Company also delivers efficiency to a large number of customers through broad channels that make efficient products accessible to customers. These broad efforts tend to focus on one measure at a time and are intended to transform the market so that customers make energy efficient choices. Examples include the ENERGY STAR® Lighting program and the Commercial and Industrial (C&I) Upstream Lighting initiative. For these broad offerings, it is difficult to precisely measure participation levels cumulatively and compare to participation in other deeper programs. Therefore, this memo focuses on participation levels in deep services that offer customers the most benefits.

Programs and initiatives are designed and delivered in very specific ways in order to maximize their potential to achieve energy savings. Therefore, specific data differs among programs and what is defined as a ‘participant’ may differ as well. A breakdown of participation units used for reporting gas and electric programs in 2019 is found below. The participation numbers found in Tables E-1 and G-1 in Attachments 5 and 6, respectively, of Docket 4888 - Annual Energy Efficiency Plan for 2019, filed with the Commission on October 15, 2018, are in these units.

#### Participation Reporting Units

Fuel	Sector	Program	Participation Unit
Gas	Commercial & Industrial	Large Commercial New Construction	Unique Account
		Large Commercial Retrofit	Unique Account
		Small Business Direct Install	Unique Account
		C&I Multifamily	Housing Units
	Income Eligible Residential	Single Family – Income Eligible Services	Unique Account
		Income Eligible Multifamily	Housing Units
	Residential	Energy Star® HVAC	Unique Account



Electric		EnergyWise	Unique Account
		EnergyWise Multifamily	Housing Units
		Home Energy Reports	Unique Account
		Residential New Construction	Housing Units
	Commercial & Industrial	Large Commercial New Construction	Unique Account
		Large Commercial Retrofit	Unique Account + Unique Customer names from Upstream Lighting
		Small Business Direct Install	Unique Account
	Income Eligible Residential	Single Family – Income Eligible Services	Unique Account
		Income Eligible Multifamily	Housing Units
	Residential	Energy Star® HVAC	Unique Account
		EnergyWise	Unique Account
		EnergyWise Multifamily	Housing Units
		Home Energy Reports	Unique Account
Residential New Construction		Housing Units	
ENERGY STAR® Lighting		Estimated Housing Units	
ENERGY STAR® Products	Number of Rebates		

As the table shows, participation is counted in different ways depending on the program.

1. Unique billing accounts: The predominate means for tracking participants. This is defined as one electric or gas account number.
2. Housing units: This method is used in the electric and gas Residential New Construction program and multifamily programs. For New Construction programs, buildings are typically under construction, so accounts do not yet exist. National Grid, therefore, tracks the number of housing units for participation. This method is also applied to all multifamily programs, where complexes and not individual apartments tend to have accounts. These programs are focused on the impact to the apartment dwellers, so from a program design perspective, understanding the number of housing units affected, is of greater interest. Please note that for the gas programs only gas-heated units are counted as participants. In the case that an electric or delivered-fuel-heated dwelling is part of the impacted complex, it would not be counted as a participant.
3. Rebates: In the ENERGY STAR® Products program, the Company reports the number of rebates processed because not every rebate contains account information.
4. Estimated bulbs per home: Within the ENERGY STAR® Lighting program, retailers do not disclose information identifying their customers, thereby precluding the connection of bulb purchases to

utility accounts. The number of bulbs, therefore, is translated into an estimate of participants based on purchasing pattern research<sup>1</sup>.

5. Unique customer names: This method is used in the C&I Upstream Lighting Initiative. Customer account information is not collected at the point of sale as it would delay the process and can be a potential barrier to the success of the program. Therefore, the Company must analyze unique customer names and addresses to determine unique participants.

## II. Unique Cumulative Participation

### Objective

The integration of efficiency services, from the identification of HVAC opportunities during home audits to product offerings through the Home Energy Reports web portal, means that a single customer may be counted as a participant in multiple programs. Continued interest in efficiency, moreover, may lead that customer to participate in consecutive years. Such overlap in participation, both over time and across programs, has become important to National Grid and its stakeholders as it is important in understanding the progress that energy efficiency programs have made in benefitting Rhode Island electric and gas customers.

### Methodology

The tables and graphs below show the unique annual and cumulative customer accounts associated with certain efficiency programs, sector, and fuel for the period 2012-2019. The tables are organized using the following:

- Annual Program Counts
  - Represents the unique accounts associated with an individual program in a given year. It removes all double counting within a given program within a given year. For example, if a customer participated in the HVAC program twice in 2016, they would only be counted once.
  - Please note that some overlap exists within the home audit programs, but not because of repeat audits. Program policy requires customers wait three years before receiving another audit. However, follow-up work to an audit in 2013, such as weatherization, could occur in 2014. One account, therefore, would appear as a unique participant in two different years.
  - For the Company's 2012 and 2013 Year End Reports, the program participation counts did not remove this double counting. The program participation counts for 2012 and 2013 below, therefore, may differ from how they were reported in the 2012 and 2013 Year End Reports.

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<sup>1</sup> 2016-2018 Massachusetts Joint Statewide Three Year Electric and Gas Energy Efficiency Plan. Appendix J. Participant Definitions: Residential Lighting Assumptions

- Additive
  - The sum of Annual Program Counts.
  
- Cumulative
  - Eliminates all double counting within a program across multiple years. For example, if a customer participated in the HVAC program in 2013 and then again in 2016, they would only be counted once. Therefore, the cumulative count may be less than the additive count since it removes customers that participate in the same program more than once.
  
- Sector (Residential, Income Eligible, and Commercial) Subtotals
  - Eliminates all double counting across programs for a given year. For example, if a customer participated in the HVAC program and the EnergyWise program in 2019, they would only be counted once. Therefore, the sector subtotal may be less than the sum of all the annual program counts in a given year.
  
- Portfolio Total
  - Eliminates all double counting across sectors for a given year. For example, if a customer participated in the Income Eligible Single-Family Program and also the ENERGY STAR® Products program in 2019, they would only be counted once. Therefore, the portfolio total may be less than the sum of all annual participant counts.
  
- Percent Unique Accounts:
  - This represents the ratio of cumulative to additive program participation counts. The result is the percentage of customers that only participated in a given program one time from 2012-2019.
  
- Percent Unique Program Participants:
  - This represents the ratio of the sector subtotal (unique counts) to the sum of annual participant counts in a given year. The result is the percentage of customers that only participated in one program during a given year.
  
- Portfolio Cumulative
  - The set of unique accounts across all programs and years, with all overlap removed. For example, if an account is found in EnergyWise for 2013 and ENERGY STAR® Products for 2014, it would only appear once in the Portfolio Cumulative Count.
  
- Important Exclusions
  - The counts shown below do not include participants in Home Energy Reports, ENERGY STAR® Lighting, and C&I Upstream Lighting (an initiative tracked under Commercial New Construction before 2016 and under Commercial Retrofit starting in 2016). While Home Energy Reports is an important program that reaches broad participation and savings

while driving customers to other program opportunities, it was excluded because its hundreds of thousands of participants would overwhelm the cumulative counts, thereby obscuring any trends that could otherwise be observed. Neither ENERGY STAR® Lighting nor Commercial Upstream Lighting collects account information so neither could be included in this analysis. The electric and gas participants for these programs, however, are included in tables E-1 and G-1 in Attachments 1 and 2 respectively.

- Not all rebates processed through the ENERGY STAR® Products contain account information. Therefore, rebates without account information are not included in this analysis. For this reason, annual program counts below are lower than the total number of customers that participated in this program. For example, in 2016, 25,171 rebates were processed through the program compared to 2,622 participants shown below. Likewise, the number of rebates in the ENERGY STAR® Products program reported in E-1 will be higher than the number of accounts detailed below because not all rebates include account information.
- In the year-end report, the Company counts EnergyWise Multifamily and EnergyWise Multifamily Income Eligible participation by units in treated buildings. When units are used, if 51% of the building is income-eligible, the whole building and all units within are treated and counted as income eligible. However, since this analysis uses account numbers, and account numbers track with a rate class, the results below will show a higher split of market rate to income eligible multifamily participants. Multifamily programs are included in this unique account analysis to remove overlaps with other programs to the best extent possible.
- 2012 was chosen as the baseline year because it represents the first year of 2012-2014 Three Year Plan.

#### Trends in EE Program Participation

The tables and figures below provide insight into participation trends across programs and years. Overall, 2019 program participation at the portfolio level saw increases compared to 2018 participation, with the electric portfolio showing an 8% increase and the gas portfolio showing a 10% increase, with this increase being mainly driven by residential programs. The program-specific observations on participation trends from 2018 and 2019 are highlighted below.

- Residential electric and gas HVAC participation saw a significant increase from 2018 to 2019 with electric participation growing by 92% and gas participation growing by 23% after more modest growth from 2017 to 2018. Growth from 2018 to 2019 was primarily driven by increased use of such measures as WIFI thermostats and air source heat pumps for use as a primary heating source. Energy Star Products participation saw a strong increase of (16%) after more than doubling participation from 2016-2017 and seeing a 6% increase between 2017 and 2018. This shows continued growth in this program, driven by growth in such products as: Dryers, Air Conditioners, and Smart Strips. The Company will continue to offer a wide array of energy efficiency measures through these programs to reach customers.

- Compared to 2018, for single family programs, EnergyWise participation increased by 16% for electric and 20% for gas and Income Eligible Services participation increased by 6% for electric and decreased by 3% for gas. For the EnergyWise electric and gas programs and the Income Eligible Services electric program, participation levels are the highest on record for these programs. The Company will continue to focus on marketing and promotions of these programs to encourage participation.
- For multifamily programs, EnergyWise participation decreased by approximately 26% for electric and stayed level for the gas program. On the other hand, income eligible multifamily participation increased by 14% for electric and decreased by 33% for gas. The decline in the number of market rate electric accounts served through the electric program is due to a decrease in the opportunities for lighting savings, whereas the market rate gas program continued to see a similar level of participation due to continued opportunities for gas savings. In contrast, the income eligible electric program saw an increase in participation due to non-lighting energy savings opportunities which are easier to obtain through the income eligible electric than the market rate program in part due to the 100% incentive for the income eligible programs.
- For C&I programs, new construction participation declined by approximately 10% for electric and increased slightly by 4% for gas, while participation for the retrofit electric program decreased by 6%, while increasing by 50% for gas. The C&I retrofit gas participation also includes the C&I multifamily program. The increase in the large new construction gas program over the past year has been driven by increased upstream participation. The decrease in the large new construction electric program over the past year was partly driven by a decline in fewer lighting accounts served year over year.
- Overall, the Company reached approximately 189,708 electric customers and 70,990 gas customers from 2012 to 2019. This figure is reflective of the “Important Exclusions” section above.

Examining the percentage of unique program participants in a single year, it is evident that there is little overlap between programs. This trend is seen across all three sectors (C&I, Income Eligible, Residential). These results are not surprising in the Income-Eligible Sector where customers would either participate in the single family or multifamily program, nor are they in the C&I sector where programs are more segmented. However, in the residential sector, customers are encouraged to participate in multiple programs in any given year. These results indicate there may be more the Company can do in terms of cross-program promotion to drive more participation in the same year.

In 2019, National Grid launched new robust, comprehensive programmatic marketing efforts, which drove awareness, interest and participation in the Company’s Energy Efficiency programs. These omni-channel marketing efforts include email, mass media (such as radio and print), out of home, social media, and digital and video ads. New customer segmentation research was leveraged to optimize messaging and channel tactics. The National Grid website continued to serve as a source for information on products and services as well as rebates available to customers.

Programmatic marketing campaigns were complemented by targeted campaigns and event sponsorships that drove awareness throughout year. These campaigns such as Earth Day in April and Energy Efficiency Day in October as well as large events such as RI Home Show continued to foster awareness of Energy

Efficiency programs for Rhode Island residential and commercial customers. Messages communicated to customers focused on how they can save energy and money as well as improve their business/home with National Grid's Energy Efficiency programs. A diverse channel mix was utilized to reach customers, ranging from email, bill inserts, television, print to social media. According to market research studies conducted, energy efficiency familiarity levels among Rhode Island customers remained strong year over year.

The multifamily program-level trends are not likely representative due to the fact that the Company generally counts all units in a participating facility. In Spring 2016, the Company started tracking participating units in addition to counting all units in a multi-family facility. Section III of this memo provides details on units served through the multifamily programs.<sup>2</sup>

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<sup>2</sup> The Company continues to examine multifamily program-level trends, participation and methodology to determine if any adjustments to multifamily program counts are necessary.

**Table 1. Electric Cumulative Participation 2012-2019**

Participation by Accounts

Sector	Program	Annual Counts								Additive	Cumulative	% Unique Accounts
		2012	2013	2014	2015	2016	2017	2018	2019	2012-2019	2012-2019	
Residential	HVAC	1,414	3,049	2,445	2,091	1,978	3,023	3,269	6,298	23,567	21,928	93%
	Products	9,520	6,254	6,922	4,461	2,622	6,630	6,249	7,283	49,941	45,675	91%
	EW	6,760	8,645	9,898	11,665	9,567	10,159	11,961	13,839	82,494	71,386	87%
	EW MF	2,626	3,531	5,277	8,014	11,408	7,472	10,014	7,455	55,797	35,312	63%
	Residential Subtotal	19,729	20,774	23,776	25,561	25,103	26,368	30,551	33,077	204,939	153,281	75%
	% Unique Program Participants	97%	97%	97%	97%	98%	97%	97%	95%			
Income Eligible	AMP	2,654	2,646	3,054	2,851	3,016	3,074	3,850	4,089	25,234	19,817	79%
	IE MF	1,410	2,010	3,104	1,383	1,999	2,289	1,256	1,433	14,884	10,216	69%
	Income Eligible Subtotal	4,062	4,656	6,158	4,234	5,015	5,359	5,103	5,520	40,107	29,974	75%
	% Unique Program Participants	100%	100%	100%	100%	100%	100%	100%	100%			
Commercial	New Construction	162	167	169	236	251	195	173	155	1,508	1,200	80%
	Retrofit	405	350	432	459	400	593	579	545	3,763	2,504	67%
	SBS	1,282	1,175	960	1,049	797	807	760	724	7,554	6,386	85%
	Commercial Subtotal	1,808	1,651	1,513	1,682	1,380	1,554	1,492	1,424	12,504	9,269	74%
	% Unique Program Participants	98%	98%	97%	96%	95%	97%	99%	100%			
<b>Portfolio Total</b>		25,545	27,032	31,307	31,448	31,449	33,177	36,995	39,825	256,778	189,708	74%

**Table 2. Gas Cumulative Participation 2012-2019**

Participation by Accounts

Sector	Program	Annual Counts								Additive	Cumulative	% Unique Accounts
		2012	2013	2014	2015	2016	2017	2018	2019	2012-2019	2012-2019	
Residential	HVAC	6,383	4,865	3,037	1,980	1,652	2,949	3,113	3,846	27,825	25,729	92%
	EW	1,413	1,946	2,737	2,830	3,252	3,387	4,329	5,209	25,103	22,979	92%
	EW MF	1,792	762	3,146	4,291	5,394	4,332	4,394	4,391	28,502	16,873	59%
	Residential Subtotal	9,338	7,352	8,662	8,909	10,112	10,413	11,594	13,138	79,518	60,749	76%
	% Unique Program Participants	97%	97%	97%	98%	98%	98%	98%	98%			
Income Eligible	AMP	388	398	539	529	722	700	615	596	4,487	4,231	94%
	IE MF	48	261	531	532	1,121	282	486	324	3,585	2,818	79%
	Income Eligible Subtotal	436	659	1,070	1,061	1,841	982	1,101	920	8,070	7,046	87%
	% Unique Program Participants	100%	100%	100%	100%	100%	100%	100%	100%			
Commercial	New Construction	112	161	115	134	206	268	309	321	1,626	1,056	65%
	Retrofit	431	476	159	656	611	240	206	311	3,090	2,673	87%
	SBS	160	111	297	121	50	122	82	109	1,052	1,017	97%
	Commercial Subtotal	678	725	549	892	852	614	575	719	5,604	4,686	84%
	% Unique Program Participants	96%	97%	96%	98%	98%	97%	96%	97%			
Portfolio Total		10,437	8,728	10,271	10,462	12,406	11,950	13,274	14,582	92,110	70,990	77%



Figure 1. Electric and Gas Participation by Sector, 2012-2019

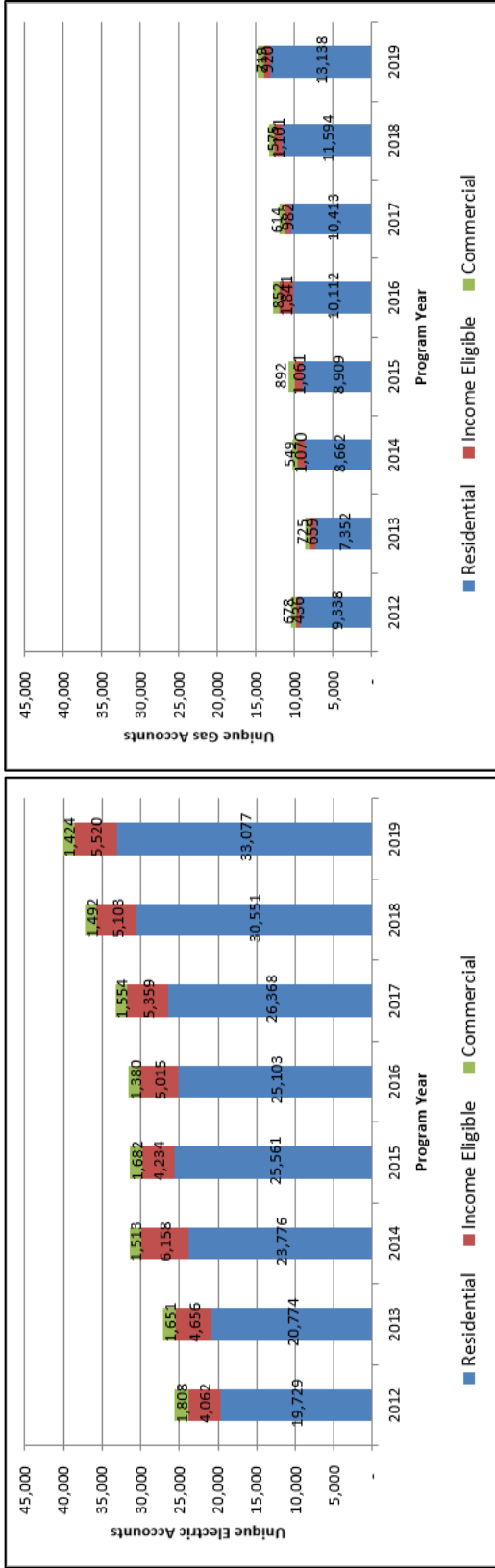


Figure 2. Electric and Gas Participation, Residential Sector by Program, 2012-2019

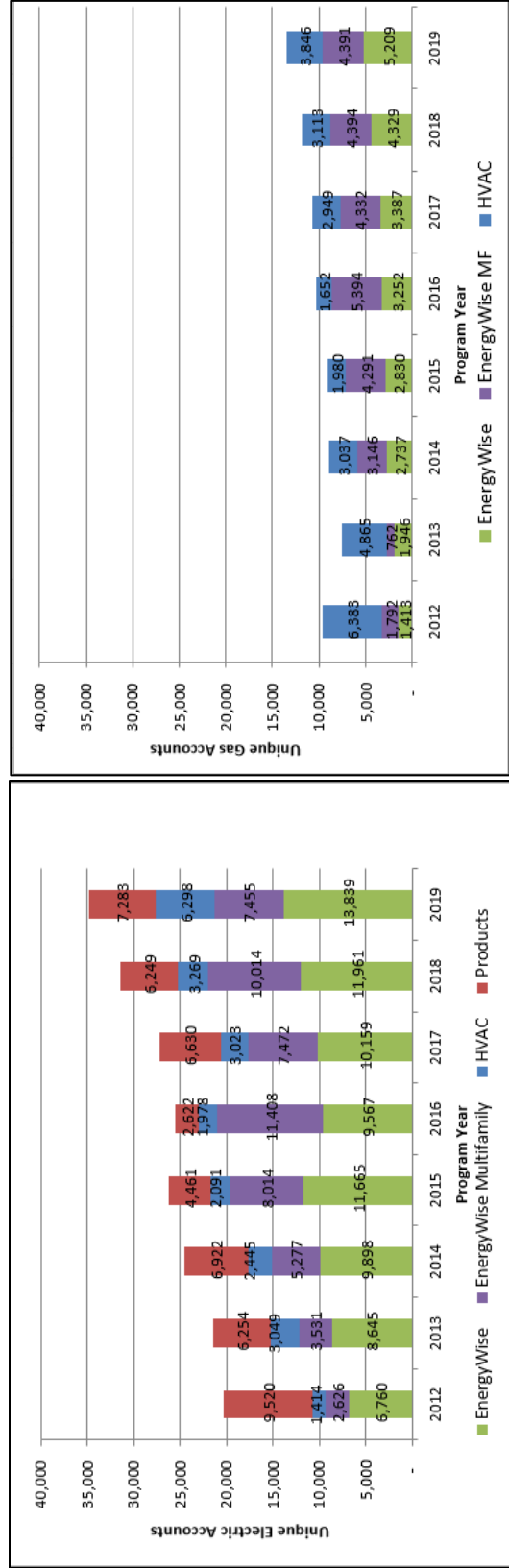


Figure 3. Electric and Gas Participation, Income-Eligible Sector by Program, 2012-2019

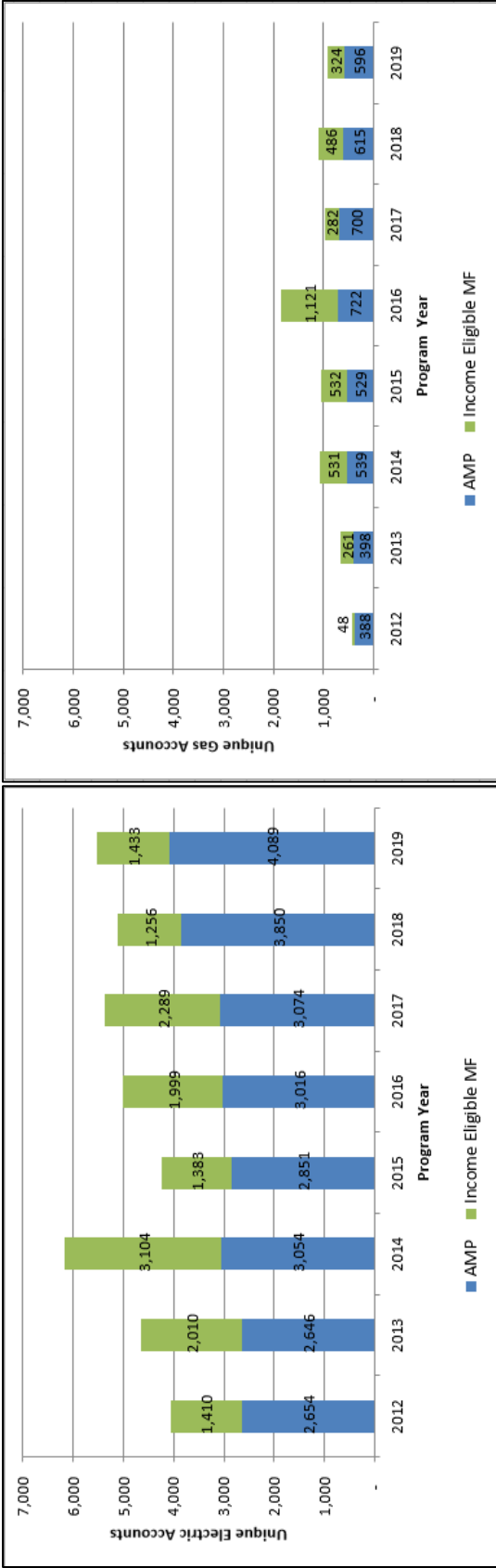
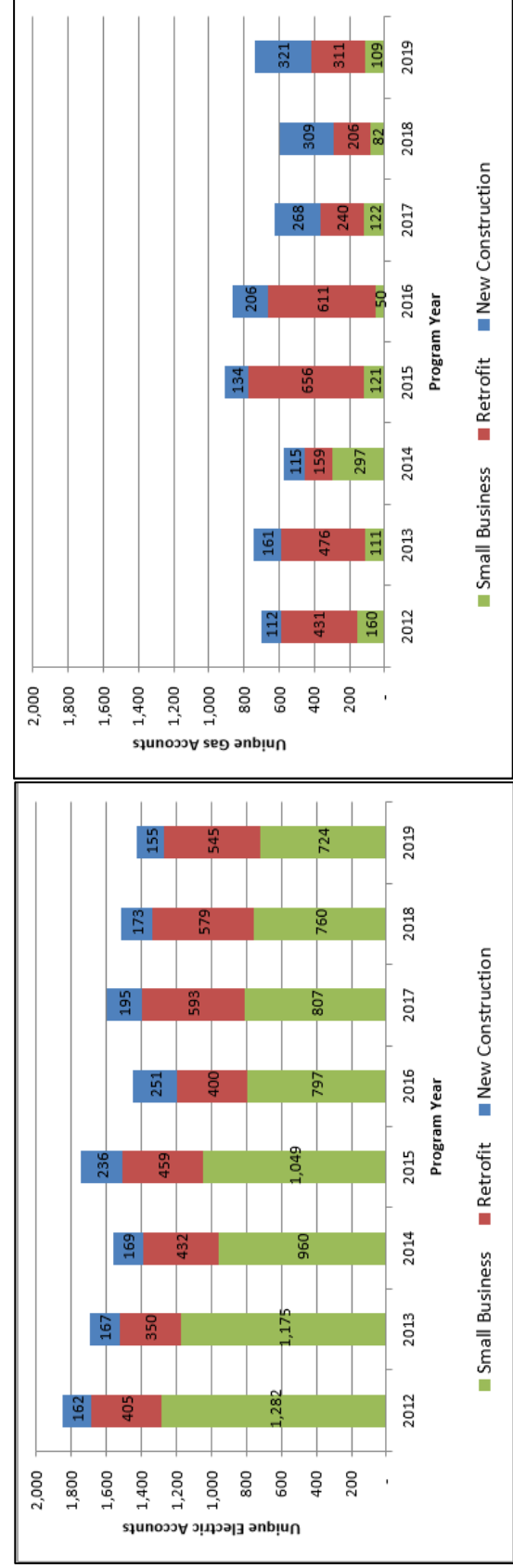


Figure 4. Electric and Gas Participation, Commercial Sector by Program, 2012-2019



### III. Housing Units

The annual housing units are defined as unique in the same sense as billing accounts. Housing units are presented below for the Electric and Gas EnergyWise Multifamily program, Electric and Gas Income Eligible Multifamily program, the Commercial and Industrial (C&I) Multifamily Gas program, and the Electric and Gas Residential New Construction Program.

In multifamily programs, the unique number of account shown in the previous section (Tables 1 and 2) do not fully represent the participation trend for these programs. That is because not all individual units have separate accounts as a building might be master metered. Therefore, in Table E-1 and G-1 of the year-end report, the Company counts all housing units in treated buildings for participation, which is also shown below. Please note that multifamily housing units cannot be shown as cumulative because the Company does not have specific unit data within a treated facility and therefore cannot remove overlap between years.

Participation in the Residential New Construction program is also defined by housing units since accounts do not yet exist. In this program, housing units are only reported once, at the time of completion, so there is no overlap between units across multiple years. Therefore, the Company can show this program in terms of cumulative unique participation.

Table 3. Electric Participation by Housing Units

Program	Annual Housing Units*								Additive
	2012	2013	2014	2015	2016	2017	2018	2019	2012-2019
EnergyWise MF	2,660	3,539	5,322	7,710	7,783	3,557	2,415	2,971	35,957
Income Eligible MF	3,878	5,370	5,977	4,610	5,366	5,162	3,875	2,140	36,378
RNC	406	473	573	442	526	680	458	639	4,197
Portfolio	6,944	9,382	11,872	12,762	13,675	9,399	6,748	5,750	76,532

\*For multifamily programs, 2016 - 2019 counted only participating housing units in participating facilities while 2012-2015 counted all housing units in a participating facility.

Table 4. Gas Participation by Housing Units

Program	Annual Housing Units*								Additive
	2012	2013	2014	2015	2016	2017	2018	2019	2012-2019
C&I MF	-	1,066	939	2,345	2,982	1,997	954	1,530	11,813
EnergyWise MF	1,569	984	2,496	3,147	2,232	3,984	1,811	1,008	17,231
Income Eligible MF	977	2,773	3,090	3,956	4,701	3,840	3,010	2,089	24,436
RNC	252	425	500	366	341	353	249	240	2,726
Portfolio Total	2,798	5,248	7,025	9,814	10,256	10,174	6,024	4,867	56,206

\* For multifamily programs, 2016 - 2019 counted only participating housing units in participating facilities while 2012-2015 counted all housing units in a participating facility.

#### **IV. Estimate of Customers Reached 2012-2019**

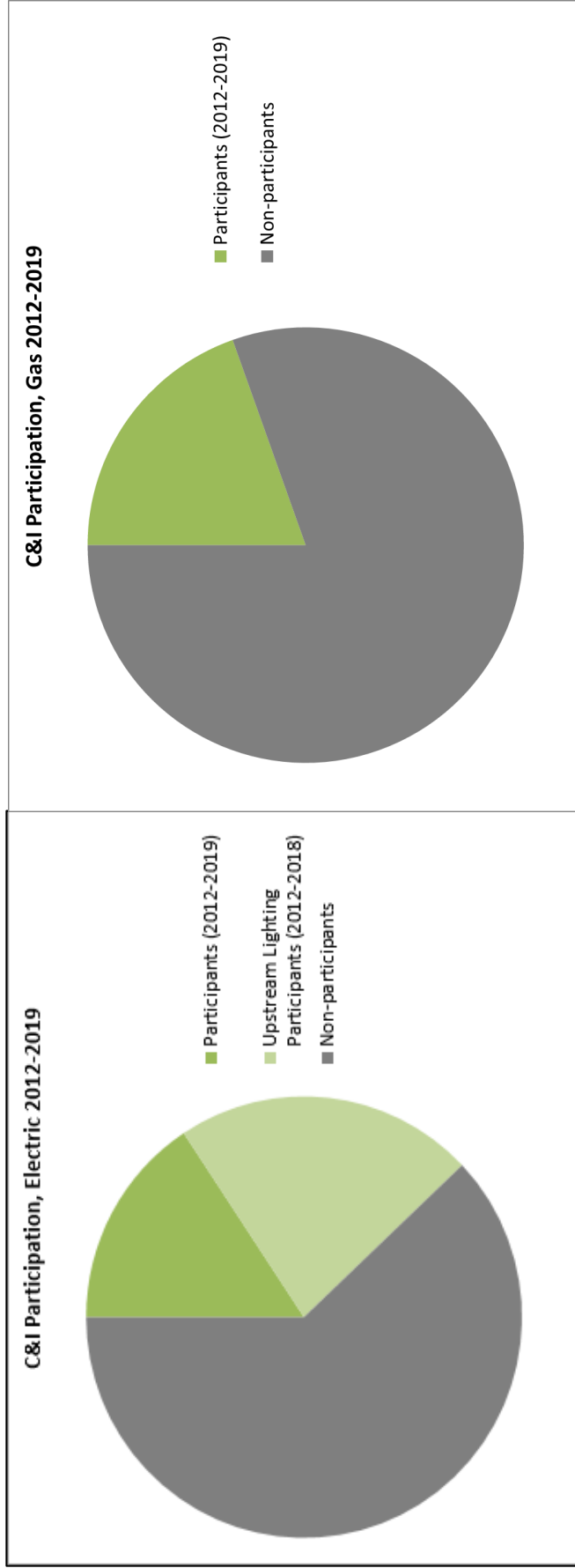
This section estimates the portion of each customer class that has participated in an energy efficiency program from 2012-2019. Figures 5 to 8 represent a visual estimate of the combination of unique participant counts from 2012-2019, plus residential new construction units, Home Energy Reports, and C&I upstream lighting. ENERGY STAR® Lighting participants are excluded from the counts because the program's broad participation among a large number of customers would overwhelm the data, making it difficult to analyze participation in other programs. Purchasing pattern research indicates that an estimated 314,682 participants purchased efficient bulbs through the program in 2019 alone. Similarly, C&I upstream lighting is also excluded from the unique participation count since the Company does not have detailed information and cannot remove overlap with other C&I programs. The Company does have customer information to remove overlap across years and includes an estimate of unique C&I upstream lighting participants in the graphs below.

The graphs show that from 2012 through 2019, 38% of electric customers and 27% of gas customers participated in National Grid's energy efficiency programs at least once. This is significant when one considers this analysis does not include data back to 2009, when energy efficiency programs under the construct of Least Cost Procurement began, and does not include ENERGY STAR® Lighting. Had this data been included, the penetration rates would undoubtedly be higher.

When Home Energy Reports and C&I upstream lighting participation is added to these counts, a total of 89% of electric customers and 82% 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.

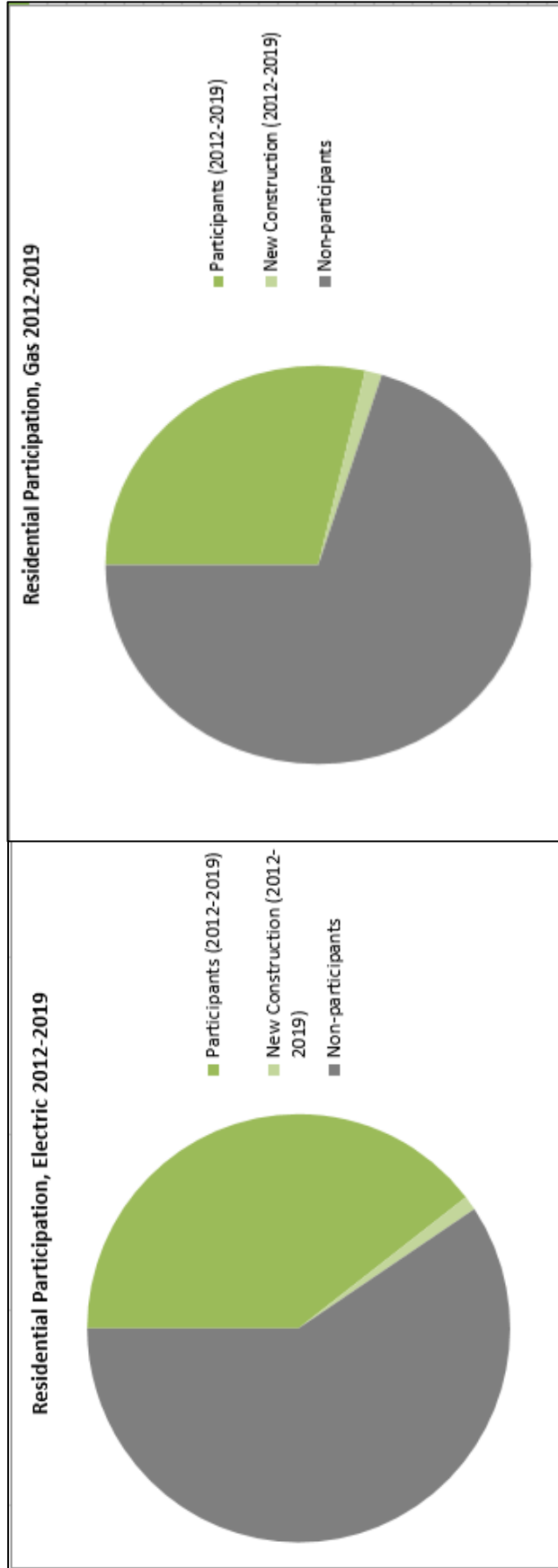
The Company will continue to conduct this analysis each year to help provide more visibility around participation levels to help gain insight into programmatic changes and improvements to reach even more customers in the future.

**Figure 5. Commercial and Industrial (C&I)**



\*While cumulative counts remove overlap between years (2012-2019), it is not possible to remove overlap between upstream lighting and other C&I programs. Therefore, there may be customers in the upstream count that are also captured in the unique participation counts for 2012-2019.

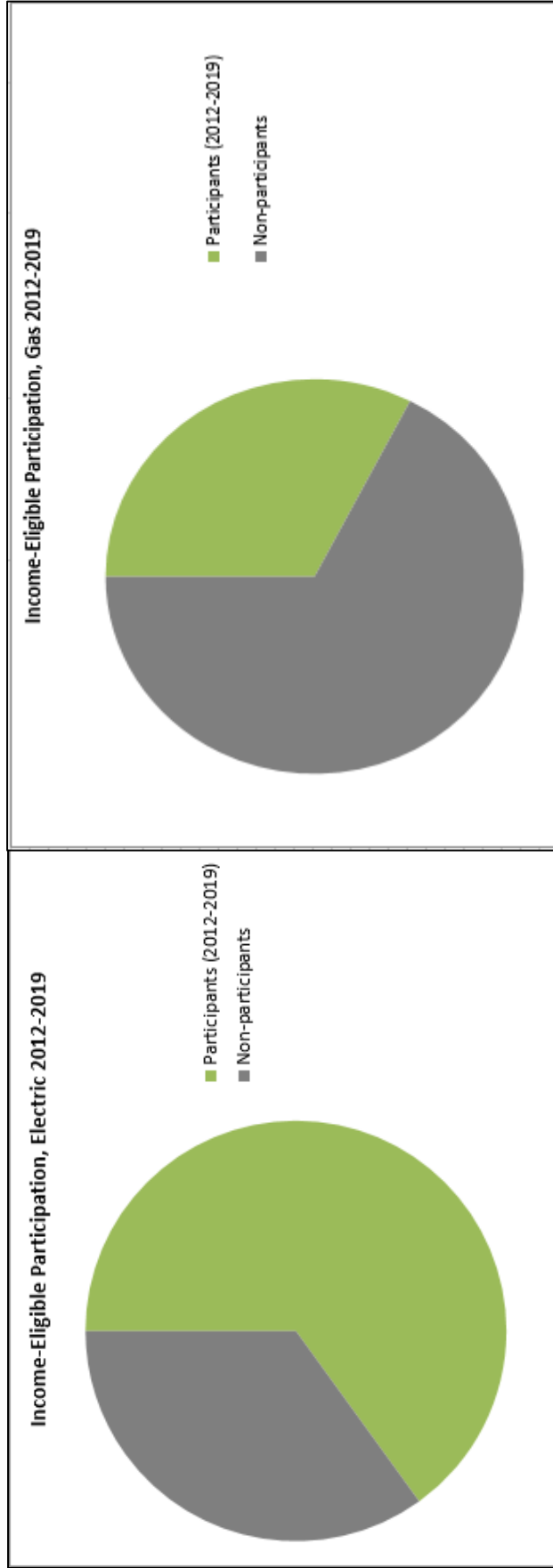
**Figure 6. Residential Participation**



\* Does not include ENERGY STAR® Lighting and Home Energy Reports

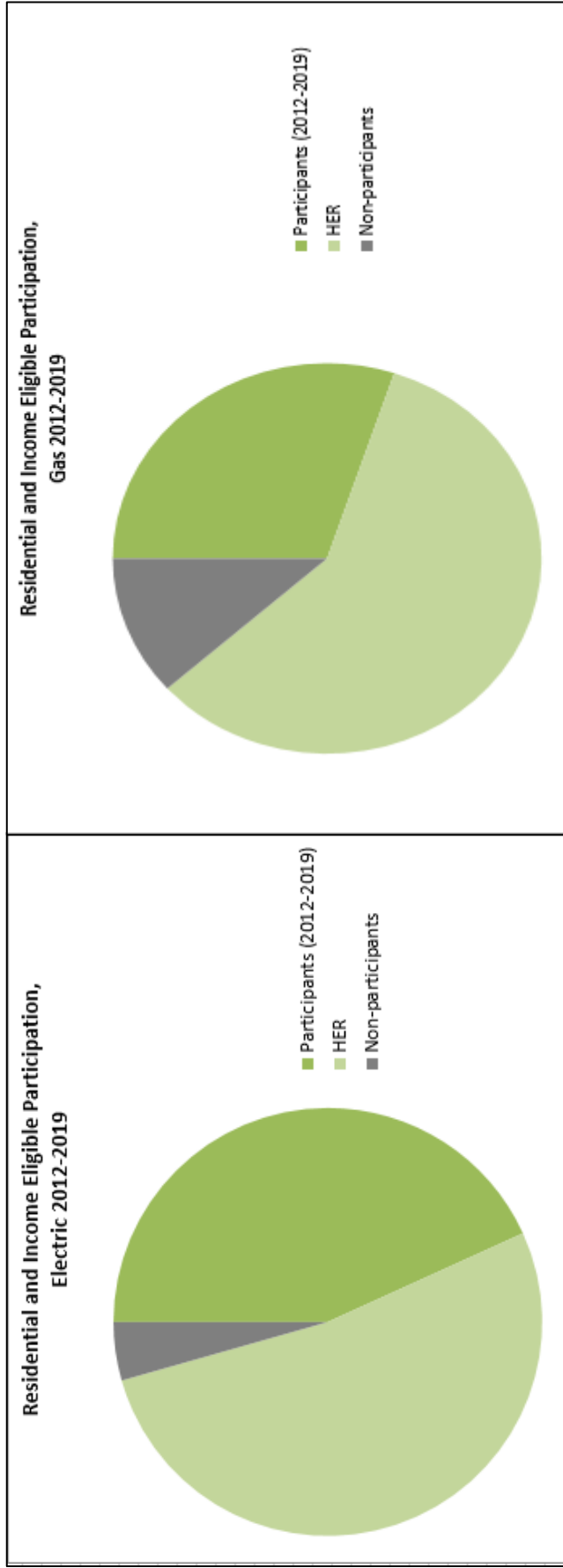
\*\* Does not include ENERGY STAR® Products Program rebates that did not contain detailed level information

**Figure 7. Income Eligible Participation**



\*While the Company counts Home Energy Reports, ENERGY STAR® Products, and ENERGY STAR® HVAC participation in the market rate residential sector, it's important to note that Income Eligible customers also participate in these programs as well as in the ENERGY STAR® Lighting program. Therefore, the above graphs likely under-represent the total number of Income Eligible customers served.

**Figure 8. All Residential and Income Eligible Services including Home Energy Reports Program**



\*Home Energy Report participation has been reduced to account for estimated cross participation with other programs based on 2017 evaluation results<sup>3</sup>.

<sup>3</sup> Rhode Island Home Energy report Program Impact and Process Evaluation. Illume Advising. 2017.



**Attachment 5**  
**2019 Energy Efficiency**  
**Workforce Analysis**

## Attachment 5

# Rhode Island 2019 Energy Efficiency Workforce Analysis Final Report

# Rhode Island 2019 Energy Efficiency Workforce Analysis Final Report

Prepared for:

**nationalgrid**

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May 7, 2020

## Table of Contents

<b>Disclaimer .....</b>	<b>iii</b>
<b>Acknowledgement.....</b>	<b>iii</b>
<b>Executive Summary .....</b>	<b>1</b>
<b>1. Introduction .....</b>	<b>4</b>
<b>2. The Energy Efficiency Workforce .....</b>	<b>7</b>
2.1 Support Services Providers .....	7
2.2 Direct Services Providers .....	7
<b>3. Support Services Providers Analysis.....</b>	<b>10</b>
3.1 EERMC Program Design and Planning Consultants .....	10
3.2 Marketers .....	10
3.3 Rebate Processing Companies .....	10
3.4 Evaluators .....	11
<b>4. Direct Services Providers Analysis .....</b>	<b>12</b>
4.1 Commercial and Industrial Programs.....	12
4.1.1 Large Commercial New Construction (Electric).....	13
4.1.2 Large Commercial Retrofit (Electric) .....	14
4.1.3 Small Business Direct Install (Electric and Gas).....	16
4.1.4 Large Commercial New Construction and Retrofit (Gas).....	17
4.1.5 Commercial ConnectedSolutions .....	18
4.2 Income Eligible Residential Programs .....	18
4.2.1 Single Family – Income Eligible Services (Gas and Electric).....	18
4.2.2 Income Eligible Multifamily (Gas and Electric).....	19
4.3 Residential (Non-Income Eligible) Programs .....	20
4.3.1 Residential New Construction (Gas and Electric).....	20
4.3.2 ENERGY STAR® HVAC (Gas and Electric) .....	21
4.3.3 EnergyWise (Gas and Electric) .....	22
4.3.4 EnergyWise Multifamily (Gas and Electric) .....	23
4.3.5 ENERGY STAR® Lighting (Electric) .....	24
4.3.6 Residential Consumer Products.....	25
4.3.7 Home Energy Reports (Gas and Electric) .....	25
4.3.8 Residential ConnectedSolutions .....	26
<b>5. National Grid Employees Analysis .....</b>	<b>27</b>
<b>6. Analysis of Workforce FTEs for 2019 .....</b>	<b>28</b>
6.1 Overview of Methodology .....	28
6.2 Summary of 2015-2019 FTEs.....	30



- 6.3 FTEs and Adjustments by Program ..... 31
  - 6.3.1 Large Commercial New Construction.....34
  - 6.3.2 Large Commercial Retrofit .....34
  - 6.3.3 Small Business Direct Install.....34
  - 6.3.4 Commercial and Industrial Multifamily.....35
  - 6.3.5 Commercial ConnectedSolutions .....35
  - 6.3.6 Other (Commercial and Residential) .....35
  - 6.3.7 Single Family Income Eligible .....35
  - 6.3.8 Income Eligible Multifamily .....36
  - 6.3.9 Residential New Construction .....36
  - 6.3.10 ENERGY STAR® HVAC.....36
  - 6.3.11 EnergyWise .....37
  - 6.3.12 EnergyWise Multifamily.....37
  - 6.3.13 ENERGY STAR® Lighting .....37
  - 6.3.14 Residential Consumer Products.....37
  - 6.3.15 Home Energy Reports .....38
  - 6.3.16 Residential ConnectedSolutions .....38
  - 6.3.17 Support Services.....38
- 6.4 FTEs by Job Function ..... 40
- 7. Qualitative Findings and Observations..... 41**
  - 7.1 Industrial Initiative..... 41
  - 7.2 Upstream Lighting Initiative ..... 42
  - 7.3 Income Eligible Single Family Program ..... 42
  - 7.4 ENERGY STAR® HVAC ..... 42
  - 7.5 EnergyWise..... 42
  - 7.6 EnergyWise Multifamily ..... 42
  - 7.7 Appliance Recycling Initiative ..... 43
- Appendix A. Methodologies Used for Assessing Employment ..... 44**
  - A.1 Program Support Service Providers ..... 46
  - A.2 Residential Programs..... 47
  - A.3 Low Income Residential Programs..... 49
  - A.4 Commercial and Industrial Programs ..... 50
- Appendix B. Interview Guides..... 52**
  - B.1 Vendor Interview Guide..... 52
  - B.2 National Grid Interview Guide ..... 53
- Appendix C. Participating Companies ..... 54**

## Disclaimer

This report was prepared by Guidehouse Inc (“Guidehouse”) for National Grid. The work presented in this report represents Guidehouse’s professional judgment based on the information available at the time this report was prepared. Guidehouse is not responsible for the reader’s use of, or reliance upon, the report, nor any decisions based on the report. **GUIDEHOUSE MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESSED OR IMPLIED.** Readers of the report are advised that they assume all liabilities incurred by them, or third parties, as a result of their reliance on the report, or the data, information, findings and opinions contained in the report.

## Acknowledgement

For the previous six years, Peregrine Energy Group had performed the FTE analysis and composed the reports associated. Sections of this report have been adapted from the 2018 study: “Analysis and Recommendations regarding the Current and Future Workforce Associated with 2018 Rhode Island Energy Efficiency Programs”<sup>1</sup> completed by Peregrine. The use of text is done with permission from Peregrine and National Grid. Specifically, portions of the Executive Summary, Introduction, The Energy Efficiency Workforce, Providers and Employees Analysis sections were adapted from the 2018 study for this report. Additionally, as described in more detail throughout the report, the 2019 FTE analysis relied on scaling the 2018 FTE count and the detailed description of the 2018 methodology in Attachment A was reproduced from the 2018 report. This meant that the 2018 methodology was embedded within Guidehouse’s 2019 counts. When describing this embedded methodology, wording from the 2018 report was used. Where sections from the 2018 study have been adapted, a footnote after the header makes this explicit.

---

<sup>1</sup> 2018 Study: “Analysis and Recommendations regarding the Current and Future Workforce Associated with 2018 Rhode Island Energy Efficiency Programs,” accessed at <http://rieermc.ri.gov/wp-content/uploads/2019/07/2018-attachment-5-workforce-report-final.pdf>.

## Executive Summary

National Grid engaged Guidehouse to estimate the workforce associated with implementation of National Grid Rhode Island's electric and gas energy efficiency programs delivered in 2019. This study addresses the requirements of General Law 39-2-1.2, enacted by the Rhode Island General Assembly in 2012. In 2019, National Grid spent a combined \$134,751,578<sup>2</sup> on the Rhode Island programs that saved 190,159 annual megawatt hours (MWh) of electricity<sup>3</sup> and 451,466 million British thermal units (MMBtu) of natural gas.<sup>4</sup>

The focus of this study is to quantify the workforce that was involved in delivering National Grid's Rhode Island programs in 2019. The workforce analysis reports the number of jobs associated with the programs and compares them to past years. Guidehouse calculated 877.6 full-time equivalent (FTE) workers associated with National Grid spending in 2019 for Rhode Island programs.<sup>5</sup> Since an FTE employee often represents the combined labors of more than one person over the course of a year, the number of individual workers is far greater than the number of FTEs. At a high level, spending for energy efficiency programs in Rhode Island increased from 2018 to 2019, leading to increased activity and therefore an increase in effort by the associated workforce. An overview of the findings of this report are shown in Table 1.

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<sup>2</sup> The Narragansett Electric Company d/b/a National Grid, 2019 Energy Efficiency Year End Report.

<sup>3</sup> Note that although the savings are not quantified here, the electric portfolio also includes delivery of energy efficiency services to customers that heat with delivered fuels.

<sup>4</sup> The Narragansett Electric Company d/b/a National Grid, 2019 Energy Efficiency Year End Report.

<sup>5</sup> As indicated in Appendix C, most vendors are either headquartered or have a physical presence in Rhode Island. The number of FTEs reported do not include customer employees who assist in various ways with project implementation in their facilities.

**Table 1 Summary of FTEs (2015-2019)**

	2019	2018	2017	2016	2015
<b>Electric Programs</b>					
Residential Non-Income Eligible	189.1	170.9	98.1	104.0	125.4
Residential Income Eligible	65.1	45.8	46.0	42.3	37.0
Commercial and Industrial	265.0	250.0	263.5	241.1	210.0
<b>Gas Programs</b>					
Residential Non-Income Eligible	218.1	191.6	174.9	159.3	172.1
Residential Income Eligible	56.2	39.4	36.5	41.4	43.8
Commercial and Industrial	28.7	31.9	34.4	36.1	32.0
<b>Other</b>					
CAP Agencies <sup>6</sup>		35.0	35.0	38.0	34.0
National Grid <sup>7</sup>	43.3	39.5	38.2	39.9	41.6
Marketing <sup>8</sup>	12.1				
<b>Total</b>	<b>877.6</b>	<b>804.1</b>	<b>726.5</b>	<b>702.2</b>	<b>695.8</b>

Source: Guidehouse analysis and 2018 study

The success of the delivery of the National Grid programs is dependent on the efforts of many workers in different roles. Two main types of service providers are identified in the report: support service providers and direct service providers. Support service providers include program design and planning consultants, marketers, rebate processors, and evaluators. These FTEs are usually embedded within the broader reported number for the program. Direct service providers are workers who are contracted by National Grid to execute a given program. The report provides a description of every National Grid program, as well as the company responsible for the delivery of the program.

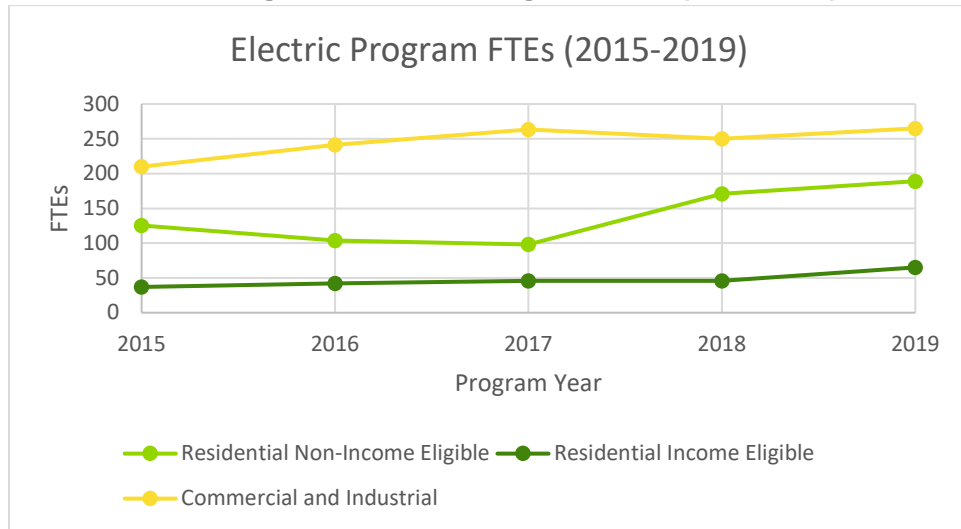
National Grid programs and delivery strategies were substantively the same in 2019 as they had been in 2018. This is due, in part, to 2019 being the second year of the three year Least Cost Procurement Plan for 2018-2020. However, there were some differences, upwards and downwards, in total associated FTEs. Increases occurred due to new program offerings or initiatives, increased spending, and higher conversion rates on residential projects. Certain program FTEs decreased in part due to market saturation, either with customers or with the measures themselves and due to turnover in the workforce and a lag in replacement. Figure 1 and Figure 2 show numbers of FTE jobs by market sector (residential, residential income eligible, and commercial and industrial) from 2015 to 2019.

<sup>6</sup> Note that for the 2019 analysis, CAP Agency staff were included within the Residential Income Eligible program under both Electric and Gas.

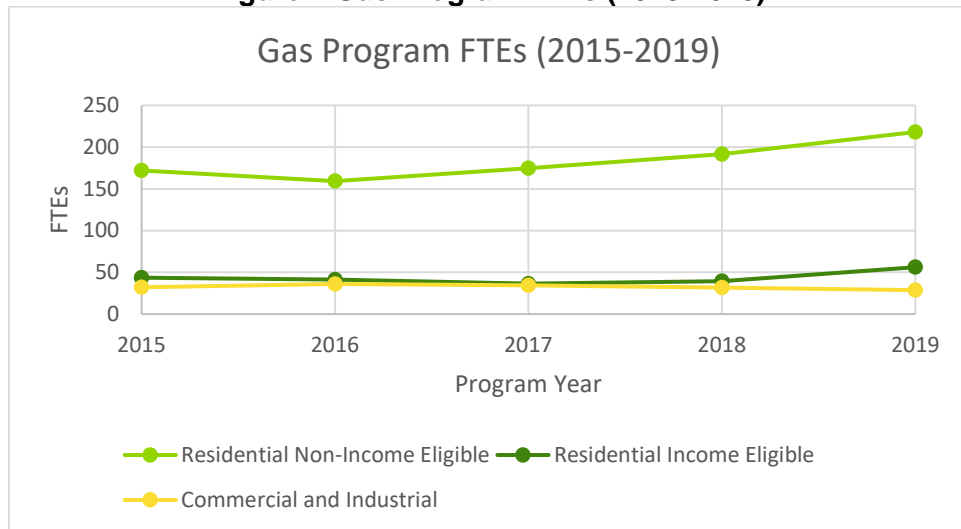
<sup>7</sup> In years prior to 2019 a 2,016-hour work year was assumed when calculating FTEs. National Grid changed this assumption in recent years to a 1,768-hour work year. This new assumption was implemented beginning in 2019 and resulted in a slight increase in FTEs. Under the new assumption, the 2018 National Grid FTE count would have been 45.

<sup>8</sup> Beginning in 2019, marketing was contracted to a new vendor, resulting in an increase in jobs, these are therefore shown separately.



**Figure 1 Electric Program FTEs (2015-2019)**


Source: Guidehouse analysis and 2018 study

**Figure 2 Gas Program FTEs (2015-2019)**


Source: Guidehouse analysis and 2018 study

## 1. Introduction

As mandated by and with the formal approval of the State of Rhode Island, National Grid delivers a state-approved portfolio of energy efficiency programs and services referred to in state enabling legislation as “demand-side management programs”<sup>9</sup> (the programs) to all market sectors it serves in Rhode Island, funded by ratepayers primarily through electric and gas utility rate surcharges and supplemented by other funding sources, including Forward Capacity Market revenue<sup>10</sup>. The Rhode Island programs focus on both new construction and retrofit of existing buildings. Programs deliver cost-effective services and energy savings to building owners and tenants, to residential customers residing in single-family and multifamily buildings, to government and non-profit institutions, to small and large commercial businesses, and to manufacturers.

Overall, the 2019 program offerings were similar to those in 2018, with the addition of some new programs. The budget in 2019 increased when compared to 2018. In 2019, National Grid spent a total of \$134,889,649 on electric and gas energy efficiency programs in Rhode Island, a 16% increase when compared to 2018. Twenty-two percent of 2019 Program expenditures, \$30,141,742, was for gas programs, while 78%, \$104,747,907, was for electric programs.<sup>11</sup> These programs created 451,466 million British thermal units (MMBtu) of natural gas savings and 190,159 megawatt hours (MWh) of electricity savings.<sup>12</sup>

Rhode Island General Law 39-2-1.2(k), enacted by the Rhode Island General Assembly in 2012, requires that

Each year, the office [RI Office of Energy Resources] and the council [EERMC] shall submit to the governor, the president of the senate, and the speaker of the house of representatives, separate financial and performance reports regarding the demand-side management programs, including the specific level of funds that were contributed by the residential, municipal, and commercial and industrial sectors to the overall programs; the businesses, vendors, and institutions that received funding from demand-side management gas and electric funds used for the purposes in this section; and the businesses, vendors, and institutions that received the administrative funds.

In fulfillment of this requirement, National Grid has prepared for submission several financial and performance reports on the programs and has developed a list of businesses, vendors, and institutions that received funding from program funds, as well as businesses, vendors, and institutions that received administrative funds. In addition to fulfilling the specific financial and performance reporting requirements, National Grid has undertaken and is submitting this “Rhode Island 2019 Energy Efficiency Workforce Analysis Report”. This is the seventh consecutive year that National Grid has provided a narrative report describing the jobs associated with these expenditures and the workforce that delivers the energy efficiency programs offered.

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<sup>9</sup> Rhode Island General Laws § 39-2-1.2(b).

<sup>10</sup> Regional Greenhouse Gas Initiative (RGGI) funds also contribute to funding of the municipal streetlighting initiative.

<sup>11</sup> The Narragansett Electric Company d/b/a National Grid, 2019 Energy Efficiency Year End Report and 2018 Year End Spend.

<sup>12</sup> The Narragansett Electric Company d/b/a National Grid, 2019 Energy Efficiency Year End Report.

Although employment directly associated with National Grid programs is not a formal program goal, it is a significant additional economic benefit that investments in energy efficiency contribute to Rhode Island and to participating businesses. Furthermore, without the availability and contributions of a workforce to deliver programs, identify opportunities for energy efficiency, and install energy efficiency improvements, the demand-side savings that R.I. General Law 39-2-1.2 is intended to create would largely not occur. The report describes the work and workforce associated with program development, design, marketing, management, delivery, and evaluation and attempts to estimate the number of jobs directly associated with National Grid's 2019 expenditures for programs that originate from energy efficiency funding sources. Accurately calculating the numbers of these jobs is challenging since it depends on the number and types of employees engaged, be they full-time or part-time, and numbers of hours worked to deliver programs, which may be captured by employers for payroll and business planning, but is not typically reported to National Grid unless for billing purposes.

This report builds on Rhode Island workforce studies performed by Peregrine Energy Group for the previous six years, as will be described in greater detail in the "Overview of Methodology" section, and even adopts significant portions of narrative text from the 2018 study.<sup>13</sup> As in prior years, Guidehouse is presenting workforce counts as "full-time equivalent" (FTE) employees. It is assumed for the purpose of this study, as in past years, that one FTE equals 1,768 actual work hours regardless of job responsibility (in addition to vacation, sick, holidays or other leave time), or the equivalent of one person working eight hours a day for 220 work days in an average year. In many instances, each FTE counted as associated with a National Grid program represents the actual part-time labors of multiple individuals who are associated with delivery of programs in Rhode Island, but also may be engaged in other work-related endeavors.

For the purpose of this study, the workforce engaged in program delivery does not "result from" the programs, but rather is "associated with" the energy efficiency programs. While Guidehouse can confirm that program budgets have funded employers with whom National Grid has contracted to support 2019 programs, no information regarding participants' motivation for replacing older inefficient equipment with new efficient equipment was provided. Therefore, to eliminate the question of causality, FTE counts are shown as employment associated with the programs, rather than "resulting from."

Several pieces of information were required to produce the findings presented in this report. Guidehouse used the following methodology to determine the 2019 FTEs:

1. Guidehouse scaled the 2018 FTEs developed by Peregrine to 2019 FTEs by using the ratio of each program's spending for 2018 and 2019<sup>14</sup>, adjusted by 2% to account for inflation effects. The ratio of 2019 spending to 2018 spending for each program was multiplied by the 2018 FTEs for that program to get an initial 2019 FTE value. This approach is valid because 2019 was the second year of a three-year program and no major changes occurred in the design or delivery of the overwhelming majority of

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<sup>13</sup> 2018 Study: "Analysis and Recommendations regarding the Current and Future Workforce Associated with 2018 Rhode Island Energy Efficiency Programs," accessed at <http://rieermc.ri.gov/wp-content/uploads/2019/07/2018-attachment-5-workforce-report-final.pdf>. The use of text is done with the permission of Peregrine Energy Group and National Grid.

<sup>14</sup> Spending information from The Narragansett Electric Company d/b/a National Grid, 2019 Energy Efficiency Year End Report.



programs, meaning that any change in spending likely could have resulted in an increase in FTE's.

2. Guidehouse conducted several interviews with both vendors contracted by National Grid as well as different National Grid employees; a total of 14 vendor interviews and 7 National Grid interviews were conducted. The information gathered in these interviews was used to either confirm or adjust the values calculated through scaling.
3. Guidehouse also obtained reports of energy efficiency measures installed throughout 2019. These were also used to confirm that no significant changes occurred within programs, and that a scaling methodology was appropriate. Where installed measures greatly differed, adjustments were made in the FTE scaling to account for it.
4. Vendor spending provided by National Grid was used to ensure FTEs reported by specific vendors were reasonable.

The sections that follow describe the Energy Efficiency Workforce, details about Support Services and Direct Service Providers, Analysis of Workforce FTEs, and Qualitative Findings and Observations.

## 2. The Energy Efficiency Workforce<sup>15</sup>

Guidehouse found that in 2019 an estimated **877.6** full-time equivalent jobs or “FTEs” were associated with National Grid programs in Rhode Island. A “full-time equivalent” employee often represents the combined labors of more than one person over the course of a year. The actual numbers of individual workers associated with program expenditures is far greater than the total number of FTEs.

Guidehouse recognizes two main categories of employers/employees that participate in delivery of National Grid’s programs. They are characterized as “Support Services Providers” and “Direct Services Providers.” The following section describes these two segments in more detail, followed by a description of how the analysis of FTEs associated with each type of provider was performed.

### 2.1 Support Services Providers

Support services providers are employers and employees involved in Program planning, administration, marketing, rebate processing, evaluation, and market research. Support services providers include:

- National Grid employees directly involved in energy efficiency program design and delivery, including regulatory matters, administrative management of contractors, marketing, some elements of customer education, and evaluation;
- Entities under contract to National Grid who provide marketing, outreach, public information, and other related services, including media placement and design of collateral marketing materials;
- Specialized firms that process rebate or incentive applications and make payments to contractors, distributors, and manufacturers that promote, provide, purchase, or install targeted high efficiency equipment;
- Independent program design consultants who assist National Grid with creation of annual program strategies, plans, and goals; and
- Evaluators of National Grid Program performance against those annual goals.

### 2.2 Direct Services Providers

The Direct Services Providers are specialized firms, sometimes contracted directly to National Grid, that may provide some or all of the following Program services: promoting, managing, and delivering individual Rhode Island energy efficiency programs; contributing engineering and other technical support to energy efficiency project development; supplying and/or installing

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<sup>15</sup> This section is adapted from the 2018 study “Analysis and Recommendations regarding the Current and Future Workforce Associated with 2018 Rhode Island Energy Efficiency Programs”, accessed at <http://rieermc.ri.gov/wp-content/uploads/2019/07/2018-attachment-5-workforce-report-final.pdf>. The use of text is done with the permission of Peregrine Energy Group and National Grid.



energy saving material and equipment, and providing quality assurance inspections. This category includes, but is not limited to:

- National Grid account managers who provide outreach and direct technical assistance to customers, particularly for large commercial and industrial retrofits and new construction.<sup>16</sup>
- Energy services companies specializing in providing field services and installation program management: National Grid has contracts with such firms to deliver individual programs to particular market sectors. In this capacity, they will often provide a “turnkey” service that includes: outreach and intake of customer requests; scheduling site visits; technical assistance; engineering; material and equipment installations; referrals to and engagements with trades people; administration, management and supervision; warehouse materials purchasing and handling; quality assurance inspections; bookkeeping; and data entry and tracking.
- Energy services companies specializing in logistical management and support: These firms engage, manage, and coordinate product suppliers and distributors, retail store offerings, and service networks. These firms often manage similar programs in both Rhode Island and Massachusetts to achieve acceptable economies of scale. They may work out of a Massachusetts office, but will spend significant time in Rhode Island working with local businesses.
- Electrical and mechanical engineers employed by contracted consulting firms: National Grid assigns and dispatches technical specialists to identify potential projects in customer facilities, quantify potential costs and savings, recommend actions that customers should take, and perform post-installation inspections to ensure that installed measures are performing as intended. The larger firms with the greatest capacity to provide these services are often based in Massachusetts, where there is a higher volume of business opportunity and activity.
- Equipment suppliers and retailers: National Grid encourages and provides incentives to equipment distributors, suppliers, and retailers throughout the Rhode Island service territory to market and sell targeted energy efficient equipment and materials directly to National Grid customers and installation contractors. An increasing number of suppliers and installation contractors participate in National Grid-sponsored “upstream” point-of-sale programs offering instant rebates. These equipment suppliers and retailers typically have Rhode Island storefronts, though they may be part of a regional or national business entity.
- Project expeditors: These are businesses that support National Grid Rhode Island initiatives that target both small and large commercial/industrial, institutional, and municipal customers. Many of these firms operate in Massachusetts as well as Rhode Island and, over time, some of the largest have extended their business activities regionally and nationally. They are primarily sales and project management organizations that rely heavily on independent subcontractors and tradespersons to perform installations. Generally, the more comprehensive their technology capabilities are, the more attractive they are to National Grid since they can provide a more comprehensive service to National Grid customers.

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<sup>16</sup>National Grid is included as both a Support Services Provider and a Direct Services Provider because of the many different roles it has in the programs. Therefore, all National Grid FTEs are segregated and presented in a separate category, rather than integrated into FTE counts for markets and programs.



- Independent installation contractors: These are contractors in the field installing energy efficient equipment and approved materials for National Grid customers. They are typically based in Rhode Island, though some may operate out of offices in neighboring Massachusetts and Connecticut. They include Rhode Island-licensed electricians, plumbers, pipe fitters, and refrigeration experts, as well as other specialists such as weatherization contractors. Many of these installation contractors are active in more than one market sector, sometimes as subcontractors to National Grid-designated program leads or to project expeditors, but also increasingly as self-directed installation vendors.
- Quality assurance inspectors: National Grid also contracts with inspectors that are independent of service delivery contractors who are responsible for installing equipment. The inspectors check a sample of completed installations or a sample of energy efficient equipment acquired by point-of-sale purchasers to ensure that program standards are being met, equipment is installed properly, and projected savings will likely be realized. Again, because of the low numbers of inspections required in Rhode Island, National Grid will typically award Rhode Island inspections to the same firm providing this service for Massachusetts.



### 3. Support Services Providers Analysis<sup>17</sup>

The following section describes different support services and the entity responsible for its delivery.

#### 3.1 EERMC Program Design and Planning Consultants

The Rhode Island Energy Efficiency and Resource Management Council (EERMC) has statutory oversight responsibilities for National Grid's energy efficiency programs including planning, program design, and evaluation. To help them with these responsibilities, the EERMC hires consultants to assist it in the performance of its responsibilities.

##### *Delivery*

Optimal Energy (Optimal), with the support of multiple specialized subcontractors, served as the primary consultants to Rhode Island's EERMC in 2019 and collaborated with National Grid on program design and development. Optimal, though headquartered in Hinesburg, Vermont, primarily serves Rhode Island from a Providence office where employees working on this program are based. The firm also provides like services for other state energy efficiency initiatives nation-wide.

#### 3.2 Marketers

Marketers primary role is promoting National Grid Rhode Island's energy efficiency programs. Marketers' role generally includes media buying and planning, creative concepting, campaign development and strategy, and facilitating planning sessions for program years.

##### *Delivery*

In January of 2019, Eric Mower and Associates (Mower) took over the role of primary marketing consultant from Kelliher Samets Volk (KSV). Mower is the main agency of record servicing marketing for the Product Growth team, handling programs across residential and commercial sectors. Additional firms that provided energy efficiency marketing support for Rhode Island in 2019 included Questline Inc. and Innerworkings Inc. among others.

#### 3.3 Rebate Processing Companies

Rebate processors receive and process applications from participants for different rebates. They generally receive the applications by mail or online submission and proceed to validate whether the customers and equipment are eligible for the rebate. If a customer is found to be eligible, they can approve instant payment to them. All data related to this process is collected

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<sup>17</sup> This section is adapted from the 2018 study "Analysis and Recommendations regarding the Current and Future Workforce Associated with 2018 Rhode Island Energy Efficiency Programs", accessed at <http://rieermc.ri.gov/wp-content/uploads/2019/07/2018-attachment-5-workforce-report-final.pdf>. The use of text is done with the permission of Peregrine Energy Group and National Grid.



by the rebate processors and sent to National Grid. Rebate processors will also provide customers with support throughout the process using call centers, notification emails, or letters.

### ***Delivery***

In 2019, the rebate processing was consolidated and done by Energy Federation, Inc. (EFI) to achieve economies of scale, whereas in previous years this was also done by Blackhawk Engagement Solutions. EFI is based in Westborough, Massachusetts, and processes rebates and incentives offered to program participants. Program participants include both consumers, i.e., National Grid customers who purchase targeted products and then apply for rebates, and equipment installers who promote and encourage National Grid customers to choose higher efficiency products.

Initiatives supported by EFI included Rhode Island Pool Pump and Upstream Circulator Pump Distributor programs, as well as the ENERGY STAR® Appliances, Lighting, and HVAC programs. They also provided call center support for the Rhode Island appliance program that focuses on high efficiency clothes dryers and dehumidifiers. Supporting the ENERGY STAR® Lighting program was EFI's largest rebate processing effort for National Grid. Working closely with Lockheed Martin which managed ENERGY STAR® Lighting, EFI reimbursed manufacturers and others for point-of-sale discounts provided to residential customers.

In addition to this effort, beginning in early 2019, they took on the heating and cooling program as well. New for 2019 as well, EFI began performing inspections in order to ensure the rebate was valid. EFI subcontracted to CLEARresult to perform equipment inspections on-site as well as handle the related phone calls from customers. Due to the consolidation of rebate processors, EFI's customers served increased by 100%, which led to an increase in jobs for EFI.

## **3.4 Evaluators**

To measure the performance of Rhode Island Program offerings against annual goals, National Grid contracts with independent consulting firms specializing in utility program evaluation. Many of these firms support National Grid evaluation needs in other states as well.

### ***Delivery***

DNV GL, based in Burlington, MA, provided approximately 58% of the Rhode Island program evaluation services in 2019, as a percentage of overall evaluation spending. They also hold the C&I statewide contract for Massachusetts and National Grid can therefore leverage their relevant work for Rhode Island. Other evaluation firms perform energy efficiency evaluation services in Rhode Island as well. In 2019, these included Cadeo Group, NMR Group, Peregrine Energy Group, Jacobson Energy Research, The Brattle Group, Navigant Consulting, The Cadmus Group, and Coughlin and Associates.

## 4. Direct Services Providers Analysis<sup>18</sup>

Based on its 2019 Energy Efficiency Year End Report, National Grid achieved 98% of its annual MWh savings targets and 104% of its annual MMBtu savings through its electric and gas energy efficiency programs. Achievement towards these energy efficiency goals in 2019 was the result of the aggregate efforts of the many Direct Services Providers who delivered the National Grid programs. This section describes each electric and gas program offered as well as the entity responsible for each program's delivery.

In 2019, National Grid employed multiple, targeted energy efficiency delivery strategies in Rhode Island. Energy efficiency programs described below were each designed for individual markets and reflect differences in the buying habits, drivers, and technical and financial resources of each market sector (residential, residential income-eligible, commercial and industrial) and their sub-sectors. Program delivery strategies varied with fuel type (i.e., electric vs. natural gas customers), characteristics of different customer rate classes, cost and benefits of different end-use technologies to classes of customers, and whether a program's objective was to affect energy efficiency in current operations or future energy use in new construction.

### 4.1 Commercial and Industrial Programs

In 2019, Commercial and Industrial (C&I) programs, gas and electric, continued to encourage installation contractors, both technology specialists and tradespeople, to take the lead in achieving National Grid's energy efficiency goals for large and small businesses. These C&I programs also target municipal facilities and large non-profit institutions (e.g., colleges and universities and healthcare facilities). At the same time, National Grid increasingly made use of "upstream" or "point-of sale" strategies, particularly for LED lighting, that discounted the purchase price of preferred, more energy efficient equipment to accelerate market transformation and replacement of older technology.

C&I programs differentiate between "prescriptive" and "custom" energy efficiency measures. Prescriptive measures, often lighting, qualify for pre-determined incentives or discounts from National Grid based on cost-effectiveness guidelines (e.g., hours of operation or equipment life). Custom and comprehensive measures are often more complex and are evaluated and approved for incentives based on actual total savings they projected to produce. In particular, the Large Commercial and Industrial Retrofit program encourages customers and their installation contractors to incorporate or bundle a mix of shorter payback, more certain, energy savings measures and longer payback, more complex, energy savings measures into projects, providing enhanced incentives for more comprehensive and deeper efficiency improvement.

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<sup>18</sup> This section is reproduced from the 2018 study "Analysis and Recommendations regarding the Current and Future Workforce Associated with 2018 Rhode Island Energy Efficiency Programs", accessed at <http://rieermc.ri.gov/wp-content/uploads/2019/07/2018-attachment-5-workforce-report-final.pdf>. The use of the text is done with the permission of Peregrine Energy Group and National Grid.

National Grid Senior Analyst Ben Rivers and Commercial and Industrial Program Manager Beth Lonergan identified the following trends with respect to commercial and industrial programs targeting electricity use.<sup>19</sup>

- Lighting continues to be the primary source of electric savings in this market sector in Rhode Island. However, saturation is a growing issue and would make it more difficult and expensive to achieve electricity savings in this market in the future. National Grid continues to explore the introduction of new measures to help meet savings targets.
- The next generation of lighting energy savings will likely be from LED fixture-mounted lighted controls. As controls rebates head upstream, there may be a need for more commissioning of control installations.
- Market focused initiatives are being developed. Rhode Island launched a restaurant focused initiative (delivered by CLEAResult) and a campus-focused Strategic Energy Management initiative (newly delivered by Cascade Energy) in 2019.

#### ***4.1.1 Large Commercial New Construction (Electric)***

The Large Commercial New Construction program encouraged energy efficient design and construction practices in new and renovated commercial, industrial, and institutional buildings. The program also promoted the installation of high efficiency equipment in existing facilities during building remodeling and at the time of equipment failure and replacement. The program offered incentives to eliminate or significantly reduce the incremental cost of high efficiency equipment over standard efficiency equipment and provided technical support to assist customers to identify opportunities for incremental efficiency improvement in eligible buildings.

##### ***Delivery***

The New Construction program was administered and promoted internally by National Grid staff. As noted above, it offered both technical and design assistance to customers to identify opportunities for incremental efficiency improvement in new building designs and to help customers and their architects/engineers to refine their designs to capture these opportunities. Outside consultants were assigned to assist customers to identify and incorporate energy efficiency solutions into new construction designs and to complete detailed studies that model and quantify energy savings. Commissioning or quality assurance was also offered to ensure that the equipment and systems operate as intended.

##### ***4.1.1.1 Engineering Support***

To further support large commercial customers, National Grid contracted with consulting engineers who could be deployed by an account manager to assist a customer. Engineers identified potential custom projects, evaluated or modeled the potential energy savings, and helped the customer complete incentive applications. Some of these consultants brought expertise in specialties like data center energy efficiency improvement or laboratories and clean room technology. In other situations, the customer could propose a scope of work with their own

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<sup>19</sup>Interview with National Grid.

engineer that National Grid could elect to support. Support from contracted consulting engineers was available through National Grid to witness project commissioning, to confirm that the installed measures were operating and performing as anticipated, and to ensure that predicted savings would be achieved. Consulting engineers are used for both new construction and retrofit projects.

#### ***4.1.2 Large Commercial Retrofit (Electric)***

The Large Commercial Retrofit program replaces older, but still operating, less efficient energy equipment and systems with more energy efficient equipment. Energy efficiency improvements installed through the program include but are not limited to: interior and exterior lighting and lighting controls; drives; heating, ventilation and air conditioning (HVAC) systems; building controls; combined heat and power systems; and street lighting. The goal is achieving persistent, measurable energy savings.

All existing commercial, industrial, and institutional customer facilities are eligible to participate. Customers in the program tend to be larger (i.e., have a monthly usage greater than 1,000,000 kWh) or are pursuing custom electricity saving measures not available through the prescriptive Direct Install Program. National Grid pays incentives to assist with defraying a portion of the costs associated with installing equipment. National Grid also can choose to provide engineering assistance to customers to assist with identification of cost-effective opportunities.

#### ***Delivery***

The Large Commercial Retrofit program is a market-based initiative with no contracted program administrator or designated preferred suppliers. National Grid has established performance standards for qualifying energy efficiency measures and allows customers to choose the suppliers and installation vendors they want to work with. Customers submit applications to National Grid for incentives that are based on projected savings that will be achieved and receive payments from National Grid that help defray costs associated with installed equipment. Installers of record for these projects are identified by National Grid as either “customers,” “installation contractors,” or “project expeditors” (PEX). According to National Grid data, 59% of projects were installed by installation contractors, 16% by customers, 24% by PEX, and the remaining 1% were unknown.

In addition to the main program described above, several initiatives exist within the Large Commercial Retrofit program, described below.

#### ***4.1.2.1 Upstream Lighting (Electric)***

National Grid’s Commercial and Industrial Upstream Lighting program encourages customers and electrical contractors to choose higher efficiency lighting products at the point of purchase. This program was launched due to a recognition that commercial customers were going to large lighting distributors to purchase stocks of replacement lighting to have should lights fail or to undertake large-scale change-outs. At that point in time, fluorescent lighting predominated the commercial market. National Grid reasoned that if a customer again purchased and installed the same “old technology” fluorescent product as was being replaced, this would be a major lost

opportunity for efficiency improvement; but if the customer could be influenced to purchase and install a more efficient LED product, both National Grid and the customer would realize the benefits and savings of energy use reduction.

LED unit sales peaked in 2015 and declined in the three succeeding years. However, vendors indicated that 2019 did not follow this trend. It was noted that 2019 had more customers participating in the program compared to 2018. They were able to achieve more savings with less spending due to introducing new high-savings products. New for 2019 were products such as troffer retrofit kits, high and low bays with controls, and parking garage lighting products. Overall, there was a decrease in sales of products that have been in the program for some time, however these new products are leading to high savings and an overall increase in participation.<sup>20</sup>

### ***Delivery***

National Grid contracted with CLEAResult to administer, support, and promote Upstream Lighting. The same team manages the Upstream Lighting program in Massachusetts. CLEAResult has engaged manufacturers and enlisted lighting distributors throughout Rhode Island, offering incentives from National Grid to reduce list prices of specified energy efficient products to electrical contractors and businesses, with the goal of transitioning and transforming stocking practices and customer purchasing behavior.

CLEAResult processed reimbursements to suppliers for discounts provided and managed a quality assurance process to ensure that recorded sales were legitimate. In 2019, new products continued to be added to what had been available through the program to continue to accelerate the market transformation process. CLEAResult has also been more closely managing participating distributors, developing performance plans with them and increasing information sharing. The result has been a significant improvement in the rate at which new product purchases are being installed. CLEAResult noted an increase in participating customers, increasing in 2019 from 2018, while also seeing a decrease in spending. New for 2019, CLEAResult introduced “branch engagement” to the program. Once a month, CLEAResult will visit a location of a distributor participating in the program in Rhode Island, visiting every branch quarterly. For example, if an electrical wholesaler has 5 locations in Rhode Island, CLEAResult will visit each of those locations once a quarter.<sup>21</sup> This has directly led to an increase in FTEs.

Larger distributors were audited to verify that product sold through the program were indeed going to the customers of record.

#### ***4.1.2.2 Energy Smart Grocer***

National Grid contracted with CLEAResult, through its Massachusetts office in Westborough, to offer the Energy Smart Grocer sub-program, which helped large and small supermarket chains identify and implement energy efficiency improvements. Participating customers were part of local and regional chains and secured through outreach in partnership with the RI Food Dealers

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<sup>20</sup> CLEAResult interview, March 16, 2020.

<sup>21</sup> CLEAResult written communication, April 20, 2020.

Association. Working in 60 kW or larger food markets, CLEAResult focused on refrigeration improvement, controls, and lighting. CLEAResult employed auditors and other technical staff to identify and develop efficiency improvement projects, helped them engage contractors to complete upgrades, provided technical support as needed, and performed quality assurance inspections of installations. CLEAResult used ESCO as the general contractor for this program. There were 23 contractors involved in the program completing 68 projects in 2019.<sup>22</sup>

The program also achieves gas savings through HVAC equipment operation, due to dehumidification and keeping cold air in refrigerated cases rather than letting it spill into supermarket aisles.

#### ***4.1.2.3 Industrial Energy (Gas and Electric)***

National Grid contracted Leidos Engineering, Inc. to help Rhode Island and Massachusetts manufacturers identify and implement energy efficiency improvements in industrial processes.

Leidos provided targeted engineering support to participating customers, functioning as an owner's representative as customers developed projects with specialty vendors and contractors. A typical engagement included meetings with a customer to review existing operations, major energy uses, and current production issues. Following a guided walk-thru of the facility, Leidos engineers prepare a summary of opportunities and suggested next steps. Depending on the specific interests expressed, Leidos helped identify vendors/contractors and prepared applications for National Grid incentives. Most industrial projects were process-related, and customers often use their own employees for installation and construction.

Leidos has reported that market saturation is becoming an issue in Rhode Island due to the relatively small size of its industrial base. However, Leidos noted that there were still many measures that could be implemented to achieve greater savings within the current customer base.

#### ***4.1.3 Small Business Direct Install (Electric and Gas)***

In 2019, the Small Business Direct Install program continued to provide direct installation of prescriptive energy efficient lighting, non-lighting retrofit measures, and minor gas efficiency measures. Electric customers with average monthly usage of up to 1,000,000 kWh were eligible to participate in 2019. This was changed from the previous threshold of 200 kW of average monthly demand in 2018.

#### ***Delivery***

The Direct Install program's lighting measures were delivered by RISE Engineering of Cranston, Rhode Island and sourced from a product vendor. RISE provided turnkey installation services to this market. According to National Grid, RISE accounted for 70% of applications serviced. The remaining 30% of applications serviced were through the Customer Directed Option (CDO).<sup>23</sup>

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<sup>22</sup> CLEAResult interview, March 19, 2020.

<sup>23</sup> National Grid, written communication, April 2, 2020.



This is an increase in CDO projects when compared to 2018, where 24% were serviced through the CDO.

RISE employees engaged in the Small Business program were responsible for marketing and lead generation as well as staffing an intake center that was responsible for pre-qualifying potential customers. RISE energy specialists performed field audits of customers' facilities, and data entry staff used completed audits to generate proposals for customers. Audits also resulted in referrals to the Commercial and Industrial Gas Program. When a customer accepted a RISE proposal, a RISE project manager ensured that sufficient product was available for the installation, issued that product to the installer/electricians, and closed out the work order when the installation was completed. RISE maintained a supervised warehouse for material distribution and materials handlers. RISE also employed back office and accounting staff to service this program. Active electricians included both RISE employees and employees of sub-contractors.

#### ***4.1.4 Large Commercial New Construction and Retrofit (Gas)***

Large Commercial and Industrial Gas programs supported installation of energy efficient gas heating and water heating systems, certain thermal envelope measures, and custom gas systems in existing buildings and in new construction. The program guidelines for measure eligibility were the same as for the Large Commercial Retrofit program and the New Construction program. All commercial, industrial, and institutional customers were eligible to participate.

The C&I gas programs offered technical assistance to customers to help them identify cost-effective conservation opportunities and paid incentives to assist in defraying part of the material and labor costs associated with the energy efficient equipment. A retrofit measure must demonstrate that it will increase energy efficiency above the performance of the still-functional equipment it will replace. For new construction or in the case of failed equipment, "lost opportunity" rules apply. New equipment, to be eligible for incremental incentives, must exceed the efficiency of what applicable codes require.

#### ***Delivery***

National Grid internalized the program management responsibility for C&I gas programs in 2018 and handled the roles of program manager and project coordinator positions, customer engagement, and data management. RISE continued to be engaged in the program in a technical support role. RISE technical staff included multiple engineers, field staff performing audits, an installer doing minor installations for the Small Business Direct Install program, and a quality assurance specialist who validated engineering work. Project energy measures included weatherization, controls, process automation, combustion efficiency, heat recovery, combined heat and power, steam traps, and hot water upgrades. RISE performed post-installation inspections of completed projects.

### **4.1.5 Commercial Connected Solutions**

The Commercial Connected Solutions program was a pilot program in 2017 and 2018 and became an official program in 2019. The program is technology agnostic and provides an incentive to participating C&I customers for verifiable shedding of load in response to a signal or communication from National Grid during curtailment events.<sup>24</sup>

#### ***Delivery***

Four curtailment service providers (CSPs) were certified and contracted for the Commercial Connected Solutions program. They market and recruit customers under the terms of the program. The most active of these is CPower Energy Management, which provided about 50% of the contracted demand reduction, including many customers in the municipal sector. The program employed EnergyHub to provide the Demand Response Management System (DRMS) platform for the program.

## **4.2 Income Eligible Residential Programs**

National Grid offers Income Eligible programs to its electric and gas customers residing in single family (1-4 unit) dwellings and multifamily (5 or more unit) buildings or developments who are eligible for the Low-Income Heating Assistance Program (LIHEAP). This target audience is eligible to receive energy-related assistance through federal and state programs. National Grid's program strategy in this market is to support, complement, and leverage the resources and services provided by these other programs.

### **4.2.1 Single Family – Income Eligible Services (Gas and Electric)**

National Grid's Income Eligible Single Family program provides low-income customers in 1-4 unit buildings with home energy assessments, installation of energy efficient LED lighting, appliances, heating systems, domestic hot water equipment, and weatherization measures. For many decades, energy services have been, and continue to be, provided to this market sector through local non-profit Community Action Program (CAP) agencies under contract to the Rhode Island Department of Human Services (DHS). These agencies deliver the federally funded Weatherization Assistance Program (WAP) and LIHEAP. These services are fuel-blind and available to income-qualified gas, oil, propane, and electric heat customers as budgets allow. Six CAP agencies provide statewide coverage to Rhode Island residents.

Under the Income Eligible Single Family program, CAP agencies provide three types of building audits: audits focused on lighting and appliances only that install lighting products; audits providing detailed recommendations and work orders for insulation contractors, heating system and ventilation fan installers; and comprehensive audits that do both. Building Performance Institute (BPI) -certified auditors complete building assessments and work orders.

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<sup>24</sup> National Grid, Annual Energy Efficiency Plan for 2019, October 15, 2018.



### ***Delivery***

CLEAResult, working out of offices in Providence, Rhode Island, has been managing the Income Eligible Single Family program since 2013. CLEAResult serves as the conduit for National Grid payments to the CAP agencies and works closely with the Rhode Island DHS staff to coordinate and optimize delivery of National Grid-funded services and traditional Weatherization Assistance.

Under CLEAResult's management, productivity and quality of service delivery to low income residents has continuously improved. CLEAResult has expanded training for current auditors, increased quality control, and improved oversight of National Grid-funded services and installations delivered through CAP agencies.

Several independent contractors are active in income-eligible weatherization, installing insulation and completed air sealing for the CAP agencies. Many of these contractors also are active in the EnergyWise Single Family program. Contractors are selected off a state-approved list and offer fixed pricing statewide for installed measures. Each agency has a handful of insulation contractors they typically work with. The CAP auditing staff inspects completed insulation work post-installation to ensure it was properly installed.

Additionally, several heating system repair and replacement contractors are active in this market. Heating system upgrades are put out to bid to contractors, and heating contractors also are used for post-installation inspections. There are also electrical contractors that are approved to repair and install bathroom fans to address humidity issues and to replace or disable antiquated knob and tube wiring (a code requirement that must be done for safety purposes before insulation can be installed in walls and ceilings).

ACTION, Inc., based in Massachusetts, oversaw the refrigerator replacement service provided to income eligible residential customers. This included product procurement, ordering, delivery, removal and disposing of old appliances, and conducting quality assurance surveys.

#### ***4.2.2 Income Eligible Multifamily (Gas and Electric)***

Since 2013, National Grid has provided energy efficiency offerings for income eligible multifamily properties with five or more units through the EnergyWise Multifamily program. This suite of programs addresses both gas and electric opportunities. Comprehensive energy services available to these customers included energy assessments, incentives for heating and domestic hot water systems, cooling equipment, lighting and appliances. Services provided to income-eligible and market rate units and buildings through EnergyWise Multifamily program are tracked separately.

Additionally, and in parallel, the Residential New Construction program works with Rhode Island Housing, local housing authorities, and developers of income-eligible housing to encourage construction of energy efficient properties.

### ***Delivery***

In conjunction with its delivery of EnergyWise Multifamily services, RISE Engineering, based in Cranston, Rhode Island, had primary responsibility for delivery and coordination of Income Eligible Multifamily services. RISE staff serve as project managers for retrofit projects, meeting with building facility managers and writing work orders and scopes of work (e.g., for air sealing, attic insulation, lighting fixtures, and even replacement refrigerators from retailers) for low-income residents. Independent contractors installed weatherization materials (insulation and air sealing) and heating equipment components. CMC Energy Services, Inc. provided quality assurance (QA) inspections to a sample of income eligible MF residential customers served. CLEARResult provided support for energy efficient construction of new income-eligible units through the Residential New Construction program.

## **4.3 Residential (Non-Income Eligible) Programs**

In 2019, National Grid's residential programs continued to offer a range of services and incentives to encourage residential electric and natural gas customers, be they owners or tenants, to install energy efficient equipment and materials and to operate their homes with energy efficiency in mind. Programs promoted conversion of residential lighting to LED technology, purchase of more energy efficient appliances, building weatherization, HVAC system replacement, and energy efficient new construction.

Large energy services companies who specialize in supporting utility energy efficiency initiatives are under contract to manage and deliver individual programs. The energy service company's role is, typically, to engage a wide range of market actors, including both buyers and sellers of energy efficiency products and services, who are needed to make a residential sector sub-market work. The company then brings these stakeholders together, provides education, training, and technical support, and facilitates investments that result in energy use reduction. Delivery information on each program is detailed below.

### ***4.3.1 Residential New Construction (Gas and Electric)***

The Residential New Construction program promoted the construction of high-performing energy efficient single family, multifamily, and low-income homes in both 1 to 4 unit buildings and multifamily buildings up to five stories. To that end, it educated builders, developers, housing agencies, tradesmen, designers, and code officials regarding the construction requirements, performance benefits, and costs for such buildings. Changes driven by the Residential New Construction program improve lifecycle energy performance. This is primarily attributable to better materials selection and improved construction methods.

### ***Delivery***

National Grid continued to contract with CLEARResult to deliver the Residential New Construction program in 2019. CLEARResult provided program management, data management, and administrative support to this program out of CLEARResult's Westborough, MA, office. Staff included a program manager, senior field managers, and project managers. Field personnel provided trainings and reviewed plans submitted by builders and developers. Field staff also

modeled proposed buildings and completed inspections that verified and certified that construction practices for participating buildings receiving performance ratings. In 2019, 639 units received Home Energy Rating System (HERS) ratings, up from 559 in 2018.<sup>25</sup>

In 2018, CLEAResult staff helped National Grid develop a Zero Energy Pilot in to continue to grow and support zero energy construction in both residential and commercial buildings through increased market awareness, education, and training. This program was launched late in 2018 and began progressing in 2019. This pilot resulted in additional funds and goals to increase the number of zero energy homes in Rhode Island. Between this additional funding and a slight increase in the new construction budget, CLEAResult was able to hire an additional employee to join their team.

#### ***4.3.1.1 Residential Codes and Standards Initiative (Gas and Electric)***

The Codes and Standards Initiative has been the complement to the New Construction program, providing information, training, and technical support to the design and construction communities and to code officials in municipalities to increase code compliance. The Rhode Island Building Commission adopted a new energy code in 2019 resulting in additional training effort.

##### ***Delivery***

National Grid contracted with CLEAResult in 2019 to lead this initiative in parallel with the Commercial New Construction program it also manages. CLEAResult coordinated and conducted residential trainings targeting HVAC contractors, architects, builders, and code enforcement officials. In addition, trainers delivered commercial classroom trainings. Two subcontractors assisted with these trainings: Energy Resource Solutions from Andover, Massachusetts, and Steven Turner, Inc. from Providence, Rhode Island.<sup>26</sup> CLEAResult also fielded circuit riders to provide on-site technical assistance to developers and municipalities as needed.

#### ***4.3.2 ENERGY STAR® HVAC (Gas and Electric)***

The ENERGY STAR® HVAC program promotes the installation of high efficiency gas heating and electric cooling systems to replace or displace existing, relatively inefficient equipment. The program also provided in-depth contractor training for design, installation, and testing of high efficiency systems, as well as quality installation verification training to ensure that all equipment is properly sized, installed, sealed, and performing.

##### ***Delivery***

Westborough, Massachusetts-based CLEAResult delivers this program, providing training, technical support, and marketing assistance to trade allies to promote electric mini-splits and higher efficiency water heating systems. Equipment distributors are the market channel used to

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<sup>25</sup> CLEAResult interview, March 9, 2020.

<sup>26</sup> CLEAResult interview, March 9, 2020.

provide outreach to installation contractors about program objectives, requirements, and opportunities. Independent HVAC contractors installed high efficiency heating and cooling system components.

Measures installed in this program are central HVAC units, boilers, furnaces, water heaters, and smart thermostats. Installers were plumbers, pipe fitters, electricians, and refrigeration technicians, primarily Rhode Island-based. This program also provides incentives for air source and ductless mini-split heat pumps; 2019 was the first year the program offered incentives for converting fossil fuel fired systems to heat pumps for heating. These incentives are largely downstream to customers and contractors, rather than up- or mid-stream to distributors or manufacturers. A number of HVAC contractors received training to qualify to perform these installations through the HVAC program. However, due to regulatory action, these heat pump incentives were discontinued in 2020. The program still offers incentives for converting electric resistance heating to air source mini split heat pumps.

### ***4.3.3 EnergyWise (Gas and Electric)***

In 2019, EnergyWise provided residential customers living in single-family homes (defined as 1 to 4-unit buildings) with a comprehensive energy assessment of energy use and building-specific recommendations for actions to take to increase home energy efficiency. These included:

- Technical assistance to identify how and where to improve building insulation and whether to replace appliances, heating systems, and thermostats with high efficiency models.
- Upgrading to LED lighting, low-flow showerheads, low-flow faucet aerators and smart power strips.
- Work orders for weatherization services (insulation and air sealing), for which National Grid would provide financial incentives. If upgrades were made, quality assurance inspections were also provided.
- Rhode Island Heat Loan, which provides 0% interest financing to eligible single-family customers to support the adoption of recommendations made during the assessment.

### ***Delivery***

For 2019, National Grid again contracted with RISE Engineering, based in Cranston, Rhode Island, to manage and deliver the EnergyWise Single Family program. Staff had a wide range of program roles: program managers, office and field staff supervisors, field auditors, field installers and technicians, field inspectors, intake staff and schedulers, warehouse and material management staff, electricians, quality assurance/quality control inspectors, database management, and accounting and contract oversight personnel.

A two-person auditor and installer team conducted the residential energy assessments, also called building audits, providing analysis, education, and instant savings from installations in a single visit. RISE reported that the number of individual energy assessments performed through the EnergyWise Single Family program increased 17% in 2019 to 12,363, up from 10,573

completed in 2018.<sup>27</sup> This resulted in an increase of approximately 20% to the number of hours RISE employees spent on the EnergyWise Single Family program compared to 2018.<sup>28</sup> This increase in hours was also reflected in the program spending, which also saw a 20% increase.

Paralleling the increase in audits completed in 2019, completed building weatherization projects (i.e., insulation and air sealing) also increased to 4,632 from 3,588, yielding about 1000 more weatherization jobs in 2019 compared to 2018.<sup>29</sup> This resulted in an increase in subcontractor demand and need of about 20%. This increase was attributed in large part to the consistency around the offer of oil and propane weatherization. RISE is about a year and a half into aligning the oil/propane incentives with the electric incentives, which has led to continued growth and success. In 2019, RISE also began delivering a renter's initiative, which led to an increase in demand of about 20% among renters.<sup>30</sup> The renter's initiative was expected to have a much larger impact, though un-motivated landlords/tenants proved to be a challenge. This is a potential area for growth in 2020.

CMC Energy Services, Inc. provided quality assurance (QA) inspections to a sample of EnergyWise Single Family residential customers served. QA addressed all phases of service delivery and included review of field auditors' performance, post-audit counts of installed measures, and post-weatherization site visits to confirm proper installation technique and customer satisfaction with results.

#### ***4.3.4 EnergyWise Multifamily (Gas and Electric)***

In 2019, EnergyWise Multifamily continued to provide comprehensive energy services to multifamily customers in buildings with five or more units, including energy assessments, incentives for heating and domestic hot water systems, cooling equipment, lighting, and appliances. These same services were available to both market rate and income-eligible multifamily properties.

##### ***Delivery***

RISE Engineering managed and coordinated the services offered across a portfolio of National Grid programs, including EnergyWise Multifamily, Commercial Multi-family, and Income Eligible Services (i.e., Low Income) Multi-family. RISE employees delivering multifamily programs included the Multi-family Operations Manager, a technical services director, field coordinators, field auditors and installers, warehouse materials handlers, and project intake and coordination staff. RISE staff also served as project managers for retrofit projects, meeting with building facility managers, making presentations to condominium boards and owners, and writing work orders and scopes of work (e.g., for air sealing, attic insulation, lighting fixtures, hot water systems and boiler resets, and even replacement refrigerators from retailers for low-income residents).

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<sup>27</sup> RISE Engineering interview, March 9, 2020.

<sup>28</sup> RISE Engineering interview, March 9, 2020.

<sup>29</sup> RISE Engineering interview, March 9, 2020.

<sup>30</sup> RISE Engineering interview, March 9, 2020.

RISE used 21 subcontractors in 2019, 9 of which were weatherization subcontractors, 6 were mechanical, and 6 were electrical.<sup>31</sup> Sixty-two sites received weatherization services in Rhode Island in 2019. It is important to note that when many units within the same building are completed at once, this only counts as one site. Therefore, the total number of discrete projects is approximately 20% higher than 62 since a single site may include multiple weatherization services.<sup>32</sup>

RISE noted that there were certain restrictions on lighting measures in 2019. RISE must develop lighting recommendations using equipment that is suitable for the application and must apply cost-effectiveness guidelines to ensure that the energy savings are sufficient to warrant the utility's investment in the project. Several factors cause certain restrictions to what can be done:

- The equipment used must meet certain standards (for example: UL, DLC, ENERGY STAR®)
- The equipment must be rated for the application (for example: wet-rated for exterior applications)
- The equipment must provide appropriate lighting for the activity within the space
- The equipment must result in sufficient energy savings to warrant the utility's investment
- The savings and costs must fit within the utility's goals and budgets.<sup>33</sup>

CMC Energy Services, Inc. provided quality assurance (QA) inspections to a sample of EnergyWise Multi Family residential customers served.

#### **4.3.5 ENERGY STAR® Lighting (Electric)**

ENERGY STAR® Lighting is a “point-of-purchase” initiative in coordination with other regional utilities. The program's strategy is to facilitate retailer discounts on lighting products that National Grid would like residential customers to purchase, resulting in instant rebates and special promotions at retail stores. A mail-order catalog and online store are also available to customers for lighting purchasing.

##### ***Delivery***

Lockheed Martin Services (LMS)<sup>34</sup>, with an office in Marlborough, Massachusetts, again supported the residential consumer lighting initiative in 2019, providing direct outreach and education to both product retailers and manufacturers. LMS works with corporate decision makers to enlist new retailers into the program. They have monthly calls with corporate trade allies and manufacturers to facilitate getting new products to retailers and assist retailers with design and set up of displays and signage in stores. The LMS staff serves utility programs in both Massachusetts and Rhode Island. Field staff worked with retailers statewide, providing

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<sup>31</sup> RISE Engineering interview, March 19, 2020.

<sup>32</sup> RISE Engineering interview, March 19, 2020.

<sup>33</sup> RISE Engineering, written correspondence, April 16<sup>th</sup>, 2020.

<sup>34</sup> The Lockheed Martin division that supported energy efficiency was purchased by TRC in November 2019. All personnel and functions related to delivery of energy efficiency in Rhode Island were transferred over to TRC. The company is referred to as Lockheed Martin throughout the report because it functioned as Lockheed Martin for the majority of the year.



product information, training them to upsell to more efficient products, offering staff events, conducting in-store surveys and point-of-sale promotions, and helping organize school-based lighting product and power strip purchasing and distribution.

In late 2019, Boulder, CO-based Uplight took over from EFI to provide an online marketplace for National Grid to promote and supply efficient lighting and other qualified products. Because this transition occurred late in the year, no adjustment to employment impacts are associated with it. Note that EFI still conducts incentive management for the program.

#### **4.3.6 Residential Consumer Products**

In 2019, the Residential Consumer Products program was again coordinated with other regional utilities to promote the purchase of high efficiency household appliances and electronics. These appliances carry an ENERGY STAR® label. The program also offered refrigerator and freezer recycling, which helped address a significant barrier to purchasing a more efficient appliance. This appliance disposal program also has helped remove non-efficient units from the market (eliminating additional, older units in customer basements and garages and preventing them from entering the used appliance market), recycled appliance components, and captured and properly disposed of refrigerants. Additional consumer products like WIFI thermostats, Tier 2 advanced power strips, energy efficient dehumidifiers, room air conditioners, and pool pumps have proven to be applicable to this point-of-purchase strategy and are similarly available from retailers.

##### ***Delivery***

Lockheed Martin Services (LMS) manages the ENERGY STAR® Appliances in Rhode Island and Massachusetts. As is the case with ENERGY STAR® Lighting, ENERGY STAR® Appliances is primarily a retail-store based initiative. Lockheed Martin Services engaged major retail outlets, providing the same support as for ENERGY STAR® Lighting. Lockheed Martin also subcontracted for disposal and recycling of replaced air conditioners and dehumidifiers.

National Grid and the other regional utilities contract with ARCA Recycling Inc. to recycle older refrigerators and freezers as part of the holistic strategy to encourage the purchase of energy efficient products. ARCA, operating in Franklin, Massachusetts, is responsible for refrigerator collection, dismemberment, and material recycling. ARCA noted that in 2019 the number of customers they served when compared to 2018 was down about 15%. ARCA indicated that their program volumes in Rhode Island decreased due to reduced funding, however their work in Massachusetts made up for the decrease in Rhode Island and overall regional employment – though not in Rhode Island – remained steady.<sup>35</sup>

#### **4.3.7 Home Energy Reports (Gas and Electric)**

National Grid began offering Home Energy Reports (HER) to all residential customers in April 2013 as the first statewide behavioral program in the country and has continued the program

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<sup>35</sup> ARCA, Inc. interview, March 10, 2020.

through 2019. The Rhode Island HER program uses historical energy usage benchmarking and social comparisons to encourage energy efficient behaviors by residential customers.

The program provides emailed or mailed reports to customers containing customer-personalized energy usage information, recommendations, and links to National Grid's other residential energy efficiency programs and services. For electric customers, 12 emailed and 7 printed reports are sent, while gas customers receive 7 emailed and 4 printed reports. The goal of reports has been to generate actual energy savings by providing "tips" for reducing energy use as well as to increase demand for and participation in other residential programs offered by National Grid.

### ***Delivery***

Oracle Utilities, with offices in Arlington, Virginia, delivers the HER program using proprietary behavioral analysis and energy audit software. A Northeast team manages accounts and optimizes delivery services to clients in Rhode Island, Massachusetts, and New York. Oracle's HER service group continues to be staffed with behavioral scientists, marketing experts, engineers, and software product developers, with support staff, operating in cross-functional teams to develop and deliver Home Energy Reports across the U.S.

### ***4.3.8 Residential ConnectedSolutions***

The Residential ConnectedSolutions program was a pilot in 2017 and 2018 and became a full program in 2019. The focus of the program is to reduce peak load through the use of wi-fi thermostats and other eligible technologies which may include batteries, lighting, water heaters, pool pumps, electric vehicles, and other devices.<sup>36</sup>

### ***Delivery***

The Residential ConnectedSolutions program employed the Demand Response Management System (DRMS) EnergyHub for the program. Customers were assumed to bring their own devices to the program; therefore, there is no incremental labor assumed for program marketing or device installation.

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<sup>36</sup> National Grid, Annual Energy Efficiency Plan for 2019, October 15, 2018.



## **5. National Grid Employees Analysis<sup>37</sup>**

National Grid employees touch all aspects of energy efficiency programs and services provided to gas and electric customers in Rhode Island including program design, delivery, evaluation, and reporting to regulators. Some of these National Grid employees are dedicated to only Rhode Island's energy efficiency programs, and others are dedicated to energy efficiency program matters in multiple states. Still other employees are involved part-time in energy efficiency-related efforts in the context of their other National Grid responsibilities. Since National Grid employees touch many different aspects of programs, their jobs have been presented as a separate category in the analysis below.

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<sup>37</sup> This section is adapted from the 2018 study “Analysis and Recommendations regarding the Current and Future Workforce Associated with 2018 Rhode Island Energy Efficiency Programs”, accessed at <http://rieermc.ri.gov/wp-content/uploads/2019/07/2018-attachment-5-workforce-report-final.pdf>. The use of text is done with the permission of Peregrine Energy Group and National Grid.

## 6. Analysis of Workforce FTEs for 2019

The following sections describe the methodology and results for the analysis of the workforce FTEs for 2019.

### 6.1 Overview of Methodology<sup>38</sup>

As in prior years, Guidehouse counts the workforce involved in delivering energy efficiency in full time equivalents (FTEs). This approach to measuring job impacts supports creation of benchmarks for level of effort expended and, by extension, for meaningful comparisons of counts year-to-year and program-to-program. It is also the most cost effective way to measure and report workforce participation since alternative methods would require far more effort, such as in depth interviews with all vendors.

Also, as in prior years, and building off of Peregrine's analytical framework, this study only counts labor as being associated with the programs if that labor meets a "but for" test, meaning that "but for" National Grid's programs, this labor would likely not occur. This is not a rigorous rule, nor is it intended to imply causality, but it is a helpful framework for considering the counting of employment associated with certain program activities. The following basic assumptions are made about classes of programs using the "but for" test:

- Retrofit programs, including C&I retrofit, and Single and Multifamily Energy Wise, and Income Eligible programs. All labor associated with these programs is counted, because these programs incentivize customers to install new, more energy efficient equipment to replace still functioning equipment. But for the energy efficiency program, the old equipment would still be in place until they failed.
- New construction programs or replace on burnout programs, including Commercial and Residential New Construction, and ENERGY STAR® Products. In these programs, the customer was planning to or needed to install new equipment and the program incentivized them to install more efficient equipment. There is an incremental cost for the equipment, but there is likely not a significant incremental impact on the labor to install the equipment.<sup>39</sup> For these programs, we counted costs and services associated with program management and engineering support to customers. But for the energy efficiency programs, the project would still have been installed and the program support and management costs would not have been incurred.
- ENERGY STAR® Lighting. Peregrine only counted the time associated with program management. But for the energy efficiency programs, the retailers' staff and

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<sup>38</sup> When referencing the 2018 methodology, the text is adapted from the 2018 study "Analysis and Recommendations regarding the Current and Future Workforce Associated with 2018 Rhode Island Energy Efficiency Programs", accessed at <http://rieermc.ri.gov/wp-content/uploads/2019/07/2018-attachment-5-workforce-report-final.pdf>. The use of text is done with the permission of Peregrine Energy Group and National Grid.

<sup>39</sup> No contractors within the Residential New Construction program were interviewed, there may in fact be some incremental effort required in order to meet air sealing and duct leakage standards that has not been captured. The FTEs within this category may be slightly higher than reported.

customer's installation costs would still be incurred. The program management effort is the only incremental labor expense.

Guidehouse developed the FTE counts for 2019 by adjusting, where necessary and supported by data, the FTE values developed by Peregrine in 2018. This was important to provide consistency with the continuum of analyses that have been done over the past several years. Attachment A from the 2018 report is reproduced in this report to describe, in detail, Peregrine's methodological approach.

At the outset of this study, Guidehouse staff had in-depth discussions with Peregrine's lead for the prior studies, Steven Weisman, including an examination of the underlying calculations used to calculate FTEs in the 2018 study. Because of time and budget constraints, the same analysis that Peregrine did in past years was not possible. Guidehouse's fundamental approach was to use spending in 2019 as a proxy for program activity and labor expended. Underlying this approach is the fact that the 2019 program year was the second year of the 2018-2020 Least Cost Procurement Plan, so few significant changes in program delivery between the two years were expected. Savings and the number of projects installed were also considered as the primary representation of program activity for 2019, and were examined in some cases to get a deeper understanding of program activity compared to 2018, but we believed spending was the most straightforward indicator, particularly since Peregrine's prior work also focused on spending in their interviews conducted with vendors.

Therefore, multiplying the 2018 FTEs by a ratio of 2019 spending to 2018 spending was the initial step of the calculation. Guidehouse made some adjustments to 2019 spending before calculating this ratio.

- First, we adjusted 2019 spending down by 2% to account for inflation and avoid increasing FTEs because labor and materials increased in cost.
- Second, we removed incremental HEAT Loan expenses from 2019 from the ENERGY STAR® HVAC program. In general, Navigant included all program-provided financing costs through the analysis. Incremental finance funds are generally considered to be a reallocation of project costs from customers to finance and do not impact the amount of labor to install those projects. Since the other financing costs remained relatively constant in 2019 when compared to 2018, and were included in the 2018 spending, they were left in spending totals. However, in 2019, HEAT Loan for the first time provided financing support for conversion of oil-heated customers to heat pumps and provided \$1,400,000 in finance for these conversions. To effectively use program spending for scaling of FTEs, these unique costs were removed.
- Third, we removed costs associated with allocations to the Rhode Island Infrastructure Bank and Office of Energy Resources that had also been removed from the 2018 FTE analysis.

While the ratio of spending adjusted as noted in 2019 to 2018 was the foundation of Guidehouse's FTE analysis, as noted by Peregrine in the 2018 report and through Guidehouse's discussions with Steven Weisman, there is not a strict linear relationship between energy efficiency spending and employment associated with the programs.

- Some program expenses are less labor intensive than others (e.g., marketing and advertising vs. weatherization services)
- Some program designs are more cost intensive than others (e.g., installing LED products for businesses through the Small Business programs vs. selling discounted LED products through distributors via the Upstream Lighting program).
- Certain energy savings measures are more complicated and laborious than others (e.g., one electrician working alone may install 15 LED ceiling fixtures in a day vs. a team of two may convert 20 streetlights to LED in a day).
- Some measure costs are more labor driven than equipment/material driven. For example, the cost of weatherization measures (e.g., cellulose for installed insulation, and caulking and foam for air sealing) is primarily labor while the cost of HVAC equipment installation is largely in the equipment cost. While these measures often require design engineering as well as field labor to install, the considerable manufacturing labor hours is not represented in program FTE counts, so the FTEs associated with each dollar spent is lower.
- Many vendors will look for ways to improve efficiency of their operations to increase productivity rather than adding staff. This is especially the case where program budget management considerations are communicated to vendors and contracts are increasingly oriented to goals achieved or installations completed.

Because of these factors, Guidehouse adjusted the scaled numbers. The adjustments were informed by the interviews Guidehouse conducted with key vendors<sup>40</sup> and National Grid staff and supported by a review of measure counts and savings installed in 2019. The FTE results are presented below, followed by a description of the adjustments made for each program.

Vendors and National Grid staff that were interviewed provided valuable insight to the analysis and context. Guidehouse notes that we were unable to schedule vendor interviews with some vendors for some program areas, in part due to the coronavirus pandemic and the need for those vendors to focus on business continuity. Included in this latter group were contractors who were very active in converting delivered fuels to electric air source heat pumps, a new program element in 2019.

## 6.2 Summary of 2015-2019 FTEs

Table 2 outlines a summary of 2015 to 2019 FTEs by market sector.<sup>41</sup> These results are an aggregate presentation of FTEs by program, which are presented in the following section. Overall, 2019 saw a 9% increase in FTEs when compared to 2018 from 804.1 to 877.6.

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<sup>40</sup> Programs which required additional adjustments were: Large Commercial New Construction, Large Commercial Retrofit, Small Business Direct Install, Residential Consumer Products, Residential New Construction, and ENERGY STAR® HVAC.

<sup>41</sup> 2018 to 2015 values are taken from the 2018 report with no adjustments made.

**Table 2 Summary of FTEs (2015-2019)**

	2019	2018	2017	2016	2015
<b>Electric Programs</b>					
Residential Non-Income Eligible	189.1	170.9 <sup>42</sup>	98.1	104.0	125.4
Residential Income Eligible	65.1	45.8	46.0	42.3	37.0
Commercial and Industrial	265.0	250.0	263.5	241.1	210.0
<b>Gas Programs</b>					
Residential Non-Income Eligible	218.1	191.6	174.9	159.3	172.1
Residential Income Eligible	56.2	39.4	36.5	41.4	43.8
Commercial and Industrial	28.7	31.9	34.4	36.1	32.0
<b>Other</b>					
CAP Agencies <sup>43</sup>		35.0	35.0	38.0	34.0
National Grid <sup>44</sup>	43.3	39.5	38.2	39.9	41.6
Marketing <sup>45</sup>	12.1				
<b>Total</b>	<b>877.6</b>	<b>804.1</b>	<b>726.5</b>	<b>702.2</b>	<b>695.8</b>

Source: Guidehouse analysis and 2018 study

### 6.3 FTEs and Adjustments by Program

The following section outlines FTEs by specific program. For each program, a description of any adjustments made to the FTE count, if applicable, is presented. Table 3 outlines FTEs for both 2018 and 2019. Since spending was heavily relied upon to derive 2019 counts, the spending by program for both years is also presented. Note that the 2019 spending has been adjusted for inflation. HEAT Loan spending has also been removed from the ENERGY STAR® HVAC Program since it only occurred in 2019 and the Finance spending and OER allocation has been removed as it was in 2018. These adjustments were discussed in the Overview of Methodology Section. Table 4 below outlines the percentage changes from 2018 to 2019 for spending and FTEs.

As outlined in the methodology section above, the ratio of 2018 to 2019 spending was used as a basis to estimate 2019 jobs. However, certain adjustments were made to account for circumstances where that may not have been appropriate. These adjustments are outlined by program in the sections following Tables 3 and 4. Adjustments were applied to both the electric and gas components of the respective program.

<sup>42</sup> The values prior to 2019 are presented as they were in the 2018 report. The total for Residential Non-Income Eligible Electric FTEs in 2018 was incorrectly totaled from the component programs and should have been 168.9. With this correction, the total number of FTEs in 2018 is 802.1.

<sup>43</sup> Note that for the 2019 analysis, CAP Agency staff are included within the Residential Income Eligible program under both Electric and Gas.

<sup>44</sup> In years prior to 2019 a 2,016-hour work year was assumed when calculating FTEs. National Grid changed this assumption in recent years to a 1,768-hour work year. This new assumption was implemented beginning in 2019 and resulted in a slight increase in FTEs. Under the new assumption, the 2018 National Grid FTE count would have been 45.

<sup>45</sup> Beginning in 2019, marketing was contracted to a new vendor, resulting in a sharp increase in jobs, these are therefore shown separately.

**Table 3 FTEs and Spend by Program (2018-2019)**

	2018 Spend	2018 FTEs	2019 Spend <sup>46</sup>	2019 FTEs
<b>Electric Programs</b>				
<b>Commercial &amp; Industrial (C&amp;I)</b>		<b>250.0</b>		<b>265.0</b>
Large Commercial New Construction	\$5,176,973	0.4	\$6,360,691	1.1
Large Commercial Retrofit	\$22,657,199	214.3	\$26,774,706	220.3
Small Business Direct Install	\$5,982,325	35.2	\$7,774,107	36.4
Commercial Connected Solutions			\$1,862,846	7.3
Other	\$1,799,240	0.1	\$15,435	0.0
<b>Low-Income</b>		<b>64.6</b>		<b>65.1</b>
Single Family Income Eligible Services	\$9,871,922	33.9	\$9,440,815	32.4
Income Eligible Multifamily	\$2,590,534	11.9	\$2,907,368	13.4
CAP Agencies Staff		18.8		19.4
<b>Residential</b>		<b>170.9</b>		<b>189.1</b>
Residential New Construction	\$767,033	2.4	\$863,236	2.8
ENERGY STAR® HVAC	\$1,857,069	0.3	\$2,427,970	63.4
EnergyWise	\$13,406,705	139.1	\$15,747,807	100.4
EnergyWise Multifamily	\$2,195,869	14.3	\$1,189,404	7.7
ENERGY STAR® Lighting	\$10,704,849	2.2	\$13,340,861	3.0
Residential Consumer Products	\$1,906,524	7.0	\$2,437,586	8.9
Home Energy Reports	\$2,568,593	2.6	\$2,512,231	2.5
Residential Connected Solutions			\$167,428	0.3
Other	\$1,125,325	1.0	\$41,300	0.0
<b>Natural Gas Programs</b>				
<b>Commercial &amp; Industrial (C&amp;I)</b>		<b>31.9</b>		<b>28.7</b>
Large Commercial New Construction	\$2,787,537	0.6	\$2,768,494	0.9
Large Commercial Retrofit	\$4,257,467	26.6	\$4,794,177	22.3
Small Business Direct Install	\$142,977	0.7	\$91,873	0.7
Commercial & Industrial Multifamily	\$814,902	4.0	\$977,413	4.8
Other	\$5,339	0.0	\$51,229	0.0
<b>Low-Income</b>		<b>55.6</b>		<b>56.2</b>
Single Family Income Eligible Services	\$4,224,638	26.8	\$3,691,134	23.4
Income Eligible Multifamily	\$2,420,083	12.6	\$3,093,076	16.1
CAP Agency Staff		16.2		16.6
<b>Residential</b>		<b>191.6</b>		<b>218.1</b>
Residential New Construction	\$640,261	2.5	\$598,085	2.4
ENERGY STAR® HVAC	\$1,980,485	0.5	\$2,350,813	80.4
EnergyWise	\$7,859,946	172.3	\$9,109,589	119.7
EnergyWise Multifamily	\$1,035,978	15.7	\$1,002,083	15.2
Home Energy Reports	\$417,081	0.5	\$411,843	0.5
Other	\$83,893	0.1		0.0
<b>Other</b>				
National Grid Staff		39.5		43.3
Marketing		-		12.1
<b>Total</b>		<b>804.1<sup>47</sup></b>		<b>877.6</b>

Source: Guidehouse analysis and 2018 study

<sup>46</sup> 2019 spending has been adjusted for inflation; values shown are in 2018 dollars, assuming an inflation rate of 2%.

<sup>47</sup> The 2018 report erroneously tabulated 804.1 jobs, the total should be 802.1 jobs, see footnote 27.

**Table 4 Percentage Increase from 2018 to 2019 by Program**

	Percentage Increase in Spending	Percentage Increase in FTEs <sup>48</sup>
<b>Electric Programs</b>		
<b>Commercial &amp; Industrial (C&amp;I)</b>		
Large Commercial New Construction	23%	170%
Large Commercial Retrofit	18%	3%
Small Business Direct Install	30%	3%
Commercial ConnectedSolutions	N/A	N/A
Other	-99%	-99%
<b>Low-Income</b>		
Single Family Income Eligible Services	-4%	-4%
Income Eligible Multifamily	12%	12%
CAP Agencies Staff		3%
<b>Residential</b>		
Residential New Construction	13%	16%
ENERGY STAR® HVAC	31%	18% <sup>49</sup>
EnergyWise	17%	
EnergyWise Multifamily	-46%	-46%
ENERGY STAR® Lighting	25%	37%
Residential Consumer Products	28%	27%
Home Energy Reports	-2%	-2%
Residential ConnectedSolutions	N/A	N/A
Other	-96%	-96%
<b>Natural Gas Programs</b>		
<b>Commercial &amp; Industrial (C&amp;I)</b>		
Large Commercial New Construction	-1%	45%
Large Commercial Retrofit	13%	-16%
Small Business Direct Install	-36%	0%
Commercial & Industrial Multifamily	20%	20%
Other	860%	0%
<b>Low-Income</b>		
Single Family Income Eligible Services	-13%	-13%
Income Eligible Multifamily	28%	28%
CAP Agency Staff		3%
<b>Residential</b>		
Residential New Construction	-7%	-5%
ENERGY STAR® HVAC	19%	16% <sup>49</sup>
EnergyWise	16%	
EnergyWise Multifamily	-3%	-3%
Home Energy Reports	-1%	-1%
Other		-100%

Source: Guidehouse analysis

<sup>48</sup> Note where the % increase in spending is not equal to the % increase in FTEs, an explanation by program is found in the sections to follow.

<sup>49</sup> FTEs associated with the ENERGY STAR® HVAC program were tabulated with the EnergyWise program in 2018. Guidehouse shifted the appropriate number of FTEs from the EnergyWise program to the ENERGY STAR® HVAC program in 2019. These programs therefore cannot be compared separately across years and have therefore been presented together. See ENERGY STAR® HVAC section below for further details.



### **6.3.1 Large Commercial New Construction**

In addition to the FTEs calculated by scaling, CLEAResult indicated that they added one additional FTE to the program.<sup>50</sup> This additional job was split across all four new construction programs (electric and gas for both commercial and residential) using spending within the New Construction expenses to allocate the additional FTE to each program. As a result of scaling plus its share of the incremental FTE, Large Commercial New Construction FTEs increased from 1 FTE in 2018 to 1.9 FTE in 2019.

### **6.3.2 Large Commercial Retrofit**

Scaling for the Large Commercial Retrofit FTEs was done using the ratio of number of projects completed in 2018 compared to 2019. This was done because, as can be seen in Table 2, there was a significant increase in spending in this program. However, National Grid interviews indicated that this spending was not a result of a larger workforce, but largely because of increased incentive payments in an effort to achieve program goals. The savings achieved in 2019 was lower than that achieved in 2018, while the spending was higher. For this reason, the number of projects rather than spending was used to scale the FTEs associated with the program. The number of projects in 2019 increased slightly from 3,299 in 2018 to 3,391 in 2019. Custom projects are also included in this category, savings for which in 2019 were very comparable to 2018. Since savings for custom projects were comparable, scaling by using the overall number of projects is appropriate, and no further adjustments for custom projects - which tend to vary from year to year - are needed. Large Commercial Retrofit FTEs increased from 240.9 in 2018 to 242.6 in 2019.

### **6.3.3 Small Business Direct Install**

2019 was the first full year of implementation after National Grid expanded eligibility criteria for the Small Business Direct Install program from a maximum monthly demand of 200 kW to a maximum monthly usage of 1,000,000 kWh. As a result, the program targeted larger customers and fewer projects were able to achieve much greater savings than previous years: in 2019, there were 40 projects which each saved over 100,000 kWh, compared to none reaching this amount of savings the year before.<sup>51</sup> RISE confirmed that this expanded eligible customer base, while causing an increase in spending and savings, did not result in an increase in effort and they had the same 27.3 FTEs. However, based on information supplied by National Grid, the number of projects installed through the customer-directed option (CDO) increased in 2019 from 183 to 210, an increase of approximately 15% when compared to 2018. The 7.9 FTEs associated with the CDO option were therefore increased by 15% to 9.1 FTEs. Since CDOs only complete electric projects, this adjustment is reflected in the electric portion of the Small Business Direct Install program. This resulted in carrying the 2018 FTEs over to 2019 with no adjustments for RISE employees and increasing the CDO FTEs by 15%. Small Business Direct Install FTEs increased slightly from 35.9 in 2018 to 37.1 in 2019.

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<sup>50</sup> CLEAResult interview, March 8, 2020.

<sup>51</sup> RISE Engineering, written communication, March 30, 2020.



### **6.3.4 Commercial and Industrial Multifamily**

Scaling using spending was deemed appropriate for this program, confirmed through vendor interviews.<sup>52</sup> FTEs for the Commercial and Industrial Multifamily program increased from 4 in 2018 to 4.8 in 2019.

### **6.3.5 Commercial Connected Solutions**

The Commercial Connected Solutions program was new for 2019, meaning there were no 2018 FTEs to scale. The FTEs for this program were estimated using information from interviews with the National Grid program manager and vendor CPower. National Grid indicated that there was 0.5 FTE attributed to Energy Hub, a Demand Response Management System (DRMS) platform provider.<sup>53</sup> This 0.5 FTE was evenly split between residential and commercial Connected Solutions programs. In addition to the DRMS, several curtailment service providers (CSPs) were involved in the program. The largest of which, CPower, accounts for approximately 50% of the work volume.<sup>54</sup> Through the interview process, CPower indicated that there were 3.5 FTEs working on the program at their company.<sup>55</sup> Given that CPower accounted for 50% of work volume, 7 FTEs were attributed to CSPs for the Commercial Connected Solutions program. These 7 FTEs, together with the 0.25 FTE of Energy Hub, lead to 7.3 FTEs for Commercial Connected Solutions in 2019.

### **6.3.6 Other (Commercial and Residential)**

This category includes spending for Commercial Electric Pilots, Residential Electric Pilots, Commercial Gas Pilots, and Community Initiatives<sup>56</sup> each accounting for 0 FTEs.

Note that in prior years' analysis the spending for the Connected Solutions pilot was included in the 'Other' category. Now that it is a full program, it is included as its own line item. In prior analysis Energy Efficiency Education and Comprehensive Marketing programs were also included within the Other category, however, Guidehouse deemed these to be tied to marketing and customer outreach spending and has analyzed it accordingly.

### **6.3.7 Single Family Income Eligible**

Single Family Income Eligible spending for 2019 decreased slightly compared to the spending for 2018. Interviews also indicated a similar level of effort for the program for 2018 when compared to 2019, however they noted that turnover within the CAP agencies caused a slight hinderance to progress.<sup>57</sup> Single Family Income Eligible FTEs decreased in both the electric and gas programs. Electric Single Family Income Eligible FTEs decreased from 33.9 in 2018 to

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<sup>52</sup> RISE Engineering, interview, March 11, 2020.

<sup>53</sup> National Grid interview, March 6, 2020.

<sup>54</sup> National Grid interview, March 16, 2020.

<sup>55</sup> CPower interview, March 20, 2020.

<sup>56</sup> Community Initiative jobs are accounted for within National Grid FTEs. No additional external FTEs were identified, confirmed through written communication with National Grid on April 3, 2020.

<sup>57</sup> CLEAResult interview, March 9, 2020. This is further discussed in the Findings and Observations section.

32.4 FTEs in 2019. Gas Single Family Income Eligible FTEs decreased from 26.8 in 2018 to 23.4 FTEs in 2019.

### **6.3.8 Income Eligible Multifamily**

Scaling using spending was deemed appropriate for the Income Eligible Multifamily program, confirmed through vendor interviews. Income Eligible Multifamily FTEs increased from 24.5 FTEs in 2018 to 29.5 FTEs in 2019.

### **Community Action Program (CAP) Agencies**

CLEAResult indicated that CAP agency staff accounted for 36 FTEs.<sup>58</sup> This reported value was used rather than applying any scaling based on spending. This was split between electric and gas programs using the ratio of jobs across fuel types within income eligible programs reported in 2018. This led to 19.4 FTEs within the electric income eligible programs and 16.6 FTEs within the gas income eligible programs. This is comparable to the 35 FTEs reported in 2018 for CAP staff. It should be noted that although spending was not used to scale CAP jobs, spending for low income programs in 2019 was almost identical to spending in 2018, both at \$19.1M.

### **6.3.9 Residential New Construction**

As noted in the Commercial New Construction program, in addition to the FTEs calculated by scaling, CLEAResult indicated that they added one additional FTE to the program.<sup>59</sup> This additional job was split across all four new construction programs (electric and gas for both commercial and residential) using spending within the New Construction expenses to allocate the additional FTE to each program. As a result of scaling plus its share of the incremental FTE, Residential New Construction FTEs increased from 4.9 in 2018 to 5.2 in 2019.

### **6.3.10 ENERGY STAR® HVAC**

The majority of FTEs associated with the ENERGY STAR® HVAC program are involved in system installation. In the 2018 report, all labor associated with HVAC installations was counted in the EnergyWise program because many of these projects were as a result of Home Energy Assessments, were tracked through the lead vendor, RISE, and Peregrine received information about those projects from RISE. However, in the 2018 version of the table of FTEs by Job Function (Table 5 below), these FTEs were assigned to the ENERGY STAR® HVAC program. For internal consistency, Guidehouse chose to align the HVAC installation FTEs with the ENERGY STAR® HVAC program throughout this report. The re-assigning of FTEs means a comparison of 2018 to 2019 FTEs for these two programs is not meaningful.

Recreating the methodology used by Peregrine to calculate jobs associated with HVAC installations (described in Attachment A), Guidehouse determined the number of person-days used by Peregrine for different types of installations (boilers, furnaces, AC systems, heat pumps, ECM pumps, water heaters and thermostats). Guidehouse then used the number of

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<sup>58</sup> CLEAResult interview, March 9, 2020.

<sup>59</sup> CLEAResult interview, March 8, 2020.

units installed and the derived person-days for the respective equipment to calculate a final FTE count and increased this number by 20% to account for supervisory personnel and project management. Guidehouse then added these FTEs to the HVAC program.

Although spending for this program increased significantly, with the 2019 spending increasing by 22% over 2018, CLEARResult indicated in the interview process that 0.8 FTEs worked in administering the ENERGY STAR® HVAC program, which was the same as in 2018. This 0.8 FTE was split between electric and gas using the ratio of spending within the program for the two fuel types and added to the installation FTEs.

### **6.3.11 EnergyWise**

Scaling using spending was deemed appropriate for the EnergyWise program, confirmed through vendor interviews. The EnergyWise program saw an increase of activity, attributed to higher conversion rates in 2019<sup>60</sup>, with RISE indicating an increase in effort from both their employees as well as from subcontractors.<sup>61</sup> As noted in the ENERGY STAR® HVAC section, the 2018 report had included heating system replacements – including conversion of oil heated customers to heat pump conversions, within the EnergyWise program. In 2019, Guidehouse moved these FTEs to the ENERGY STAR® HVAC program, as this was deemed more appropriate. After scaling the EnergyWise jobs, the FTEs calculated for HVAC installations calculated as described above were removed from the FTE count.

### **6.3.12 EnergyWise Multifamily**

Scaling using spending was deemed appropriate for the EnergyWise Multifamily program, confirmed through vendor interviews. The EnergyWise Multifamily FTEs decreased from 30 in 2018 to 22.9 in 2019. Interviews with RISE indicated that the program, especially on the electric side, suffered in 2019 due to restrictions on lighting measures, these are further described in the program delivery section above.<sup>62</sup>

### **6.3.13 ENERGY STAR® Lighting**

This program includes jobs associated with Lockheed Martin for management of the program. Scaling using spending was deemed appropriate for the ENERGY STAR® Lighting program. However, the spending used to scale this program was only spending within Sales, Technical Assistance, and Training (STAT) to mitigate any effect incentive spending may cause. ENERGY STAR® Lighting FTEs increased from 2.2 in 2018 to 3.0 in 2019. The slight increase in jobs is assumed to be an increased administrative effort associated with the increased spending.

### **6.3.14 Residential Consumer Products**

Vendor information was used to determine FTEs for the Residential Consumer Products program, instead of spending. ARCA, the vendor for this program, indicated through the interview process that their FTEs remained the same in 2019 when compared to 2018 at 7

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<sup>60</sup> National Grid interview, March 10, 2020.

<sup>61</sup> RISE Engineering, interview, March 9, 2020.

<sup>62</sup> RISE Engineering, interview, March 19, 2020.

FTEs. However, they indicated that payroll hours for Rhode Island Energy Efficiency programs decreased by 30%. Guidehouse elected to use the payroll hours as a more appropriate indicator and adjusted the 7 FTEs down by 30%, leading to 4.9 FTEs for ARCA employees. ARCA also indicated that they subcontracted out 4 additional FTEs, leading to 8.9 FTEs for this program, compared to 7 FTEs in 2018.<sup>63</sup>

ARCA is the only source of workforce counted for this program. While there is additional spending associated with Residential Consumer Products that does not go to ARCA for recycling, the additional spending was associated with incentives for qualifying products. Consistent with the 2018 report, it is assumed that *but for* the energy efficiency programs, either less efficient versions of these products would still have been installed and therefore no energy efficiency workforce is associated with them or the equipment purchased by consumers, such as smart strips, require negligible labor to install and use.

Lockheed Martin provided support for consumer products such as pool pumps in addition to Residential Lighting in 2019. Most of their sales training and technical assistance is assumed to overlap with the residential lighting program and all Lockheed Martin FTEs are counted with that program.

### **6.3.15 Home Energy Reports**

Scaling by spending was deemed appropriate for the Home Energy Reports program. FTEs for the program decreased slightly from 3.1 in 2018 to 3.0 in 2019.

### **6.3.16 Residential ConnectedSolutions**

The Residential ConnectedSolutions program was new for 2019, meaning there were no 2018 FTEs to scale. The FTEs for this program were estimated using information from the National Grid program manager. National Grid indicated that there was 0.5 FTE attributed to Energy Hub, a Demand Response Management System (DRMS) platform provider.<sup>64</sup> This 0.5 FTE was evenly split between residential and commercial ConnectedSolutions programs. This resulted in the Residential ConnectedSolutions program having 0.3 FTEs (rounded) in 2019.

### **6.3.17 Support Services**

#### **6.3.17.1 National Grid Employees**

National Grid FTEs were reported using data provided by National Grid. National Grid reported 76,606 employee hours relating to Rhode Island Energy Efficiency work, amounting to 43.33 FTEs. This assumed a 1,768-hour work year to be consistent with the hours used in calculating FTEs for other workforce members. Note that this assumption differs from prior years' reporting, where a 2,016-hour work year was assumed. For comparison's sake, had 2018 assumed 1,768 hours, the FTEs associated with National Grid would have been 45.

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<sup>63</sup> ARCA indicated that the 4 additional FTEs for subcontractors were also present in 2018, however they were unaccounted for in the previous report.

<sup>64</sup> National Grid interview, March 6, 2020.

### ***6.3.17.2 Marketing and Customer Outreach***

Marketing FTEs were reported based on a vendor interview with Mower. Mower reported 36,200 payroll hours associated with Rhode Island Energy Efficiency work, amounting to 20.5 FTEs, again assuming a 1,768-hour work year. This is a large increase from the 3.7 FTEs reported for Marketing in 2018. After discussions with National Grid, the 2018 FTE reported value seems to understate the effort within this service, however, the 2019 reported value seems to overstate them. Therefore, the average of the two - 12.1 FTEs - was used for Marketing in 2019.

Included in this category are the FTEs associated with Comprehensive Marketing because its impact flows to many programs.

### ***6.3.17.3 Rebate Processing, EERMC Consultants and Evaluation***

Jobs relating to rebate processing, EERMC consultants and evaluation were calculated using distributions within these categories from 2018 using the following procedure. Once the scaling for all programs was complete, the column “Market/Program Totals with Support Services Allocations” in Table 4 below was populated, combining values for programs that have both gas and electric components. From there, the jobs were distributed across the three “Direct Service Providers” columns based on the distributions in the 2018 report. For example, if “Third Party Program Admin & Mgmt” jobs represented 10% of all EnergyWise FTEs in 2018, this percentage was applied to the 2019 total EnergyWise FTE value to determine how many FTEs fell into the “Third Party Program Admin & Mgmt” category. Because the support services jobs were embedded in the total program FTEs in 2018 and not associated with a particular program, the sum of the “Direct Services Providers” columns is not necessarily equal to the total amount of program jobs. This leaves a certain number of “leftover” jobs that belong within the “Support Services Providers” columns. Since the marketing jobs were already known based on interviews, these can be removed from the “leftovers.” Therefore, the remaining jobs can be distributed across Rebate Processing, EERMC Consultants, and Evaluation. This is done using the ratio of jobs in each category from 2018. For example, if Rebate Processing accounted for 35% of jobs within the 3 remaining categories, 35% of the “leftover” jobs were assigned to Rebate Processing. This process continues for all of Rebate Processing, EERMC Consultants, and Evaluation. Spending for 2019 was then compared to 2018 to ensure the number of jobs assigned was reasonable.

### 6.4 FTEs by Job Function

Table 5 provides a more in-depth breakout of the workforce, providing additional detail regarding the specific functions of jobs associated with markets and programs and the level of effort they contribute.

**Table 5 FTEs by Job Function in 2019**

Markets and Programs	Market/Program Totals with Support Services Allocations	Direct Services Providers				Support Services Providers				
		Third Party Program Admin & Mgmt	Auditors/Installers, Technical Support, QA Inspections	Installations by Vendors & Trades	Rebate Processing	Marketing	EERMC Consultants	Evaluation		
<b>Residential Programs</b>	<b>407.2</b>									
EnergyWise	220.1	22.3	57.3	136.8						
ENERGY STAR® HVAC	143.7	0.9	0.0	142.8						
EnergyWise Multifamily	22.9	3.4	5.0	14.0						
Residential New Construction	5.2	1.3	3.5	0.0						
Residential Home Energy Report	3.0	2.9	0.0	0.0						
Residential Connected Solutions	0.3	0.1	0.1	0.0						
ENERGY STAR® Lighting/Appliances	11.9	1.3	10.6	0.0						
<b>Income-Eligible Programs</b>	<b>121.3</b>									
Income Eligible Single Family	55.8	2.8	0.0	51.2						
Income Eligible Multi Family	29.5	5.4	10.2	13.3						
Community Action Agency Staff	36.0	0.0	36.0	0.0				4.1	12.1	2.9
<b>Commercial Programs and Initiatives</b>	<b>293.7</b>									
C&I Small Business	37.1	14.6	7.0	15.4						
C&I Large Commercial Retrofit Electric	187.6	0.0	2.7	184.4						
C&I Upstream Lighting/HVAC*	25.7	8.1	0.0	17.0						
C&I Tech Support*	1.0	0.0	0.0	1.0						
Industrial Energy & Energy Smart Grocer*	5.9	3.0	0.0	2.9						
C&I Multifamily	4.8	0.5	0.0	1.6						
C&I New Construction	1.9	0.6	1.4	0.0						
Commercial Connected Solutions	7.3	3.6	3.6	0.0						
C&I Large Commercial Retrofit Gas	22.3	0.3	3.6	17.7						
<b>National Grid Staff</b>	<b>43.3</b>									
<b>Total</b>				<b>877.6</b>						

Source: Guidehouse analysis

\*Note that these are not official programs but are initiatives. They are included separately for added details and to stay consistent with previous report



## 7. Qualitative Findings and Observations

Through the interview process, several qualitative findings and observations were made, these are summarized in this section. Guidehouse notes that our interviews confirmed our basic approach of scaling 2018 FTEs by spending and making adjustments based on interview findings. While 2020 is the third year of energy efficiency implementation under the 2018-2020 Least Cost Procurement Plan, the coronavirus pandemic has caused the suspension of most field-based program activity since mid-March 2020, with the exception of work in progress. Estimated recovery trajectories are uncertain at the time this report was written and therefore, it is premature to suggest what study approach would be applicable to 2020.

The following observations are ones that were brought up in several interviews and have been aggregated here; some of these are comments about the status of the program delivery effort and do not necessarily impact FTEs.

- Quicker access to National Grid data from vendors. Vendors stated that some receive data once a month but would prefer to receive data more often. If data is received once a month, and action needs to be taken to correct issues from the previous month, they find they are already delayed.
- Sooner decisions regarding program plans. Vendors noted that occasionally final decisions are made very close to the program launch date which does not leave them enough time to execute.
- As the workforce gets older, there is an opportunity to develop a new skill set. Vendors noted a shift away from non-network lighting measures and a need for more mechanical contractors. For example, it was noted that there is a lack of refrigeration contractors who can execute National Grid programs.

The following observations are ones that were specific to the vendor interviewee's program. Note that interviews were not conducted with vendors in every program, so the observations below are not comprehensive.

### 7.1 Industrial Initiative<sup>65</sup>

- Leidos noted that, in 2019, National Grid expanded the eligibility for the initiative. This has not impacted them yet but may in following program years.
- Leidos noted that since the market in Rhode Island is relatively small, new measures could help increase savings from the existing industrial customer base. They noted that there are possible measures that can be implemented that have not yet been processed for incentives. Since the customer base is saturated, they are always looking for new measures and incentives.

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<sup>65</sup> Leidos interview, March 20, 2020.

## 7.2 Upstream Lighting Initiative<sup>66</sup>

- In 2018, it was noted that there was a decreasing trend in sales from upstream lighting. When asked about this trend, CLEARResult noted that this did not continue in 2019. They saw more customers participate in 2019 when compared to 2018 but were spending less. This was attributed to new products that were added to the program.

## 7.3 Income Eligible Single Family Program<sup>67</sup>

- CLEARResult noted that there was a loss of senior staff at some of the agencies. This meant that experienced auditors were replaced with new staff who required training. This additional training effort slowed down their progress.
- CLEARResult suggested standardizing the workforce within the CAPs. Creating a clear path for career progression within the agencies could help them attract and retain the best possible workforce.

## 7.4 ENERGY STAR® HVAC<sup>68</sup>

- CLEARResult noted that National Grid's heat pump initiative led to the increase in installations of heat pumps done in 2019. This resulted in a higher effort for training and outreach visits.

## 7.5 EnergyWise<sup>69</sup>

- Although the renter's initiative did increase demand by approximately 20%, RISE indicated that they expected it to have a much bigger impact than it did. The lack of tenants' and landlords' motivation was causing challenges.
- The consistency within this program has led to improved results year over year. The program attracts customers largely through word of mouth, with approximately 60% of customers coming to the program through a referral from a friend or family.
- RISE noted they observed a reduction in savings available from lighting.

## 7.6 EnergyWise Multifamily<sup>70</sup>

- As noted in the general observations above, RISE noted a trend of measures shifting from traditional ones such as lighting and weatherization to more mechanical work. In 2019, the mechanical contracting community did not have a large workforce, there were far more openings than people to fill them. This meant that it was difficult at times to find a firm who would be responsive to RISE's requests for price

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<sup>66</sup> CLEARResult interview, March 16, 2020.

<sup>67</sup> CLEARResult interview, March 9, 2020.

<sup>68</sup> CLEARResult interview, March 13, 2020.

<sup>69</sup> RISE Engineering interview, March 9, 2020.

<sup>70</sup> RISE Engineering interview, March 19, 2020.





quotes. Often, they only had 1-2 firms submitting bids. The shortage within the workforce therefore manifested in the pricing and quotes they were getting from subcontractors. Contractor pricing was high because they were the only ones offering services, resulting in price pressures to the lead vendors.

## **7.7 Appliance Recycling Initiative<sup>71</sup>**

- ARCA noted that the appliance recycling program was a great gateway to get National Grid into customers' homes. It is by nature a very customer facing program. The recycling program is a good avenue for National Grid to promote other programs.

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<sup>71</sup> ARCA interview, March 10, 2020.

## **Appendix A. Methodologies Used for Assessing Employment<sup>72</sup>**

Peregrine has used a consistent calculation of FTE employees in this study to provide a definable and comparable measure of job impacts. The number of individual employees associated with National Grid Programs in Rhode Island well exceeds total FTEs reported. This was confirmed by interviews with companies who provide support services or manage programs for National Grid and by our analysis of field installation of individual program measures. Individuals who perform this work may be full-time or part-time employees, may work solely in Rhode Island or divide their time between Rhode Island utility programs and utility programs in other states, or may be engaged both in energy efficiency activity and other work for which their trade licenses qualify them. FTE counts are determined based on: reports from employers of actual Rhode Island hours tracked; from allocations of total labor hours to Rhode Island using relative numbers of Rhode Island customers served by a team vs. customers in other states, primarily Massachusetts; or using unit counts of installed materials (e.g., a particular lighting fixture) or number of projects completed (e.g., a residential home weatherization) installed to calculate total labor hours.

For non-installation roles, many companies interviewed told Peregrine that they employed multiple individuals with specialized skills or in discrete roles that were necessary and important to delivering a comprehensive, high quality product or service. However, only a portion of each employee's total annual hours might be attributable to Rhode Island energy activity.

For unit installed-based calculations, totals for individual items installed are converted into hours or days by applying the average per unit installation labor time and then converted total hours into FTEs by dividing by 1,760<sup>73</sup> hours or 220 days per FTE year. Similarly, specific types of work completed, such a weatherization job or heating system installation, are assigned an average labor time for an installation crew, and counts are multiplied by the time for each to generate total days or hours and an FTE number.

Some examples:

- Engineers providing technical support to customers. National Grid's Large Commercial and Industrial customer base in Rhode Island is relatively small, the call for engineering support is very intermittent, the engineering expertise that different customers need varies. Rather than retaining engineers with a variety of skills to be available to assist Rhode Island customers, National Grid has entered into master services agreements with multiple consulting engineering firms from whom expert engineering can be purchased as needed. However, since business economics necessitate that these consulting engineering firms' keep their staff utilized and billable most of the time, the majority of preferred engineering firms do other work.

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<sup>72</sup> This section is reproduced from pages 53-55 and Attachment A of the 2018 report.

<sup>73</sup> Guidehouse used 1,768 hours in its analysis, consistent with information provided by National Grid.

Some, like RISE Engineering, provide similar energy engineering services to multiple utility programs, in multiple states, to utility and non-utility clients, or to a combination of these.

- Firms that manage programs targeting specific customer sub-sectors and offer market-specialized technical services in multiple utility jurisdictions. The Energy Smart Grocer program delivered by CLEAResult and the Industrial program delivered by Leidos, Inc. exemplify this dynamic in the commercial market. Both companies are headquartered outside of New England, but they have local offices in Westborough and Framingham, Massachusetts, respectively. Both have field staff that spent a portion of their time helping National Grid customers in Rhode Island, but supported many more such projects for utility customers in Massachusetts. The firms dispatch staff, as required, to advance individual projects in Rhode Island, but they could not cost effectively deliver this program to Rhode Island alone, given the size of the target market in the state. For both programs, the customers select the contractors they prefer to do the installations.
- Programs targeting regional retailers. The contractors delivering the residential ENERGY STAR® Lighting and Appliance programs (Lockheed Martin Services) or the commercial Upstream Lighting program (CLEAResult) and Upstream HVAC program (Energy Solutions) work with and mobilize regional distributors and retailers to stock and promote energy efficient products preferred by utilities. National Grid and other utilities, covering both Rhode Island and Massachusetts, have recognized that using a single contractor to manage this effort across multiple territories creates programmatic benefits and economies of scale. Time spent supporting Rhode Island programs is allocated out of the total staff deployed, which may include individuals dedicated wholly or in part to Rhode Island.
- National Grid's Rhode Island team. National Grid itself reported 79,566 employee hours billed against Rhode Island energy efficiency program-related accounts, equal to 39.5FTE employees. Those hours and that FTE count represent not only the aggregate contributions of Rhode Island-dedicated employees, but also employees with system-wide or similar other-state responsibilities who contributed fractionally to the Rhode Island FTE total.
- RISE Engineering, based in Cranston, Rhode Island. RISE has been a partner to National Grid in Rhode Island since the inception of energy efficiency programs over 30 years ago. Today, RISE is the lead vendor for or a major participant in many of the largest programs offered in Rhode Island by National Grid, including EnergyWise Single Family, EnergyWise Multifamily, Small Business Direct Install, Large Commercial and Industrial Retrofit, and the Commercial and Industrial Gas programs. For the complex, labor intensive, high volume, EnergyWise Single Family program, RISE's total FTE counts and the number of individual personnel contributing to the program are nearly equal. The large customer volume of EnergyWise Single Family enables RISE to employ full-time staff to serve in specific program roles, such as auditors, installers, and inspectors. This creates stability and

consistency that benefits customers, National Grid as well. Further, similarities between staffing needs across multiple programs, e.g., for engineering, materials handling, or accounting, have allowed RISE to pool staff to provide higher levels of utilization and improved staffing economies. Additionally, similarities in technical needs between programs, e.g., for electricians, allowed RISE to employ a baseline number of full-time technical specialists, but then supplement them on an as needed basis with sub-contracted assistance. Having this capacity has, in turn, enabled RISE to be a major player as a Project Expediter supporting National Grid's Large Commercial Retrofit program, generating business opportunities, managing more complex installations, securing equipment and materials, and providing or contracting for installation labor. And, at the same time, as new business opportunities have emerged and been secured in neighboring states, RISE has been able to grow further, shifting specialized staff back and forth between states as demand for services dictates, while maintaining or increasing the efficiency of staff utilization and improving labor economics.

Peregrine has made a conscious effort to use consistent methodologies to count jobs year-to-year as it has undertaken studies for National Grid of the workforce associated with energy efficiency programs. Our goal has been to maximize the potential for apples to apples comparisons of total jobs and program specific workforce jobs. Further, we believe the methodologies we have used are conservative in their counting and generally understate the employment impacts of National Grid programs.

## **A.1 Program Support Service Providers**

### ***A.1.1 National Grid***

National Grid provided to Peregrine a summary of billed hours for employees involved with individual energy efficiency programs in Rhode Island in 2018. Responsibilities of these employees included program planning and development, program administration, regulatory affairs, marketing, evaluation, and market research. Peregrine is reporting National Grid FTEs as a separate category for purposes of this study and not allocating them to specific programs or groups of programs.

### ***A.1.2 Support Services Contractors***

Peregrine interviewed most of the larger contractors who supported National Grid in these activities, and they described their roles and responsibilities and provided counts and hours for employees supporting National Grid in Rhode Island. The FTEs Peregrine is reporting often represent the aggregation of small numbers of hours worked by many employees. Often, this was because the contractor's role required contributions from many members of a multi-disciplinary team. Depending on the nature of the services provided and whether the support role could be associated with specific programs, time of these contractors is assigned to

programs according to the overall allocation of gas and electric spend by program sector (Residential, Residential Income Eligible, Commercial and Industrial), or allocated to a specific program sector.

### ***A.1.3 Direct Service Providers***

Employee numbers reported by Direct Service Providers was a primary input to FTE counts. Peregrine interviewed the major contractors directly engaged by National Grid to support or deliver Rhode Island programs to get information about type, number, and responsibilities of personnel employed. Some of these contractors provided the same services in 2018 to National Grid customers in multiple states and in some cases to multiple utilities, often using the same team of employees. Peregrine relied on their informal calculations of allocations of time to Rhode Island when formally reported hours from timecards were not available.

Where employer-sourced information on employment was not available, Peregrine relied on program records and statistics for 2018 installations to calculate person-hours, person-days, and ultimately annual full-time equivalent field staff. Peregrine used totals for individual energy efficiency measures installed or, in some cases, total dollar value of categories of projects completed in 2018 to calculate FTEs. Depending on the information available, Peregrine would multiply the average time required (in person-hours or person-days) for each installation by the number of installations and converting the result to FTEs based on an assumed 1,760 work hours per year or 220 workdays per year. These unit-based installation times were secured from representative installation companies that performed this work or from organizations that supervised installation activity. In other cases where the only information available was total project cost, Peregrine would estimate the labor cost component of projects and determine total hours required for installations using average hourly billing rates, again converting those total hours into annual FTEs. Finally, in cases where major employers could provide actual installer hours of work to Peregrine, those actual hours or days of work were used instead of calculated FTEs.

Again, central to these calculation methodologies is an effort to use the same approach year-on-year for individual programs.

## **A.2 Residential Programs**

### ***A.2.1 EnergyWise 1 – 4 Unit Residential Program***

For the EnergyWise Residential program, RISE Engineering's program manager provided to Peregrine an overview of how the program functions and any changes from 2016, as well as updated FTE counts of RISE employees in various roles based on payroll tracking. Peregrine then allocated this total number of FTEs to gas and electric programs, using the relative size of National Grid electric and gas budgets as the basis for these allocations.

In 2014, RISE had shared general rules of thumb with Peregrine concerning how weatherization contractor crews and heating contractors perform site work. These typical installation scenarios were borne out by direct interviews with installation companies, as well as by interviews with

Community Action Program supervisors with similar responsibilities for low-income residential services. Peregrine has continued to use these rules of thumb for 2018 to estimate numbers of FTE insulation and heating system contractor personnel that installed major energy efficiency measures.

Peregrine assumes it takes a weatherization crew made up of three insulation specialists an average of two days to complete an insulation and air sealing job. National Grid provided counts of numbers of weatherization jobs completed in 2018. Peregrine then used the total numbers of insulation jobs and the average number of man-days required for each installation to calculate a total number of FTEs (again, assuming work 220 days per person per year) providing insulation services in 1-4 unit buildings. FTEs were marked up by 20% to account for a contractor's support and management staff.

For heating system installations, we assume that it takes a two-person team four days on average to remove and replace a hydronic heating system. Peregrine secured counts of high efficiency heating systems and related equipment installed in 2018 from Hawk Incentives, which processes the incentives paid out for these installations. Since Peregrine had received differentiated counts for replacements furnaces and boilers, Peregrine assigned less installation time to replacement furnaces (due to less piping work) and adjusted time estimates accordingly. Replacement residential gas equipment was allocated to the gas program and any replacement residential oil or propane heating equipment or electric heat pump installations were treated as an expense of the electric program. We multiplied average total hours required for an installation by the total number of items installed. The total number of calculated hours was then divided by 1,760 hours to convert it to FTEs, and the FTEs were marked up by 20% to account for a contractor's support and management staff.

### ***A.2.2 EnergyWise Multifamily Residential Program***

As with the EnergyWise 1-4 Unit Residential Program, Peregrine interviewed RISE's program manager and was provided with staffing counts. In addition to general program supervision, responsibilities included technical leadership, auditing, field coordination and inspections, and electrical installation work. Again, RISE was able to convert staff counts to FTEs associated with this particular program. Peregrine relied on installation counts from National Grid to determine numbers of individual measures that had been installed by independent weatherization contractors and heating contractors in these buildings. As was the case for contractors installing measures in 1 to 4 unit buildings, these counts were multiplied by average times for installations in hours or portions of hours, and the resulting total hour counts were divided by 1,760 hours per FTE to arrive at annual FTE counts.

### ***A.2.3 Rhode Island Heating and Cooling Program***

The Heating and Cooling Program serves as the umbrella for high efficiency heating, cooling, and water heating. In some respects, it is a distributor and contractor installation program that encourages these market channel participants to promote high efficiency heating and cooling equipment (e.g., condensing gas boilers and furnaces, ductless and ducted heat pumps for air conditioning, high efficiency central air conditioners, smart thermostats) to their respective customers, and passes on National Grid rebates to customers for installation of approved

equipment. Installation contractors submitted rebate applications on behalf of their customers to rebate processors Blackhawk and Energy Federation who processed reimbursement checks.

FTE counts for program management were developed from staff counts and allocations provided by the program manager to Peregrine. Total FTEs were then allocated to gas or electric based on the ratio of spending gas and electric programs.

Counts of installation FTEs were generated using installed equipment counts provided by National Grid based on rebates provided. These counts were then used to calculate total hours or days of installation time required and converted to FTEs.

#### ***A.2.4 Residential New Construction, Residential Codes and Standards, Residential Home Energy Report Program***

For each of these programs, there was no significant incremental labor impact associated with product installed or purchased because the program did not so much affect whether product was installed as it did which product was installed. Peregrine generated FTE counts through interviews with contractors that facilitated these programs and provided support services (e.g., marketing assistance, informational mailings, technical assistance, trade ally training, quality assurance inspections). These businesses provided staffing counts from their accounting records. Total FTEs were then allocated to gas or electric based on the ratio of spending in each residential gas and electric program.

#### ***A.2.5 ENERGY STAR® Lighting, ENERGY STAR® Products***

Both of these programs were funded solely through the residential electric budget. For both programs, there was no significant incremental labor impact associated with amount of product installed or purchased. Further, retailers' staff engaged at the point-of-sale were not counted as incremental FTEs. Peregrine generated FTE counts through interviews with individual contractors engaged by National Grid to supply services in support of the programs. These businesses provided staffing counts for 2018 from their accounting records. Total FTEs were then allocated to the residential electric spend.

### **A.3 Low Income Residential Programs**

#### ***A.3.1 Income Eligible 1-4 Unit Residential***

FTE counts for this program for 2018 include program management staff by the program vendor CLEARResult, Community Action Program (CAP) agency staff counts, and calculated labor required to complete installations. CLEARResult staff FTE counts came from direct interviews with CLEARResult's program manager. We determined CAP agency energy staffing for each of the six agencies operating in Rhode Island with the assistance of CLEARResult and then aggregated them to establish the statewide CAP Agency staff count. CLEARResult also provided counts of weatherization and heating system installations completed in 2018. Peregrine used



CAP agencies guidance on contractor crew sizes and installation practices to calculate the numbers of FTE installers who performed this work.

### ***A.3.2 Income Eligible Multifamily Residential***

Peregrine used the same approach to calculating FTEs for the Income Eligible Multifamily program as for the EnergyWise Multifamily Residential Program since both programs were administered by RISE Engineering and used the same delivery strategy.

## **A.4 Commercial and Industrial Programs**

### ***A.4.1 Small Business Direct Install Program***

Peregrine used counts of employees provided by RISE Engineering, the regional program administrator, to generate FTEs for RISE staff involved in program management and measure installations and for their sub-contractors as well. No actual measure counts and calculated FTEs were used to compile job counts attributable to the work of RISE and its subcontractors, as all workers were accounted for without a piecework analysis. Peregrine also calculated additional FTEs associated with the “customer-directed option” (or “CDO”) that allowed customers to use an electrician they had an existing relationship with to install program measures and receive the same incentives as were available through RISE. These numbers were based on information from RISE about numbers of electrical contractors that were active through CDO and the numbers of customers they work with and then cross-tabulated installation time that would be required for actual items installed.

### ***A.4.2 Large Commercial Retrofit Program (Electric)***

#### Installations

As described in the section on energy program delivery, the Large Commercial Retrofit program was the most market-based of all electric programs offered. Customers initiated projects, as did businesses that had products or services they were trying to sell. Installations included prescriptive lighting, motors and drives, compressors, and HVAC control measures. FTEs for installation work was calculated in a number of ways, depending on which information and how much information was available to Peregrine in the data sets supplied by National Grid. For prescriptive Large Commercial Retrofit installations that were part of a specific technology group (e.g., lighting, drives), Peregrine used installed item counts to generate total installation times or total project cost to generate labor cost estimates and converted this information to FTEs. For larger, more complex custom projects, National Grid helped disaggregate total project costs into costs for sub-categories by technology. Installation labor ratios of FTEs associated with non-custom installations of specific equipment and total project costs were applied to total costs of custom measure sub-categories. Once the total dollar value of the project was determined, we could apply assumptions about the ratios of labor cost to material cost for different technologies, calculate the type and number of labor hours this represented, aggregate the total hours, and convert them to FTEs.



### Sales and project management

As in past years, Peregrine interviewed the larger Project Expeditors to get counts of sales and project management staff they were employing in 2018 to secure and oversee projects. Similarly, Peregrine estimated the number of sales and project management personnel that were employed by other installation contractors active in Large Commercial Retrofits. We extrapolated the sales and project management staffing identified for Project Expeditors to calculate numbers of like staff employed by other installation contractors. This extrapolation used the total dollar value of Large Commercial retrofit projects installed by PEX and by other contractors under to estimate the additional sales and project management staff employed by these other installation contractors.

### Engineering support

For engineering support services provided to commercial customers, Peregrine used the recorded payouts for technical assistance services provided in 2018 to calculate workforce FTEs. National Grid provided engineering services to customers through retained contractors, in particular where energy efficiency solutions required technical support to determine what could be done, what should be done, what energy savings would result, and what incentive levels were appropriate. To calculate the FTEs associated with technical assistance support provided by engineers under contract to National Grid, Peregrine took the total dollars paid out for this work and calculated how many hours of labor it represented at an assumed \$120 per hour. Total hours were then converted to FTEs. Finally, for the Smart Grocer and Industrial initiatives, Peregrine interviewed and secured staff counts from CLEAResult and Leidos Engineering.

#### ***A.4.3 Upstream Lighting, Upstream HVAC***

As in other programs where National Grid and other utilities had engaged a shared contractor to promote and manage like programs in multiple states, Peregrine secured counts of contractor staff from program managers, calculated FTEs, and allocated a portion of them to Rhode Island.

Upstream Lighting-related sales counts were rolled into the Large Commercial Retrofit counts. Peregrine calculated the FTEs required for installation of equipment that required an electrical contractor to wire it by code, taking counts of product, applying per unit labor times, and then calculating the total FTEs for installations. Peregrine did not include any stand-alone lamps sold by Upstream lighting in its FTE calculations because Peregrine could not determine with certainty if they had been installed by the customer or an installation contractor. Upstream HVAC sales counts were reviewed and considered but ultimately not included in total counts. Numbers were relatively small and were in many cases attributed to equipment failures where no incremental labor was needed.

#### ***A.4.4 Commercial and Industrial Gas Programs***

For Commercial and Industrial Gas programs Peregrine interviewed RISE to secure counts of RISE employees and FTEs. RISE management time attributed to the program was reduced for 2018 because National Grid internalized much of this role leaving RISE to do engineering and Small Business gas installations.

A variety of contractors installed energy efficiency measures under the Large Custom Retrofit program. Due to a lack of specific details about the cost of these projects, Peregrine relied on statistics about incentives levels paid to develop order of magnitude estimates of total project costs for labor and equipment and then conservatively calculated hours of installation labor and total FTEs assuming an average labor rate of \$100/hour.

## Appendix B. Interview Guides

### B.1 Vendor Interview Guide

Question	Response
<b>Your Organization</b>	
Tell us a little bit about your company's role in National Grid Energy Efficiency programs.	
How long has [company] been involved in the program?	
What is/are location(s) of office(s) providing RI services and activities:	
How many employees work at [company]?	
Any RI based staff? If yes, how many?	
What is your estimate of the number of FTEs working on RI EE programs in 2019?	
<b>Compare 2019 to 2018</b>	
Do you use subcontractors/installation contractors?	
How does the number of FTEs for subcontractors/installation contractors compare to 2018? [prompt if necessary, for approximate % change]	
How do RI EE related customers served in 2019 compare to 2018? An estimated % change is sufficient.	
How does revenue from RI EE programs in 2019 compare to 2018? An estimated % change is sufficient.	
What is your reaction to this comparison of 2018 to 2019? (Colour commentary on numbers)	
Were there any program changes in 2019 compared to 2018 that affected your workforce?	
If so, what were those changes and how did they affect your workforce?	
<b>Business Process</b>	

How does your company acquire EE customers in RI?	
How do you attract and retain workforce to support programs?	
Does your company provide training to the workforce? If so, how do you provide necessary training to workforce?	
<b>Additional Comments</b>	
Are there any changes related to workforce management that you would recommend to National Grid? If so, what are those recommendations and what impact do you think they would have?	
Does National Grid adequately communicate programmatic/policy/strategy changes to your company? If not, what can the company do to improve its communication?	
Any other comments related to these questions?	

## B.2 National Grid Interview Guide

### Question 1

What program changes have occurred from the 2018 to the 2019 energy efficiency programs in Rhode Island that may have had a significant impact on the jobs associated with these programs?

*Prompt if needed: We are looking specifically for programmatic changes that have had significant impacts on jobs beyond scalability (i.e., 10% increase in FTE).*

### Question 2

Have you received any information or feedback from vendors or program managers regarding the employment/workforce environment in Rhode Island in 2019, either in general or as a result of programmatic changes?

### Question 3

Other than what vendors have told you, have you become aware of any changes in the employment/workforce environment in Rhode Island in 2019 from previous years?

### Question 4

Historically, a large portion of Rhode Island's energy efficiency portfolio savings have been from lighting. Have you seen a shift away from lighting and LEDs occur in Rhode Island's energy

efficiency programs? If so, what has made up the gap in savings and has this had any impact on the jobs associated with energy efficiency programs?

*Prompt if needed: Did the size of lighting energy efficiency programs decrease in 2019? Are there plans to change the lighting energy efficiency programs in the future?*

## Appendix C. Participating Companies

The following list includes contractors and subcontractors performing work directly for National Grid Energy Efficiency programs in 2019 that were counted in the FTE analysis and additional companies who assisted customers to secure equipment rebates, for example through the New Construction, High Efficiency HVAC programs, and upstream lighting. The list also includes the Community Action Program agencies and their subcontractors involved with the delivery of the low-income program, whether under National Grid funding or WAP/LIHEAP/ARRA funding. The list is organized by state, with companies then listed alphabetically. Rhode Island firms are listed first. Of the 1,151 companies, agencies, contractors and sub-contractors listed here, 71% are either headquartered in Rhode Island or have a physical presence in Rhode Island. 20% are Massachusetts-based companies with no physical presence in Rhode Island. 3% of companies are Connecticut firms. The remaining firms have offices in the other New England states or outside of New England.

<b>Vendor</b>	<b>Town</b>	<b>State</b>
5C Energy	Cumberland	RI
A & I Electric	Pawtucket	RI
A E Costa Electrical Contractor LLC	Warwick	RI
A Santurri Electric	East Greenwich	RI
A&B Heating	Johnston	RI
A&K Safety	Warwick	RI
A. Perry Plumbing and Heating	Coventry	RI
A.T. Electric Co.	Pawtucket	RI
A-1 Electric Co.	North Smithfield	RI
Abernathy Lighting Design	Providence	RI
Accu Electric	Providence	RI
Ace Electric Co. Inc.	Providence	RI
Acorn Maintenance	Warwick	RI
ACR Construction & Management Corp	North Providence	RI
Adams Plumbing & Heating	West Warwick	RI
Addressi Plumbing	Providence	RI
Adler Bros. Development	Smithfield	RI
Advance Electrical Corporation	Providence	RI
Advanced Comfort Systems Inc.	North Smithfield	RI
Advanced Mechanical Solutions	Manville	RI
Affordable Heating & Air Conditioning Services	North Providence	RI
AG Electric of New England	Riverside	RI
Air Conditioning Services of New England	Cranston	RI
Air Flow Inc.	Coventry	RI
Air Synergy LLC	Providence	RI
Air Tech Heating & Air Conditioning	Rumford	RI
Airhart Electric Inc.	Coventry	RI
Al Danti & Son Plumbing & Heating	Pascoag	RI
Al Jerauld	North Providence	RI
Al Swajian & Son	Cranston	RI
Ala and Sons Construction	Warwick	RI
Aladdin Electric Co. Inc.	Johnston	RI



Alan Menard Plumbing LLC	Pawtucket	RI
Alan Paul Electric	Warwick	RI
Alert Fire Protection	Cranston	RI
All Electrical Solutions	Providence	RI
All Seasons Heating & Air Conditioning Inc.	Johnston	RI
All Star Insulation	Providence	RI
Allen's Electric	Woonsocket	RI
Alliance HVAC	Cumberland	RI
Alpha Electrical Contractors Inc.	Riverside	RI
Al's Electric	North Providence	RI
AM Electric LLC	Warwick	RI
Amaral Revite Corp.	Providence	RI
Amaral, Paul	Tiverton	RI
American Development Institute	Smithfield	RI
American Electrical Contractors	West Greenwich	RI
American Heating, Plumbing, & Sprinkler, Inc.	North Providence	RI
American Home Heating and Air Conditioning	Cranston	RI
American Plumbing & Mechanical	West Warwick	RI
Amity Electric	Wyoming	RI
Anchor Insulation Inc.	Pawtucket	RI
Anchor Plumbing & Heating	Providence	RI
Anderson Energy Solutions LLC	Charlestown	RI
Andy's Overhead Electric LLC	Exeter	RI
Anibal J. Cante	Central Falls	RI
Anthony Simas	Woonsocket	RI
APB Plumbing & Heating	Cumberland	RI
APCO LLC	Johnston	RI
A-Plumbing & Heating	East Providence	RI
Apple Valley Alarms	North Scituate	RI
Apuzzo Plumbing & Heating	North Scituate	RI
Aquidneck Services LLC	Taunton	RI
AR Heating & Cooling Inc.	Cranston	RI
Arden Building Companies, LLC.	Pawtucket	RI
Ardente Supply Co. Inc.	Providence	RI
Arema HVAC	Greenville	RI
Arther Lettieri	Providence	RI
Arthur W. Adler	Bristol	RI
Aten Energy	Pawtucket	RI
Atlantic Plumbing & Heating Supply	Coventry	RI
Atlantis Pool Service LLC	Cranston	RI
ATMS Electrical Services	East Providence	RI
Auburn Electric Company	Cranston	RI
Audet, E.W. And Sons Inc.	Providence	RI
Audet, Robert F. Inc.	East Greenwich	RI
Aussant Electric	Cumberland	RI
Autiello Plumbing & Heating	Cranston	RI
Automatic Temperature Controls	Cranston	RI
AZ Corporation	Hopkinton	RI
Azverde Electric Company	Cumberland	RI
B & B Consumers Natural Gas Service & Air Conditioning	Woonsocket	RI
B & K Electric, LLC	Warwick	RI
B & M Plumbing	Warwick	RI
B Martel Plumbing & Heating	Central Falls	RI
B Z Electric	West Warwick	RI
B&D Boiler Removal	Pawtucket	RI
B&G Electric Inc.	Pawtucket	RI
B&W Building Maintenance Electrical Contractors	North Providence	RI
B. Lachapelle Home Improvements LLC	Lincoln	RI
Balletto Construction Company	Providence	RI
Balme, Ryan Electric	Chepachet	RI
Baptista Electric	Cumberland	RI
Barlow Heating LLC	Warwick	RI
Barrington Plumbing & Heating	Barrington	RI

Bashaw Electric	East Greenwich	RI
Baum Energy	Warren	RI
Bayside Electric Company	Warwick	RI
Beach Mechanical	Warwick	RI
Beaver River Heating & Cooling	Wyoming	RI
Belcher Electric LLC	Woonsocket	RI
Beneficial Energy	Pawtucket	RI
Benjamin Jenkins DbA	Middletown	RI
Bertrand Plumbing Inc.	Pascoag	RI
Besco	Woonsocket	RI
Better Call Sal Electric LLC	Charlestown	RI
Biello Electric Co.	Fall River	RI
Big John's Plumbing & Heating	Coventry	RI
Bileau HVAC Inc.	Woonsocket	RI
Bill Gornostai Electric	Warwick	RI
Bill's Direct Plumbing & Heating	Bristol	RI
Bill's Handyman/Painting	Johnston	RI
Bisono Construction	Providence	RI
BKW Plumbing	Pawtucket	RI
Blackstone Valley Community Action	Pawtucket	RI
Blyden Electric	Providence	RI
BMB Services LLC	Cranston	RI
Bob Ayers	Bristol	RI
Bob Sequeira	Cranston	RI
Bodell Plumbing & Heating	South Kingstown	RI
Boss Heating & Cooling, Inc.	Charlestown	RI
Boucher HVAC/R Inc.	Wakefield	RI
Boulevard Plumbing & Heating	Middletown	RI
Bousquet Oil	Woonsocket	RI
Brandon Schiano Plumbing and Heating	Cranston	RI
Brian's Fire Alarm System Solutions, LLC	North Smithfield	RI
Brien Godin	Cumberland	RI
Brittain Electric Inc.	Jamestown	RI
Brochu, Mark G.	Lincoln	RI
Brock's Electric	Johnston	RI
Broway Electric, LLC	Cranston	RI
Bruno & Son Electric Inc.	Providence	RI
Bryant Plumbing Inc.	Johnston	RI
BSH Heating and Appliance	Barrington	RI
Buckley Heating & Cooling	Peace Dale	RI
Butler & Sons Plumbing and Heating	Providence	RI
C & K Electric Company Inc.	Providence	RI
C & L Energy Corp	Cranston	RI
C Carr Electric LLC	Cumberland	RI
C Mancuso Construction & Plumbing Co.	Cranston	RI
C.J. Nemes Inc. Plumbing & Heating	Woonsocket	RI
Caiozzo Plumbing	Warwick	RI
CaI Supply Company, Inc.	Cranston	RI
Calson Corporation	Johnston	RI
Calyx Retrofit	Lincoln	RI
CAM HVAC & Construction Inc.	Smithfield	RI
Campco Electrical Services LLC	Wyoming	RI
Carbone Plumbing Heating & Air Conditioning	Johnston	RI
CARJON Air Conditioning & Heating Inc.	Smithfield	RI
Carl Gross	Providence	RI
Carlino Electric Inc.	Coventry	RI
Carnevale Electric	Johnston	RI
Carter Bros Inc.	Glendale	RI
Casey's Oil & Propane	Newport	RI
Casperson Construction	Johnston	RI
Cassana HVAC LLC	Cranston	RI
Cavaco Brothers Plumbing & Heating	East Providence	RI
CBRE	Providence	RI

CD Heating, Inc.	Cranston	RI
Century Electric	Westerly	RI
Century Heating	Smithfield	RI
Certified Energy Consultants	Mapleville	RI
CFC Electrical Contracting Inc.	Providence	RI
Charette Plumbing LLC	Richmond	RI
Charland Enterprises	Pawtucket	RI
Charles Doherty and Steve Girard	Warwick	RI
Charles Nichols Plumbing	Warwick	RI
Chaves Services	Middletown	RI
Chevalier Electric	Johnston	RI
Chilabato, Peter	Portsmouth	RI
Chris Cardillo Electrician	Providence	RI
Chris Electric, Ltd.	Newport	RI
Cipriano Plumbing & Heating	Wakefield	RI
CJ's Plumbing & Heating Specialists	Smithfield	RI
Clearesult	Providence	RI
Clermont Mechanical Plumbing	Glendale	RI
Cleverly Plumbing LLC	Greene	RI
Clover Engineering	Providence	RI
CMAGS HVAC	Warwick	RI
Coast Modern Construction LLC	Providence	RI
Coastal Electric Inc.	Newport	RI
Coastal Plumbing Service Inc.	Wakefield	RI
Cohen Heating Supply Inc.	Providence	RI
Cola Plumbing & Heating Inc.	North Kingstown	RI
Coldmasters Temperature Control	Providence	RI
Collard Enterprises	Coventry	RI
Comfort Systems	West Kingston	RI
Commercial Electric	East Providence	RI
Community Action Partnership of Providence	Providence	RI
Competitive Chimney Sweep Inc.	Woonsocket	RI
Comprehensive Community Action	Cranston	RI
Computer Sciences Corporation	Warwick	RI
Connolly and Sons Heating Services	Harmony	RI
Consolidated Maintenance	Johnston	RI
Consumers Propane, Bousquet Oil	Woonsocket	RI
Conti Brothers Inc	Providence	RI
Continental Engineering Inc.	Johnston	RI
Control Systems	Cranston	RI
Corey Craven	Woonsocket	RI
Cosmo Enterprises	Warwick	RI
Cox Construction Inc.	Cranston	RI
Cox Electric LLC	Narragansett	RI
Cozzo Electrical Services	Johnston	RI
Craig R. Committo Electrician	Tiverton	RI
Cross Insulation	Cumberland	RI
Crystal Plumbing & Heating	Providence	RI
CSV Mechanical	South Kingstown	RI
Cutler H. Besser & Sons	Scituate	RI
CV Construction	Cumberland	RI
CW Cummings Plumbing Co.	Coventry	RI
D & D Electric Company	East Greenwich	RI
D & E Electric, Inc.	Warwick	RI
D & J Electric Corporation	Warwick	RI
D & J Plumbing & Heating Inc.	Carolina	RI
D & V Mechanical Inc.	Westerly	RI
D Gomes Electric LLC	Pawtucket	RI
D.S. Plumbing	Coventry	RI
Daluz Plumbing & Heating	West Warwick	RI
Dan Gomes Electrician	Pawtucket	RI
Danfoss LLC	Smithfield	RI
Danico LLC	North Providence	RI



Daniel Sheehan	Cumberland	RI
Daniele Inc.	Pascoag	RI
Dauphinais Electrical Services LLC	Woonsocket	RI
Dave Fortier (D & Z Electric)	Woonsocket	RI
David Parrillo Plumbing, Heating & Son LLC	Hope	RI
David Phillips Plumbing & Heating	Riverside	RI
David Seddon Electrician	Rumford	RI
David St. Angelo	Barrington	RI
David R. Gince Electrician	Woonsocket	RI
Dayco Electric	Warwick	RI
Deal Electric	Cranston	RI
Dealta Mechanical Contractors	Warwick	RI
Deangelis Electric	Lincoln	RI
Delmonico Enterprises, Inc.	Cranston	RI
Del's Plumbing	North Scituate	RI
Delta Electro Power Inc.	Cranston	RI
Dennis Pratt Plumbing & Heating	Harrisville	RI
Derek Germain	Cumberland	RI
Desarro Electric LLC	Hope Valley	RI
Desmarais Plumbing & Heating Inc.	Johnston	RI
Dessaint Electric Co.	Warwick	RI
Dimery Electrical	Barrington	RI
Dino's Plumbing	North Providence	RI
Dino's Propane	Johnson	RI
Dionnes Plumbing Systems	Cumberland	RI
Diorio, Joseph	Pawtucket	RI
Dirocco Plumbing Services LLC	North Providence	RI
Diversified Repair Services	Barrington	RI
Divona Enterprises	Cranston	RI
DJL Electric	Warren	RI
Don Jesting & Sons LLC	Middletown	RI
Donald E. Lemay Electrician	Bristol	RI
Done Right	North Providence	RI
Donovan & Sons	Middletown	RI
DP's Plumbing and Heating	Scituate	RI
Driver's Plumbing & Heating	Providence	RI
DSC Heating & Air Conditioning	North Kingstown	RI
Dual Voltage Electric	Johnston	RI
Dube's Plumbing	Woonsocket	RI
Dudek Oil	Warren	RI
Dupuis Oil Co.	Pawtucket	RI
Durante Electric	Lincoln	RI
DWI Group Ltd.	Johnston	RI
Dynamic Air Systems Inc.	E Providence	RI
E Whitford Plumbing Services	Exeter	RI
E. A. Marcoux & Son Inc.	Woonsocket	RI
Eagle Design Corp.	Middletown	RI
Eagle Electric	Hopkinton	RI
East Coast Electric	Wakefield	RI
Eastbay Community Action	Riverside	RI
Eastern Electric Construction Co. Inc.	Cranston	RI
Eastland Electric	Lincoln	RI
Ecologic Spray Foam Insulation Inc.	Tiverton	RI
Econ Electric Contractors	Bristol	RI
Ed Sylvia Plumbing	Narragansett	RI
Ed Tudino Heating and Air Conditioning Service	Hope	RI
Eddy's Weatherization	Providence	RI
Eirich Electric Inc.	Portsmouth	RI
EJ Excavating LLC	Portsmouth	RI
Electrical Concepts Inc.	East Greenwich	RI
Electrical Construction Specialists LLC	Middletown	RI
Electrical Wholesaler Inc.	Cranston	RI
Electro-Tec Systems Inc.	Lincoln	RI



Elite Heating & Cooling LLC	Pawtucket	RI
Elle Ghazal	Pawtucket	RI
Elmer A. Reynolds Jr. Plumbing and Heating	Middletown	RI
Emerald Services	Foster	RI
Emergency Response Plumbing, Heating & Air Conditioning Inc.	Warwick	RI
Energy Conservation Inc.	South Kingstown	RI
Energy Efficient Exteriors, Inc.	Pawtucket	RI
Energy Electric Co, Inc.	Woonsocket	RI
Energy Geeks	North Smithfield	RI
Energy Monster	Lincoln	RI
Energy One	West Warwick	RI
Energy Source LLC	Providence	RI
EP Electric	East Providence	RI
Eric R. Krause Electrician	Cranston	RI
Eurotech Climate Systems LLC	Pawtucket	RI
Eveready Electric	Barrington	RI
Evergreen Plumbing & Heating	Warwick	RI
EW Flagg Plumbing & Heating	Warwick	RI
F & S Electric Inc.	Bristol	RI
F.M. Bodington Plumbing & Heating Inc.	Little Compton	RI
Farrar Associates	Newport	RI
Feula Plumbing & Heating	Johnston	RI
Fico Electric	Johnston	RI
Figliozzi Plumbing & Heating	Peace Dale	RI
Fire and Ice Heating and Cooling	Warwick	RI
First Response Plumbing	Newport	RI
Five Star Mechanical	Richmond	RI
Five Star Plumbing & Heating	Johnston	RI
Fleet Plumbing & Heating Inc.	North Scituate	RI
Flou HVAC	Charlestown	RI
Foley's Property Management	Wakefield	RI
Foster Electric, Inc.	Tiverton	RI
Fox & Delomba Heating, Air Conditioning & Plumbing	Riverside	RI
Francis Heating & Hydronics	East Providence	RI
Francisco Mechanical	North Providence	RI
Frank Dimaio Heating LLC	Cranston	RI
Frank Knight Plumbing & Heating	Warwick	RI
Frontier Mechanical Contractor LLC	Providence	RI
Furtado Lighting & Design LLC	Bristol	RI
G & L Electric Inc.	Woonsocket	RI
Gambit Electric Inc.	Johnston	RI
Gary Fernandes Electrician	Woonsocket	RI
Gary Ficca Electrician	North Smithfield	RI
Gas Doctor	Providence	RI
Gas Works	Westerly	RI
Gastech	Cranston	RI
Gatta Electric LLC	Cranston	RI
GEM Plumbing & Heating Services, Inc.	Lincoln	RI
Gencarella Plumbing	Westerly	RI
Gerald M Lepore Jr.	Cranston	RI
Giorno Plumbing & Heating	Cranston	RI
GKT Refrigeration	Pawtucket	RI
Glenn Dusablon	Cranston	RI
Global Plumbing & Heating	Darlington	RI
GM Control Systems	North Smithfield	RI
Graham Builders	Smithfield	RI
Grand Builders	Providence	RI
Gravel Electric Inc.	Harrisville	RI
Greene Construction Inc.	Johnston	RI
Greenside Energy, LLC	Middletown	RI
Greenwich Insulation	West Greenwich	RI
Greg Blanchette	North Smithfield	RI
Greg Brown	Smithfield	RI



Greystone Construction	Providence	RI
Griff Electric LLC	Portsmouth	RI
GT Electric	Pawtucket	RI
Guarino Power Systems LLC	Smithfield	RI
Gunn Electric	Westerly	RI
Guy Clemont Plumbing & Heating	Cranston	RI
GW Wagner Plumbing LLC	Providence	RI
H&R Electric Contractors Inc.	Greenville	RI
H2O Plumbing & Heating	Cumberland	RI
Haven Plumbing & Heating Co. Inc.	Cranston	RI
Hawkes Plumbing & Heating Co. Inc.	Fiskdale	RI
Henderson Electric	Warwick	RI
Highland Builders, Inc.	Tiverton	RI
Hill Electrical Services	Pascoag	RI
HK Heating Inc.	Greene	RI
HNT Plumbing	Wakefield	RI
Hodges Electric	Scituate	RI
Holland Electric	Peace Dale	RI
Home Depot	Smithfield	RI
Houle Plumbing & Heating	Coventry	RI
Howard Saucier	Pawtucket	RI
Howards Heating	North Kingstown	RI
HP Electric Co.	Cranston	RI
Hughes Inc.	North Kingstown	RI
Hutchins Electric	Greenwich	RI
HVAC Inc.	Cumberland	RI
Hynson Electrical Construction Inc.	Bristol	RI
I Wire LLC Electrical & Alarms Contractor	Providence	RI
Iasimone Plumbing & Heating	North Providence	RI
Innovative Construction Inc.	Tiverton	RI
Innovative Plumbing and Heating	North Providence	RI
IRB Solutions Inc.	Greenville	RI
Iroquoian Plumbing & Heating	Providence	RI
Island Solar Plumbing and Heating	Jamestown	RI
IT Comfort LLC	Coventry	RI
It's Shocking Electric Corp.	Cranston	RI
Izzo & Sons Electric	Providence	RI
J & A Electric	Providence	RI
J & E Mechanical Contractors Inc.	Johnston	RI
J & J Electric	Warwick	RI
J & J Plumbing & Heating Inc.	Johnston	RI
J & K Supplemental Plumbing Inc.	East Greenwich	RI
J Dunford Plumbing & Heating	West Greenwich	RI
J H Lynch & Sons	Cumberland	RI
J Joyce Plumbing & Heating	Warwick	RI
J Nuzzo Construction	Newport	RI
J&M Plumbing	Coventry	RI
J&S Electric	Warwick	RI
J.D. Mello Plumbing & Heating Inc.	Newport	RI
Jack's Electric	Jamestown	RI
Jacob Messier	Warwick	RI
Jacobson Energy Research	Providence	RI
Jake Lavole Plumbing and Heating	Pawtucket	RI
James Silvia	Warwick	RI
JAS Plumbing	North Providence	RI
Jason Pizzo United Construction	Cranston	RI
Jason Truppi Plumbing and Heating	North Providence	RI
JB Cote Construction	Cumberland	RI
JBK Plumbing	Warwick	RI
JC Electric Inc.	Wakefield	RI
JED Electric Inc.	Greene	RI
Jeff Lisi	Lincoln	RI
Jeffrey Berard Plumbing & Mechanical	Warwick	RI



Jeffrey Reynolds	Westport	RI
JG Home Remodeling	Woonsocket	RI
Jim Dugan	East Greenwich	RI
Jim Kelley Electrician	Scituate	RI
Jim Steitz Plumbing & Heating	Greene	RI
JJ Mcnamara Electric	Providence	RI
JKL Engineering Co. Inc.	Providence	RI
JL Electric	Middletown	RI
JLJ Enterprises DbA Jenkins Heating	Smithfield	RI
JLL Engineering	Providence	RI
JMAC Plumbing and Heating Inc.	Warwick	RI
JMJ Construction	Warren	RI
JMS Heating and Air Conditioning	Coventry	RI
Jo Da Plumma	Providence	RI
Joe Archilla Electrician	Johnston	RI
Joe Vigneault Electrician	Riverside	RI
John Berard Plumbing & Contracting	North Providence	RI
John Ekdahl	Chepachet	RI
John Fletcher Heating	Ashaway	RI
John Nicholson Mechanical Contractor	North Scituate	RI
John Schweglewis Plumbing Solutions LLC	North Smithfield	RI
John Simard Electrical Contractor LLC	North Smithfield	RI
Johnny Mack Electric	Narragansett	RI
Johnny's Home Solutions LLC	Central Falls	RI
Johnny's Oil & Heating	Providence	RI
Johnson & Johnson Plumbing	Narragansett	RI
Johnstone Supply	Providence	RI
Jonathan Svitil	Lincoln	RI
Jose Toledo	Coventry	RI
Joseph C. Grimm Plumbing Inc.	Westerly	RI
Joseph McDermott Pipeworks	Bristol	RI
Joseph Mitchell	Hopkinton	RI
Joseph Soave	North Providence	RI
Joseph Stroschio - Morra Electric	Johnston	RI
JP Island Plumbing	Portsmouth	RI
JR Vinagro Corp.	Johnston	RI
JTE Electric	Warwick	RI
JTM Builders	Warwick	RI
Juan Villanueva	Central Falls	RI
Just Heat	Portsmouth	RI
K Electric	Warwick	RI
Kazounis Plumbing and Heating	Hope Valley	RI
Keith Weindel (Amped Electric)	Coventry	RI
Kelco Electric Inc.	Johnston	RI
Kelly Electric LLC	Cumberland	RI
Ken Adams	Cranston	RI
Kenney & Bishop Electric	Cumberland	RI
Kenny Pierce	Ashaway	RI
Ken's Heating	Providence	RI
Kent County Electrical Service	Warwick	RI
Kevin Barry	Warwick	RI
Kevin M. Lynch	Smithfield	RI
Kevin Messier Electrical	Cumberland	RI
Kimberly Construction Co.	North Smithfield	RI
King's Hardware Co.	Providence	RI
Kirk Rerick	Hope	RI
Kirkbrae Electric	Lincoln	RI
KME Electric	Woonsocket	RI
KMJ Electric & Construction	North Providence	RI
Knight Plumbing & Heating	Cranston	RI
Koolco Inc.	Wakefield	RI
KWH Electrical Contracting	Exeter	RI
Kwik Plumbing & Heating	Johnston	RI

L & F Plumbing LLC	Cranston	RI
L&B Remodeling	North Providence	RI
Lamplighter, Inc.	Little Compton	RI
Landy, Ross	Portsmouth	RI
Lawrence Air Systems	Barrington	RI
Leak Free Lifestyles	Coventry	RI
Leidos Engineering	Newport	RI
Leveille Electric	Smithfield	RI
Liddell Brothers Inc.	Woonsocket	RI
Lifespan Corp.	Providence	RI
Lineage LLC	Wakefield	RI
LJ Giorgi Plumbing & Heating	North Providence	RI
Lowe's Home Improvement	Warwick	RI
LP And Son LLC	Cranston	RI
Lubera Plumbing	Coventry	RI
Luke Beaudreault Plumbing & Heating	North Smithfield	RI
M & M Electric	Providence	RI
M D'Andrea Electric LLC	Portsmouth	RI
M P Samsky Corp.	North Smithfield	RI
Madden Electric	Little Compton	RI
Mador Electric, LLC	Providence	RI
Magnetic Electric Inc.	Warwick	RI
Main Street Plumbing LLC	Pawtucket	RI
Maintenance Plus Inc.	East Providence	RI
Mandarini Plumbing and Heating	Cranston	RI
Manning Plumbing Company	Warwick	RI
Map Electric	Woonsocket	RI
Marcel MS LLC	Pawtucket	RI
Marchetti, Matthew A.	Cranston	RI
Marciano Electrical Contractors	West Warwick	RI
Marinelli & Sons Electric	West Kingston	RI
Mario's Appliances	Woonsocket	RI
Marisa Desautel	Providence	RI
Mark Quinn Electric	Coventry	RI
Maron Construction Co. Inc.	Providence	RI
Martel Plumbing & Heating	Central Falls	RI
Martin Mendez	Providence	RI
Mastro Electric Supply Co Inc.	Providence	RI
Mastrocinque & Sons Plumbing & Heating	Portsmouth	RI
Matthew Fitts Electrical	Greenville	RI
Matthew Girard	Greenville	RI
Matt's Mechanical	Smithfield	RI
MB Plumbing	Warren	RI
McCormick Electrical	North Kingstown	RI
McKee Bros Oil Corp.	Cumberland	RI
Mechanical HVAC	Peace Dale	RI
Menard Electric	Manville	RI
Mercury Tec Inc.	East Providence	RI
Metro Electric	Woonsocket	RI
Michael Bowry I.P.S. Plumbing & Heating	Cranston	RI
Michael Dias	Smithfield	RI
Michael Faria	Cranston	RI
Michael Freitas Plumbing & Heating	Pascoag	RI
Michael Giuffre	West Warwick	RI
Michael Maymon	Warwick	RI
Michael Tulipani	Charlestown	RI
Michael R. Lafleur	Smithfield	RI
Micheletti Oil	Johnston	RI
Mid Heating and Air Conditioning LLC	North Providence	RI
Midstate Heating & Cooling	Hope Valley	RI
Millennium Restoration	Johnston	RI
Miller Electric Corp.	West Warwick	RI
MJ Electric and Refrigeration	Pawtucket	RI

MJ Skurka Inc.	West Warwick	RI
MJF Plumbing & Heating	Bristol	RI
Modern Mechancial LLC	Woonsocket	RI
Modern Plumbing Inc.	Charlestown	RI
MoonWorks	Woonsocket	RI
Morel Plumbing and Home Improvement	North Providence	RI
Morrair HVAC LLC	Warwick	RI
MP Remodeling General Contractor	Warwick	RI
Mr. Plumber LLC	Coventry	RI
Mutual Engineering	Warwick	RI
Nadeau Plumbing Services	North Providence	RI
National Refrigeration Inc.	Warwick	RI
Naxos Electric	Smithfield	RI
NDL Designs	Portsmouth	RI
NeighborWorks Blackstone River Valley	Woonsocket	RI
Nestor Padilla After Hours Plumbing	Providence	RI
New England Boiler Works LLC	Coventry	RI
New England Plumbing-Heating	Foster	RI
Newbury Insulation	Woonsocket	RI
Newport Electric	Portsmouth	RI
Newport Solar	North Kingstown	RI
Nexus Electric	North Providence	RI
NGB Electric	Smithfield	RI
Nicolas Bermudez	Pawtucket	RI
Nite Oil	Tiverton	RI
Nolin Electric	North Scituate	RI
North Atlantic Heating, Inc.	Coventry	RI
Northeast Temperature Control	Westerly	RI
Northern Energy Services Inc.	Providence	RI
Northern Power Electrical Services	North Scituate	RI
NS Electric LLC	Exeter	RI
Oal Service Co.	Central Falls	RI
Ocean State Air Solutions	Portsmouth	RI
Oceanline Combustion	Pawtucket	RI
Old Tyme Electric, Inc.	Pawtucket	RI
Ome Building Tech	Providence	RI
Omni Electric	Wakefield	RI
O'Neil Electric Company	Warwick	RI
Online Builders	Wakefield	RI
O'Rourke James J. Inc.	Warwick	RI
Owen Blanco	Warwick	RI
P & S Electric Inc.	East Greenwich	RI
Pajan Services Inc.	North Providence	RI
Pakenham, Scott	Portsmouth	RI
Papa's Plumbing	Johnston	RI
Parrella Electric	Providence	RI
Patrick Corrigan	Warwick	RI
Paul Musco	Cranston	RI
Paul Scotto Electrical	Portsmouth	RI
PAV Electric	Wakefield	RI
Pawtucket Power Association	Pawtucket	RI
Pecchia Plumbing and Heating	Warwick	RI
Pellegrino Plumbing	Westerly	RI
Pelletier & Son Plumbing	North Kingstown	RI
Pelletier Finishing	East Providence	RI
Percivalle Electric Inc.	Warwick	RI
Peregrine Mechanical	Rumford	RI
Perez Construction	Providence	RI
Perfect Touch Electrical Contractors Corp.	Cranston	RI
Peter Bibby Ponagansett LLC	Providence	RI
Petit Plumbing	Westerly	RI
Petro Heating & AC Services	Warwick	RI
Pezzullo & Sons Electric Inc.	East Providence	RI



Philip M. Child	Bristol	RI
Philip P. Sands	Warwick	RI
Phillip J. Forcier Electric	Cumberland	RI
Phillips Plumbing & Mechanical Inc.	Cranston	RI
Phil's Heating & AC	Westerly	RI
Pickles Plumbing and Heating LLC	Mapleville	RI
Pinnacle Plumbing & Heating	Greenville	RI
Plumbing & Heating Solutions LLC	East Greenwich	RI
Polaris Plumbing & Heating	Johnston	RI
Polisena Construction	Smithfield	RI
Positive Energy Electric	Saunderstown	RI
Positive Flow Plumbing Inc.	Bristol	RI
Potvin Enterprises Inc.	Warwick	RI
Power by Design Electrical Contracting LLC	Richmond	RI
Preferred Heat Inc.	Providence	RI
Premair HVAC	Warwick	RI
Presto Plumber LLC	Westerly	RI
Primary Flow Signal, Inc.	Cranston	RI
Prince Noah HVAC	Central Falls	RI
Priority Plumbing & Heating Inc.	Providence	RI
Pro-Mac Inc.	Woonsocket	RI
Prout Mechanical	Warwick	RI
Providence Mechanical Services LLC	Smithfield	RI
PSE Agency	Providence	RI
R & M Electric Inc.	Coventry	RI
R C Smith Electric	Warwick	RI
R.B. Queern & Co Inc.	Portsmouth	RI
R.C. Plumbing and Heating	Smithfield	RI
R.E. Coogan Heating Inc.	Warwick	RI
R.E.M. Mechanical LLC	North Kingstown	RI
R.W. Desrosiers Inc.	Central Falls	RI
Rado Construction	Pawtucket	RI
Rafelito Heating Services	Providence	RI
Rama Electric	Wakefield	RI
Rapid Electric Inc.	Cranston	RI
Ray Ciampanelli Plumbing & Heating Co.	Peace Dale	RI
Raymond Degnan	North Providence	RI
RAZ Heating & Plumbing Services	Foster	RI
Reardon Plumbing and Heating	Warren	RI
Red Oak Remodeling	Coventry	RI
Reddy Piping Concepts	Cranston	RI
Regan Heating & Air Conditioning	Providence	RI
Regent Electric Co. Inc.	Coventry	RI
Reilly Electrical Contractor Inc.	Providence	RI
Relevant Discover-e	Providence	RI
Reliable Electric Corp.	Coventry	RI
Reliant Electric	Cranston	RI
Renewable Energy Consultants LLC	East Greenwich	RI
Restivos Heating & Air	Johnston	RI
RF Plumbing & Heating	Johnston	RI
Rhode Island Department of Human Services	Cranston	RI
Rhodes Technologies Inc.	Coventry	RI
Rholen Central	Bristol	RI
RI Electrical Contractors (Carlos M. Delgado)	Providence	RI
RI Insulation	Hope	RI
RI Pipe Guys	Warwick	RI
Ricci Electric	Cranston	RI
Richard Gayer Electric	Bristol	RI
Richard Heffernan	Warwick	RI
Richburns Plumbing	Newport	RI
Right Built Homes	West Greenwich	RI
Rightway Electric, Inc.	Providence	RI
RISE Engineering	Cranston	RI

Ritacco Electric LLC	Westerly	RI
RJL Insulation	Middletown	RI
RMD Plumbing	Newport	RI
Robert Dionne	Smithfield	RI
Robert Hopkins Electrician	Exeter	RI
Roberts Electric	Pawtucket	RI
Rodriguez Plumbing & Heating	Provincetown	RI
Roger O. Joyal Refrigeration	North Smithfield	RI
Ronald Marcaccio Electrician	North Providence	RI
Rooter Man Plumbers	Johnston	RI
Rossi Electric Company	Cranston	RI
Round One Electric	Burrillville	RI
RPM Electrical Services	Providence	RI
RSM Electric	North Providence	RI
Rudy Almada Electrician	East Providence	RI
Rudy Branca Electrician	Cranston	RI
Russ Lembo Electrician	Johnston	RI
Ryan Bartlett	Coventry	RI
Ryan Electric Construction	Warwick	RI
S & K Electric Inc.	Charlestown	RI
S & S Electric	Chepachet	RI
Sakonnet Electric	Bristol	RI
Sakonnet Plumbing & Heating	Little Compton	RI
Sal Manzi & Son Plumbing & Heating Inc.	Cranston	RI
Sam Bliven Jr. Plumbing & Heating Inc.	Westerly	RI
Santoro Electric	Warwick	RI
Santoro Oil	Providence	RI
Santos Construction Company	Riverside	RI
Sargent Plumbing Inc.	West Kingston	RI
Sasa Energy LLC	Johnston	RI
Scott Smith	Prudence	RI
Scotto Electric	Portsmouth	RI
Seddon Electric	Rumford	RI
Sensible Heating & Air Conditioning LLC	Hope Valley	RI
Sentinel Electric	Warwick	RI
Shamrock Electric	Middletown	RI
Shearman Oil	Portsmouth	RI
Shepard Services	Cumberland	RI
Sheridan Electric Inc.	Warwick	RI
Sherwood Enterprises	North Kingston	RI
Sine Plumbing & Heating	East Providence	RI
Site Specific LLC	Providence	RI
Small's Plumbing Inc.	Woonsocket	RI
Smithco Oil Service	Wakefield	RI
SMP Electric, LLC	West Warwick	RI
SMR	Pawtucket	RI
SMS Oil Burner Service	Jamestown	RI
Sol Power	Providence	RI
Some Construction Co.	Providence	RI
South County Gas Service	Narragansett	RI
Spencer's Plumbing	East Greenwich	RI
SPK Home Improvement	Cranston	RI
St. Angelos Property Management	Barrington	RI
Staffall Electronic Hardware	Cranston	RI
Stafford Electric	North Scituate	RI
Standard Oil Inc.	East Providence	RI
Standish Brothers HVAC	Coventry	RI
Stano M. Trombino	Westerly	RI
Stan's Plumbing & Heating	Cumberland	RI
Stanton Electric, Inc.	Cumberland	RI
Statewide Insulation	North Smithfield	RI
Statewide Plumbing & Heating Co., Inc.	Cranston	RI
Stedman & Kazounis	Charlestown	RI



Stem Electrical	Warwick	RI
Stephen Andrea Fire & Electric, LLC	Coventry	RI
Stephen Donatelli	North Providence	RI
Stephen Freitas Plumbing and Heating	Lincoln	RI
Stephen Larochelle	Cumberland	RI
Steve Allen Plumbing Service LLC	Wakefield	RI
Steve Doughty Electrician	Coventry	RI
Steve Pine Electrician	Smithfield	RI
Steven Dubois Inc.	Bradford	RI
Sullivan & McLaughlin	Greenville	RI
Summit Electrical Contractors Inc.	Lincoln	RI
Sun Systems Inc./Kroll Building Co.	Narragansett	RI
Sunshine Fuels & Energy Services	Bristol	RI
Superior Comfort Inc.	Bristol	RI
Superior Electric	Providence	RI
Superior Fire & Electrical Services	North Providence	RI
Superior Insulation	Narragansett	RI
Superior LED Lighting LLC	Warwick	RI
Superior Plumbing & Heating	Cranston	RI
Supply New England	Middletown	RI
Supreme Duct Systems	Lincoln	RI
SW & Sons Plumbing & Heating LLC	Johnston	RI
Sylvander Heating & Air Conditioning	East Greenwich	RI
Sylvester Sheet Metal Inc.	West Warwick	RI
Symmes Maini & McKee Association	Providence	RI
T. Cabral Rooter & Plumbing Repair	Cranston	RI
T. Gomes Heating & Cooling	Warwick	RI
T.A. Gardiner Plumbing and Heating	Bristol	RI
T.D. Plumbing Inc.	East Providence	RI
T.H. Malloy & Sons Inc.	Cumberland	RI
Tasso Plumbing & Heating	North Kingstown	RI
Tavares LLC	Providence	RI
Tebano Electric	Bristol	RI
Tebo Electric Inc.	Woonsocket	RI
Technic Inc.	Cranston	RI
Tempotec Mechanical	Providence	RI
TF Electric, LLC	East Greenwich	RI
The Drain Pro	Providence	RI
The Ho-Medic	Johnston	RI
The Plumber Company LP	Cranston	RI
Thermal Energy Inc.	Cranston	RI
Therrien Mechanical Systems	Lincoln	RI
Thomas Adamson Electrician	Coventry	RI
Thomas S. Cavaco & Sons LLC	East Providence	RI
Thumbs Up Plumbing and Drain Clearing	North Smithfield	RI
Tom Jenkins Jr.	Middletown	RI
Tom McGee	North Smithfield	RI
Tom Peters Plumbing & Heating	Portsmouth	RI
Tom Whitaker	Newport	RI
Tom's Plumbing LLC	Manville	RI
Toner Electric Company	Middletown	RI
Total Comfort Heating & Cooling	Cumberland	RI
Total Construction Services, Inc.	Providence	RI
TPF Electrical Services	Pawtucket	RI
Travers Plumbing & Heating Inc.	Tiverton	RI
TRG Construction LLC	North Kingstown	RI
Tri-Town Community Action	North Providence	RI
Tuma Insulations	Warwick	RI
U.G. Nason's Inc.	Middletown	RI
Ultimate Plumbing	Warwick	RI
United Mechanical	Cranston	RI
Universal	Providence	RI
Universal HVAC LLC	North Providence	RI



Urban Construction	West Warwick	RI
V. Letizia Plumbing & Heating	Providence	RI
Valcourt Heating Inc.	Little Compton	RI
Valley Heating & Cooling	Hope Valley	RI
Valley Plumbing & Heating	Cumberland	RI
Valley Repair Inc.	Wyoming	RI
Van's Electric Inc.	Bristol	RI
Vaughn Oil	Smithfield	RI
Venancio Brother Plumbing & Heating	Middletown	RI
Vicmir & Sons	Riverside	RI
Victor Allienello	East Providence	RI
Viking Electric Inc.	Riverside	RI
Vision Energy Solutions, Inc.	Providence	RI
Vivona Plumbing & Heating Inc.	Portsmouth	RI
W.T. Home Improvement	Providence	RI
Wakefield Heating Service	South Kingstown	RI
Wakefield Plumbing LLC	Middletown	RI
Waldo Plumbing & Heating	Lincoln	RI
Watermark Plumbing LLC	Cranston	RI
Wayne Electric, Inc.	Bristol	RI
West End Plumbing	Cranston	RI
Westbay Community Action	Warwick	RI
Wickford Appliance	Pawtucket	RI
Wilkinson Plumbing & Heating LLC	Hope Valley	RI
William J. Riley Plumbing & Heating	Warwick	RI
William Soares Electric	Bristol	RI
Wood's Heating Service	East Providence	RI
Yoakum Septic Services LLC	Smithfield	RI
Zanella Plumbing & Heating	Westerly	RI
Zawadski Plumbing	Warwick	RI
Zincones HVAC	Warwick	RI
Zompa Plumbing & Heating	Warren	RI
Association of Energy Services Professionals	Phoenix	AZ
American Wholesale Lighting	Livermore	CA
AutoGrid Systems inc.	Redwood City	CA
Cohen Ventures	Oakland	CA
CRM Orbit	San Francisco	CA
Redaptive	San Francisco	CA
Whisker Labs Inc.	Oakland	CA
Simple Energy	Boulder	CO
Televent USA LLC	Fort Collins	CO
ABC Refrigeration	North Strighton	CT
Absolute Plumbing & Heating	Trumbull	CT
Air Quality LLC	Monroe	CT
All Phase Heating & Cooling	Moodus	CT
Amco & Company	Dayville	CT
Asp Electric	South Windsor	CT
Best Energy	Pawcatuck	CT
Budderfly Energy Company	Shelton	CT
Calderon Brothers Drywall	Bridgeport	CT
Cameron Hanna	Somers	CT
Chaput Electric	Woodstock	CT
Craig C. Porter	Dayville	CT
Dean Monteiro	New Haven	CT
Duarte Costa	Griswald	CT
Duncklee Inc.	Stonington	CT
Dynamic Building & Energy (Formerly Uplands Construction Group)	North Stonington	CT
Eastern Plumbing	New Haven	CT
Energy Resources	Thomaston	CT
Greentemp Mechanical Services	Groton	CT
Horton Group LLC	New Haven	CT
J G Electric LLC	West Haven	CT
JMC Mechanical LLC	Ansonia	CT



JT HVAC	North Stonington	CT
Lourerio Engineering Associates, Inc.	Plainville	CT
Mark McNeil Heating & Cooling	Pawcatuck	CT
Matt Hall	Hebron	CT
McGuire Plumbing and Heating LLC	Voluntown	CT
Moran Construction	Westport	CT
Nick Zaharie	Pawcatuck	CT
Omega Electric	Waterbury	CT
Saucier Mechanical	Plantsville	CT
Simmons HVAC	Pawcatuck	CT
South Shore Heating & Cooling, Inc.	Pawcatuck	CT
Techniart Inc.	Collinsville	CT
ThermaXX LLC	West Haven	CT
Tri Phase Contractors, LLC	North Haven	CT
U.S. Electrical Services, Inc.	Middletown	CT
Vandale Electric LLC	North Stonington	CT
WJR Plumbing and Heating LLC	Voluntown	CT
Cadeo Group LLC	Washington	DC
Energy Solutions Center	Washington	DC
Express Lighting, Corp.	Melbourne	FL
National Energy Educational Development Need	Manassas	GA
Frontier Energy Inc.	Chicago	IL
Innerworkings Inc.	Chicago	IL
A & M Electrical Mechanical, Inc.	Fall River	MA
Action Inc.	Fall River	MA
Advanced Energy Services	Hopedale	MA
Advanced Mechanical Solutions	Mansfield	MA
Advanced Plumbing & Heating	North Andover	MA
Aetna Corp	Cambridge	MA
Affordable Plumbing Solutions	Cambridge	MA
AGS HVAC Services LLC	Westport	MA
Ahaesy Electric	Fall River	MA
Air Tight Insulators	Webster	MA
All Seasons Comfort	Framingham	MA
Alternative Weatherization, Inc.	Fall River	MA
Alves, Paul	Fall River	MA
American Plant Maintenance	Woburn	MA
Andelman and Lelek Engineering Inc.	Norwood	MA
Andy Ramos Electric	Holyoke	MA
Anthony Vieira Iii Heating & Air Conditioning	Attleboro	MA
ARCA Recycling Inc.	Franklin	MA
Atlantic Power Services Inc.	Seekonk	MA
Attention to Detail Plumbing & Heating	Somerset	MA
B & L Ductless	Swansea	MA
B2Q Associates Inc.	Andover	MA
Baraby Electric	Fall River	MA
Baystate Energy Reduction	Sutton	MA
Borges, Jason	Westport	MA
Botelho Electric	Rehoboth	MA
BRH Electrical Services	Seekonk	MA
Briggs Mechanical	North Attleboro	MA
Bristow Electric Company, Inc.	Attleboro	MA
Bruin Corp.	North Attleboro	MA
C.A. Senecal Electrical Services, Inc.	Worcester	MA
Cabral, Daniel	Fall River	MA
Camara's Heating & Air Conditioning Services	Westport	MA
Can Do It Electrical	Foxborough	MA
Carlos A. Magina Electrical Inc.	Seekonk	MA
Cesar Almeida LLC	Westport	MA
CMA Heating & Air	North Dartmouth	MA
Coastline Electric Inc.	North Attleboro	MA
Commonwealth Electrical Technologies	Worcester	MA
Complete Recycling Solutions LLC	Fall River	MA

Compressor World LLC	Plymouth	MA
Cordeiro, Nathan	Somerset	MA
Costa Plumbing Inc.	Seekonk	MA
Cotti-Johnson HVAC Inc.	Taunton	MA
Coughlin & Associates Energy Consulting	Stow	MA
Craig R. Casavant Inc.	Blackstone	MA
Cunningham Electric	Leicester	MA
D P Electric	Blackstone	MA
Dalika EDF Group	Beverly	MA
Dan Savoie Licensed Electrician	Wilmington	MA
David J. Dionne Electric	Blackstone	MA
David Peters Electric	Tewksbury	MA
DeSignore Electrical Contractor Inc.	Worcester	MA
Demand Management Institute	Needham	MA
DNV GL	Medford	MA
Dominic Ingemi Electrician	Attleboro	MA
Dreyer Plumbing & Heating	Agawam	MA
Drolet Electric	North Attleboro	MA
Duarte, Jason	Fall River	MA
Dustin Leonard Master Plumber	Seekonk	MA
East Bay Plumbing & Heating	Fall River	MA
East Coast Plumbing LLC	Upton	MA
Efficiency Forward Inc. (DLC)	Medford	MA
Efficient Buildings LLC	Bridgewater	MA
Electrical Technologies	Medford	MA
Elite Construction Corp.	Rehoboth	MA
Elite Heating and Air Conditioning	Seekonk	MA
ENE Systems Inc.	Canton	MA
Enel X	Boston	MA
Energy & Resource Solutions Inc.	North Andover	MA
Energy Efficiency Advisers Inc.	Mendon	MA
Energy Federation Inc.	Westborough	MA
Energy Machinery Inc.	Rockland	MA
Energy Management Associates Inc.	Franklin	MA
Energywise Inc.	Sutton	MA
EnergySavvy Inc.	Cambridge	MA
ENGIE Services US	Norwell	MA
Etech, Inc.	Millbury	MA
Expandable Sound	East Freetown	MA
Fairbanks Energy Services Inc.	Hingham	MA
Fall River Mechanical	Fall River	MA
Faria, Wayne D.	North Dartmouth	MA
Fearn Electric	Holyoke	MA
Ferguson Plumbing & Heating	Groton	MA
FLM Plumbing & Heating	Seekonk	MA
Florence Electric LLC	Canton	MA
Fuseideas	Winchester	MA
Germaine Plumbing & Heating	Attleboro	MA
GH Electrical Service	Attleboro	MA
Glynn Electric Inc.	Plymouth	MA
GM Refrigeration	Fall River	MA
GreenerU	Watertown	MA
Group One Incorporated	Boston	MA
Guaranteed Builders Inc.	Douglas	MA
Hallmark Electrical Systems, Inc.	Taunton	MA
Hannon Electric, Inc.	South Easton	MA
Healy Electric	Boylston	MA
Holmes Plumbing & Heating	Westport	MA
HomeServe	Woburn	MA
Horizon Solutions LLC	Taunton	MA
Horton Property Services	Dorchester	MA
Hull Electric	Marblehead	MA
IBM Corp.	Cambridge	MA

Innitou Contracting Co.	Woburn	MA
Insulate 2 Save	Fall River	MA
Insulation R Us	Fall River	MA
Interstate Electrical Services Co.	North Billerica	MA
Ironman Heating & Cooling	Swansea	MA
J & L Heating and Air	Plainville	MA
J Derenzo Company	Brockton	MA
Jarosz Plumbing & Heating Inc.	Rehoboth	MA
Jay Comeau Electrician	Attleboro	MA
JF Electrical	Quincy	MA
John A. Moniz Electrical	Swansea	MA
John McDonough Electrician	Boston	MA
Jones Lang LaSalle Construction	Boston	MA
Jouberts Heating & Air Conditioning	Warwick	MA
Justin Alfred Electrician	Attleboro	MA
K.M. Kelly	Leicester	MA
Kafin Oil Company	Woonsocket	MA
Keith Maciel Plumbing	Fall River	MA
Kelley, James - Middleton Electric Light Dept.	Middleton	MA
Kevin McNulty	Attleboro	MA
Kevin R. Curt Electrical LLC	Fall River	MA
Lafayette & Cross Co. Inc.	Seekonk	MA
Ledoux Electric	Seekonk	MA
Lefevre, Douglas	Taunton	MA
Levesque, Gus	Westport	MA
Lighthouse Construction	Johnston	MA
LiteMor	Norwood	MA
Lockheed Martin	Burlington	MA
Lussier, Joseph - Lussier Electric Services	Worcester	MA
M. Sardinha & Sons	Fall River	MA
Mach Mechanical	Attleboro	MA
Machado Plumbing & Heating	Dighton	MA
Marc's Sheet Metal Inc.	Assonet	MA
Massachusetts Power & Light Co.	Uxbridge	MA
Matthew S. Cedarfield	Warwick	MA
Maurice Richard Plumbing & Heating	South Attleboro	MA
McManus Plumbing and Heating	Millville	MA
Medford Wellington Service Co., Inc.	North Billerica	MA
Michael Sullivan Electrician	Somerset	MA
MJ Electric & Refrigeration	Rehoboth	MA
MN Electric	Marshfield	MA
MTS Mechanical	Fairhaven	MA
MV Electric	Acushnet	MA
National Resource Management	Canton	MA
Navigant Consulting, Inc.	Boston	MA
Needham Electric Supply	Peabody	MA
New Ecology Inc.	Boston	MA
New England Energy Concepts Inc.	North Dighton	MA
New England Safety Systems	Taunton	MA
Nicholas Beaulieru	East Taunton	MA
NMR Group Inc.	Somerville	MA
Northeast Electrical Service	Bellingham	MA
Northeast Mechanical Solutions	Shrewsbury	MA
Northern Electric	Feeding Hills	MA
Northern Energy Services	Northborough	MA
O.H. Burg Corporation	Stoughton	MA
Old Glory Boiler Mechanical Inc.	Assonet	MA
O'Neill Mechanical Services	Seekonk	MA
Oracle America	Cambridge	MA
Pacheco Plumbing & Heating	Fall River	MA
Patriot Sheet Metal HVAC	Seekonk	MA
Paul's Electric	New Bedford	MA
Pavao, Joseph	Worcester	MA

PB & J Mechanical Services	East Wareham	MA
Peregrine Energy Group	Boston	MA
Perez Plumbing & Heating	Haverhill	MA
Potter Electric Inc.	Fairhaven	MA
Pride HVAC Services	Fall River	MA
Priority Plumbing, Inc.	Weymouth	MA
Professional Electrical Contractors of CT, Inc.	Canton	MA
R & F Construction	Dedham	MA
R E M Electric	Attleboro	MA
R R Services	Swansea	MA
R.J. Mcneil Heating & Air Conditioning Services	Shrewsbury	MA
RALCO Electric Inc.	Westport	MA
Raymond D. Melanson Electric	Swansea	MA
Raytheon Company	Waltham	MA
Reis Electrical	Seekonk	MA
Rethinking Power Management	Boston	MA
Retrofit Insulation	Fall River	MA
Richard Lussier Plumbing & Heating	Seekonk	MA
Richard Smith Heating Service	Swansea	MA
Rick Boyajian Construction	Attleboro	MA
ROI Energy Investments LLC	East Walpole	MA
Roia, Jason Electrical	Fall River	MA
Safe Electric	Georgetown	MA
Sarnie Electrical Contracting	Walpole	MA
Savio Lighting	Needham	MA
Seekonk Supply Inc.	Rehoboth	MA
Sikora Electric	Fall River	MA
South Coast Alternative Power Solutions	Acushnet	MA
South Coast Electric & Refrigeration Services	Westport	MA
St. George, Paul R.	Dighton	MA
Stateline Boiler Service	Attleboro	MA
Stateline Fuel & Burner Service Inc.	Seekonk	MA
Steam Trap Systems	Amesbury	MA
Stepka Corp.	Plainville	MA
Suburban Heating & Cooling Services	Swansea	MA
Superior Energy Solutions	Swansea	MA
Sylvania Lighting Solutions	Wilmington	MA
T & J Heating, Air Conditioning and Plumbing	Bellingham	MA
T&T Light Co.	Millbury	MA
TC Building	Medfield	MA
TEEG LLC	Sharon	MA
The Brattle Group	Boston	MA
The Cadmus Group LLC	Boston	MA
The Energy Efficiency Group	Norwood	MA
Theroux Mechanical	South Attleboro	MA
TJ's Plumbing & Heating Inc.	Attleboro	MA
TNZ Energy Consulting Inc.	Stoughton	MA
TRC Environmental Corp.	Boston	MA
Triangle Refrigeration	Fall River	MA
Triple B Plumbing Inc.	Seekonk	MA
Trust Energy Solutions	Marlborough	MA
Utility Energy Inc	Fall River	MA
UTS Energy Engineering LLC	Quincy	MA
Veolia North America	Boston	MA
Victory Heating, Air Conditioning, Plumbing	Bellingham	MA
Wicked Plumbing LLC	Somerset	MA
Wipro Ltd.	Quincy	MA
Worcester Electric Association	Worcester	MA
WR Construction & Design Inc.	Fall River	MA
Yankee Home Improvement Inc.	Northampton	MA
Young Electrical Service	Taunton	MA
EE Lighting LLC	Silver Spring	MD
Enerwise Global Technologies Inc.	Baltimore	MD

MD GreenEnergy LLC	Laurel	MD
Eastern Plumbing & Heating	Dennysville	ME
Underwood Electric	Mapleton	ME
EaglePicher Technologies	Joplin	MO
Hussmann Corp.	Bridgeton	MO
APEX Analytics	Greensboro	NC
Coastal Lighting LLC	Wilmington	NC
KT&T Distributors	Nashua	NH
National Energy & Light Inc.	Nashua	NH
Sprague Operating Resources	Portsmouth	NH
Clear Energy LLC	Bloomfield	NJ
CMC Energy Services Inc.	Cranbury	NJ
Gary The Plumber	Hoboken	NJ
Ideas Agency Inc.	Blairstown	NJ
IPKeys Technologies	Eatontown	NJ
KL Communications	Red Bank	NJ
SHI International Corp.	Somerset	NJ
Advanced Heating & Cooling	Penfield	NY
Barron Plumbing	Williamsville	NY
Big Shine Worldwide	Newburgh	NY
Bill The Plumber	Seaford	NY
Country Heating	Hannibal	NY
Customertimes	New York	NY
EnergyHub Inc.	Brooklyn	NY
Goldstein & Lee, P.C.	New York	NY
Integrated Marketing Services	Liverpool	NY
Medoff Inc.	Flushing	NY
Ram Marketing	Saint James	NY
Rensselaer Research	Troy	NY
Trane Inc.	Plainview	NY
Questline Inc.	Columbus	OH
Cascade Energy Inc.	Portland	OR
Evergreen Consulting Group	Beaverton	OR
BidEnergy	Philadelphia	PA
M. J. Brunner Inc.	Pittsburgh	PA
MPG Mechanical	Mechanicsburg	PA
Mr. Rooter	Bethlehem	PA
Pontoon Solutions Inc.	Pittsburgh	PA
Vecchione Heating & Cooling	Fairless Hills	PA
Simple HVAC	Hartsville	TN
Blackhawk Engagement Solutions	Lewisville	TX
NexRev Inc.	Plano	TX
Compressed Air Challenge	Alexandria	VA
Kelliher Samets Volk	Burlington	VT
Optimal Energy Inc.	Hinesburg	VT
New Buildings Institute Inc.	White Salmon	WA
Northwest Energy Efficiency Council	Seattle	WA
Seventhwave Inc.	Madison	WI

**Attachment 6  
New EE Program Cost  
Schedules**

## Attachment 6

# DPUC Summary of Work Regarding Development of New EE Program Cost Schedules



# Summary of Work Regarding Development of New EE Program Cost Schedules

Division of Public Utilities and Carriers

April 2020

# Current Forms of Budgeting/Cost Reporting

- While the planning process reviews many details, the Reports currently published by National Grid provide only high-level cost information relating to budgeting assumptions and cost incurrance
- This is not a criticism of the utility. They have been operating in good faith, using established practices
- The reporting formats were reasonable when the program budget was smaller, but now that the combined electric and gas far exceeds \$100 million per year, more granularity is needed
- Outcome of work with the Company: Agreement on new set of enhanced cost-schedules to be included in Year-End Annual Reports, beginning with the 2019 filing in May

# Background:

## Two Forms of Cost-Related Reporting

- There are two forms of current reporting relating to costs:
  - Program Budgets forecasting costs (filed with petition for approval)
  - Year-End Program Summary (filed in May)
- The two reports relate to each other
- At this time, the new schedules will apply to the Year-End Report. But the data could influence the type of schedules that are filed when approval for the 2021 program is sought
- The new schedules will be explained in the slides that follow by comparing current reports to new schedules

# Current Practice: Forecasting Budget Costs

Contained in Filing Petitioning for Program Approval

# Table E-2: Breakdown of Forecasted Costs

- The filing seeking approval of the program contains a budget schedule: “Table E-2”
- Table E-2 identifies the Company’s forecast of costs by program
- As shown in the next slide, forecasted costs are segregated into categories under the following labels:
  - Program Planning & Administration
  - Marketing
  - Rebates and Other Customer Incentives
  - Sales, Technical Assistance & Training (STAT)
  - Evaluation and Market Research

# Categories of Program Costs for Budgeting

Table E-2  
National Grid  
2018 Electric Energy Efficiency Program Budget (\$000)

	Program Planning & Administration	Marketing	Rebates and Other Customer Incentives	Sales, Technical Assistance & Training	Evaluation & Market Research	Shareholder Incentive	Grand Total
<b>Non-Income Eligible Residential</b>							
Residential New Construction	\$63.9	\$2.5	\$407.0	\$238.0	\$52.1		\$763.4
ENERGY STAR® HVAC	\$70.2	\$108.5	\$1,494.9	\$512.3	\$18.8		\$2,204.7
EnergyWise	\$338.3	\$414.9	\$12,422.3	\$1,453.9	\$271.5		\$14,900.8
EnergyWise Multifamily	\$91.3	\$43.8	\$2,130.0	\$711.0	\$81.5		\$3,057.7
ENERGY STAR® Lighting	\$218.4	\$516.2	\$5,572.7	\$269.6	\$175.1		\$6,752.0
Residential Consumer Products	\$84.3	\$568.7	\$523.4	\$642.0	\$11.2		\$1,829.6
Home Energy Reports	\$84.7	\$10.9	\$2,466.2	\$10.2	\$52.3		\$2,624.4
Energy Efficiency Education Programs	\$0.0	\$40.0	\$0.0	\$0.0	\$0.0		\$40.0
Residential Demonstration and R&D	\$11.3	\$63.5	\$437.8	\$235.0	\$175.0		\$922.6
Community Based Initiatives - Residential	\$6.2	\$80.0	\$76.8	\$0.0	\$0.0		\$163.0
Comprehensive Marketing - Residential	\$5.7	\$550.8	\$0.0	\$0.0	\$0.1		\$556.7
Residential Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1,690.7	\$1,690.7
<b>Subtotal - Non-Income Eligible Residential</b>	<b>\$974.4</b>	<b>\$2,399.9</b>	<b>\$25,531.1</b>	<b>\$4,072.0</b>	<b>\$837.6</b>	<b>\$1,690.7</b>	<b>\$35,505.7</b>
<b>Income Eligible Residential</b>							
Single Family - Income Eligible Services	\$272.5	\$129.2	\$7,087.4	\$1,596.8	\$229.1		\$9,315.0
Income Eligible Multifamily	\$85.5	\$9.5	\$1,880.0	\$515.3	\$63.0		\$2,553.2
Income Eligible Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$593.4	\$593.4
<b>Subtotal - Income Eligible Residential</b>	<b>\$358.0</b>	<b>\$138.7</b>	<b>\$8,967.4</b>	<b>\$2,112.1</b>	<b>\$292.1</b>	<b>\$593.4</b>	<b>\$12,461.7</b>
<b>Commercial &amp; Industrial</b>							
Large Commercial New Construction	\$239.9	\$367.7	\$4,193.4	\$1,182.6	\$122.0		\$6,105.7
Large Commercial Retrofit	\$659.4	\$276.2	\$19,352.8	\$3,241.6	\$456.7		\$23,986.6
Small Business Direct Install	\$288.1	\$336.9	\$5,625.4	\$463.2	\$196.6		\$6,910.2
Commercial Demonstration and R&D	\$19.4	\$58.0	\$515.8	\$360.6	\$40.0		\$993.8
Community Based Initiatives - C&I	\$1.7	\$20.0	\$19.2	\$0.0	\$0.0		\$40.9
Comprehensive Marketing - C&I	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0		\$0.0
Finance Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0		\$0.0
RI Infrastructure Bank	\$0.0	\$0.0	\$5,000.0	\$0.0	\$0.0		\$5,000.0
Commercial & Industrial Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$2,151.86	\$2,151.9
<b>Subtotal - Commercial &amp; Industrial</b>	<b>\$1,208.5</b>	<b>\$1,058.8</b>	<b>\$34,706.5</b>	<b>\$5,248.0</b>	<b>\$815.3</b>	<b>\$2,151.9</b>	<b>\$45,189.1</b>
<b>Regulatory</b>							
OER	\$706.1	\$0.0	\$0.0	\$0.0	\$0.0		\$706.1
EERMC	\$706.1	\$0.0	\$0.0	\$0.0	\$0.0		\$706.1
<b>Subtotal - Regulatory</b>	<b>\$1,412.1</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$1,412.1</b>
<b>Grand Total</b>	<b>\$3,953.0</b>	<b>\$3,597.4</b>	<b>\$69,205.1</b>	<b>\$11,432.1</b>	<b>\$1,945.0</b>	<b>\$4,436.0</b>	<b>\$94,568.6</b>
System Reliability Procurement							\$399.3

**Total Budget**

Notes:  
 (1) 2017 Commitments are anticipated to be \$0.  
 (2) For more information on Finance Costs, please refer to the 2018 C&I Program Description, Attachment 2.  
 (3) OER and EERMC total 2.0% of customers' EE Program Charge collected on Table E-1, minus 2%.  
 (4) System Reliability funds are included for illustrative purposes. They are part of the 2018 System Reliability Procurement Report, filed as a separate docket.

Table E-2 contains forecasting costs for each specific program.

Example: "EnergyWise" directly costs \$14.9 million, summing across all columns.

	Program Planning & Administration	Marketing	Rebates and Other Customer Incentives	Sales, Technical Assistance & Training	Evaluation & Market Research	Shareholder Incentive	Grand Total
<b>Non-Income Eligible Residential</b>							
Residential New Construction	\$63.9	\$2.5	\$407.0	\$238.0	\$52.1		\$763.4
ENERGY STAR® HVAC	\$70.2	\$108.5	\$1,494.9	\$512.3	\$18.8		\$2,204.7
EnergyWise	\$338.3	\$414.9	\$12,422.3	\$1,453.9	\$271.5		\$14,900.8
EnergyWise Multifamily	\$91.3	\$43.8	\$2,130.0	\$711.0	\$81.5		\$3,057.7
ENERGY STAR® Lighting	\$218.4	\$516.2	\$5,572.7	\$269.6	\$175.1		\$6,752.0
Residential Consumer Products	\$84.3	\$568.7	\$523.4	\$642.0	\$11.2		\$1,829.6
Home Energy Reports	\$84.7	\$10.9	\$2,466.2	\$10.2	\$52.3		\$2,624.4
Energy Efficiency Education Programs	\$0.0	\$40.0	\$0.0	\$0.0	\$0.0		\$40.0
Residential Demonstration and R&D	\$11.3	\$63.5	\$437.8	\$235.0	\$175.0		\$922.6
	\$670	\$600	\$670	\$600	\$600		\$600

# Highest Cost Category is “Rebates and Other Customer Incentives”

Table E-2  
National Grid  
2018 Electric Energy Efficiency Program Budget (\$000)

	Program Planning & Administration	Marketing	Rebates and Other Customer Incentives	Sales, Technical Assistance & Training	Evaluation & Market Research	Shareholder Incentive	Grand Total
<b>Non-Income Eligible Residential</b>							
Residential New Construction	\$63.9	\$2.5	\$407.0	\$238.0	\$52.1		\$763.4
ENERGY STAR® HVAC	\$70.2	\$108.5	\$1,494.9	\$512.3	\$18.8		\$2,204.7
EnergyWise	\$338.3	\$414.9	\$12,422.3	\$1,453.9	\$271.5		\$14,900.8
EnergyWise Multifamily	\$91.3	\$43.8	\$2,130.0	\$711.0	\$81.5		\$3,057.7
ENERGY STAR® Lighting	\$218.4	\$16.2	\$5,572.7	\$269.6	\$175.1		\$6,752.0
Residential Consumer Products	\$84.3	\$568.7	\$523.4	\$642.0	\$11.2		\$1,829.6
Home Energy Reports	\$84.7	\$10.9	\$2,466.2	\$10.2	\$52.3		\$2,624.4
Energy Efficiency Education Programs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0		\$40.0
Residential Demonstration and R&D	\$11.3	\$3.5	\$437.8	\$235.0	\$175.0		\$922.6
Community Based Initiatives - Residential	\$6.2	\$0.0	\$76.8	\$0.0	\$0.0		\$163.0
Comprehensive Marketing - Residential	\$5.7	\$50.8	\$0.0	\$0.0	\$0.1		\$556.7
Residential Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1,690.7	\$1,690.7
<b>Subtotal - Non-Income Eligible Residential</b>	<b>\$974.4</b>	<b>\$2,299.9</b>	<b>\$25,531.1</b>	<b>\$4,072.0</b>	<b>\$837.6</b>	<b>\$1,690.7</b>	<b>\$35,505.7</b>
<b>Income Eligible Residential</b>							
Single Family - Income Eligible Services	\$272.5	\$129.1	\$7,087.4	\$1,596.8	\$229.1		\$9,315.0
Income Eligible Multifamily	\$85.5	\$9.5	\$1,880.0	\$515.3	\$63.0		\$2,553.2
Income Eligible Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$593.4	\$593.4
<b>Subtotal - Income Eligible Residential</b>	<b>\$358.0</b>	<b>\$138.7</b>	<b>\$8,967.4</b>	<b>\$2,112.1</b>	<b>\$292.1</b>	<b>\$593.4</b>	<b>\$12,461.7</b>
<b>Commercial &amp; Industrial</b>							
Large Commercial New Construction	\$239.9	\$367.7	\$4,193.4	\$1,182.6	\$122.0		\$6,105.7
Large Commercial Retrofit	\$659.4	\$276.2	\$19,352.8	\$3,241.6	\$456.7		\$23,986.6
Small Business Direct Install	\$288.1	\$336.9	\$5,625.4	\$463.2	\$196.6		\$6,910.2
Commercial Demonstration and R&D	\$19.4	\$58.0	\$515.8	\$360.6	\$40.0		\$993.8
Community Based Initiatives - C&I	\$1.7	\$20.0	\$19.2	\$0.0	\$0.0		\$40.9
Comprehensive Marketing - C&I	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0		\$0.0
Finance Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0		\$0.0
RI Infrastructure Bank	\$0.0	\$0.0	\$5,000.0	\$0.0	\$0.0		\$5,000.0
Commercial & Industrial Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$2,151.86	\$2,151.9
<b>Subtotal - Commercial &amp; Industrial</b>	<b>\$1,208.5</b>	<b>\$1,058.8</b>	<b>\$34,706.5</b>	<b>\$5,248.0</b>	<b>\$815.3</b>	<b>\$2,151.9</b>	<b>\$45,189.1</b>
<b>Regulatory</b>							
OER	\$706.1	\$0.0	\$0.0	\$0.0	\$0.0		\$706.1
EERM	\$706.1	\$0.0	\$0.0	\$0.0	\$0.0		\$706.1
<b>Subtotal - Regulatory</b>	<b>\$1,412.1</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$0.0</b>	<b>\$1,412.1</b>
<b>Grand Total</b>	<b>\$3,953.0</b>	<b>\$3,597.4</b>	<b>\$69,205.1</b>	<b>\$11,432.1</b>	<b>\$1,945.0</b>	<b>\$4,436.0</b>	<b>\$94,568.6</b>
System Reliability Procurement							\$399.3

**Notes:**

- (1) 2017 Commitments are anticipated to be \$0.
- (2) For more information on Finance Costs, please refer to the 2018 C&I Program Description, Attachment 2.
- (3) OER and EERM total 2.0% of customers' EE Program Charge collected on Table E-1, minus 2%.
- (4) System Reliability funds are included for illustrative purposes. They are part of the 2018 System Reliability Procurement Report, filed as a separate document.



# Cost Categories Lack Granularity and are not Definitionally Clear

- The filed budget does not go any deeper than the five broad cost categories
- Some of the categories are not clearly delineated
- For example, category labeled: **“Rebates and Other Customer Incentives”**
  - Highest cost category of the portfolio
  - This category contains more than rebates and incentives paid to customers
  - It also contains vendor service costs utilized in the provision of service to customers
  - Example: “Home Energy Reports” has no rebates associated with it. It is the cost of the service being provided to the customer.
  - The blending of rebates/incentives with vendor service costs may inadvertently leave the impression that it is all rebate payments to participating customers
- New schedules in the Year End Report will drill down further on vendor costs
- More information will be provided that show the split between vendor services and actual rebates, as actually incurred for the year

## Another Example: Allocated Costs

- There are costs that are not directly attributable to any individual programs, but are allocated by the Company
- Based on review of 2018 costs, approximately 7% of the total program costs appear to be allocated
- Nothing necessarily wrong with allocated costs; it is a standard utility practice to appropriately spread certain costs
- But more visibility is needed for both budgeting, cost review, and effectively incentivizing cost controls

# Tables in Year-End Report

Filed in May

# Limitations of Current Year End Report

- The Year-End Report discloses total “Implementation Expenses”
- As shown in the next slide, the Year-End report only provides total costs by program in one column of one schedule (Table E-1)
- There are no schedules that break out actual cost-incurrence by the same cost categories that were used to establish the original budget
  - The program costs are rolled up into one number by program, lacking visibility that would allow comparison of actual costs against the original budget

Year End Results: Table E-1 summarizing Total "Implementation Expenses" Incurred

\$88,122.9

NATIONAL GRID ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND  
Table E-1: Summary of 2018 Target and Year End Results

Sector and Program	(1) Demand Reduction (Annual kW)		(3) Pct Achieved		(4) Energy Savings (Annual MWh)		(6) Pct Achieved		(7) Customer Participation Approved		(8) Pct Achieved		(10) Implementation Expenses (\$ 000)		(13) Lifetime MWh		(14)	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Budget	Actual	Achieved Pct		\$/kWh	
<b>Commercial &amp; Industrial</b>																		
Large Commercial New Construction	1,728	2,116	139.9%	14,017	13,959	100.4%	149	106.9%	139	149	106.9%	\$5,177.0	\$6,111.7	84.7%	218,617	\$0.024		
Large Commercial Retrofit	11,910	12,471	104.7%	80,591	75,616	106.6%	2,193	150.4%	2,193	3,299	150.4%	\$22,657.2	\$24,030.7	84.3%	962,429	\$0.024		
Small Business Direct Install	1,034	1,697	164.0%	10,321	9,940	103.8%	565	120.2%	565	679	120.2%	\$5,982.3	\$6,924.5	86.4%	126,524	\$0.047		
Commercial Demonstration and R&D												\$938.0	\$993.8	94.4%				
Community Based Initiatives - C&I												\$2.0	\$40.9	4.8%				
RI Infrastructure Bank												\$5,000.0	\$5,000.0	100.0%				
<b>SUBTOTAL</b>	<b>14,673</b>	<b>16,284</b>	<b>111.0%</b>	<b>104,929</b>	<b>99,515</b>	<b>105.4%</b>	<b>2,897</b>	<b>142.4%</b>	<b>2,897</b>	<b>4,126</b>	<b>142.4%</b>	<b>\$39,756.4</b>	<b>\$43,101.6</b>	<b>92.2%</b>	<b>1,297,570</b>	<b>\$0.031</b>		
<b>Income Eligible Residential</b>																		
Single Family - Income Eligible Services	696	973	139.9%	4,336	4,185	103.6%	2,750	140.0%	2,750	3,850	140.0%	\$9,871.9	\$9,329.3	105.8%	45,094	\$0.219		
Income Eligible Multifamily	170	211	124.2%	2,480	3,287	75.4%	4,800	80.7%	4,800	3,875	80.7%	\$2,590.5	\$2,557.4	101.3%	28,903	\$0.090		
<b>SUBTOTAL</b>	<b>865</b>	<b>1,184</b>	<b>136.9%</b>	<b>7,472</b>	<b>7,472</b>	<b>91.2%</b>	<b>7,550</b>	<b>102.3%</b>	<b>7,550</b>	<b>7,725</b>	<b>102.3%</b>	<b>\$12,462.5</b>	<b>\$11,886.7</b>	<b>104.8%</b>	<b>73,997</b>	<b>\$0.168</b>		
<b>Non-Income Eligible Residential</b>																		
Residential New Construction	49	70	143.3%	972	619	157.1%	501	91.4%	501	458	91.4%	\$767.0	\$764.6	100.3%	14,961	\$0.051		
ENERGY STAR® HVAC	433	972	224.6%	2,091	2,091	95.3%	1,794	170.4%	1,794	3,057	170.4%	\$1,857.1	\$2,206.6	84.2%	27,709	\$0.067		
EnergyWise	286	414	144.7%	6,684	6,157	108.6%	10,000	118.4%	10,000	11,838	118.4%	\$13,406.7	\$14,916.3	89.9%	46,499	\$0.288		
EnergyWise Multifamily	329	240	72.8%	4,207	2,834	67.4%	6,000	40.3%	6,000	2,415	40.3%	\$2,195.9	\$3,062.6	71.7%	29,788	\$0.074		
Home Energy Reports	3,325	2,748	82.6%	25,054	23,527	93.9%	213,750	97.6%	213,750	208,594	97.6%	\$2,568.6	\$2,629.3	97.7%	23,527	\$0.109		
ENERGY STAR® Lighting	4,413	6,141	139.1%	38,891	54,211	139.4%	292,150	147.4%	292,150	430,649	147.4%	\$6,768.6	\$10,704.8	158.2%	304,000	\$0.035		
Residential Consumer Products	429	759	176.9%	2,849	2,849	149.0%	9,682	202.5%	9,682	19,609	202.5%	\$1,906.1	\$1,831.1	104.1%	30,794	\$0.062		
Energy Efficiency Education Programs												\$0.0	\$40.0	0.0%				
Residential Demonstration and R&D												\$598.2	\$922.6	64.8%				
Community Based Initiatives - Residential												\$70.6	\$163.0	43.3%				
Comprehensive Marketing - Residential												\$451.5	\$556.7	82.0%				
<b>SUBTOTAL</b>	<b>9,264</b>	<b>11,343</b>	<b>122.4%</b>	<b>79,868</b>	<b>79,868</b>	<b>118.3%</b>	<b>533,877</b>	<b>126.7%</b>	<b>533,877</b>	<b>676,620</b>	<b>126.7%</b>	<b>\$34,532.0</b>	<b>\$33,861.5</b>	<b>102.0%</b>	<b>477,278</b>	<b>\$0.072</b>		
<b>Regulatory</b>																		
OER												\$686.1	\$686.1	100.0%				
EERMC												\$686.1	\$686.1	100.0%				
<b>SUBTOTAL</b>												<b>1,372.1</b>	<b>1,372.1</b>	<b>100.0%</b>				
<b>TOTAL</b>	<b>24,802</b>	<b>28,811</b>	<b>116.2%</b>	<b>186,855</b>	<b>186,855</b>	<b>110.4%</b>	<b>544,324</b>	<b>126.5%</b>	<b>544,324</b>	<b>688,471</b>	<b>126.5%</b>	<b>\$88,122.9</b>	<b>\$90,221.9</b>	<b>97.7%</b>	<b>1,848,845</b>	<b>\$0.048</b>		
Municipal LED Street Lights												\$802.3	\$802.3	107.3%				
System Reliability Procurement												\$399.3	\$399.3	59.4%				

# Development of New Schedules

- As a test case, the Company took actual 2018 Program costs and used a Division-requested set of schedules to create drafts of enhanced cost schedules
- The proposed schedules were populated with more granular data from 2018.
- The Company presented the populated draft schedules to the Division
- Further discussion occurred and additional enhancements were agreed
- The Company will supplement its report with new schedules when it files its Year End Report for the 2019 program in May
- The Company also will go back to 2018 and create a revised set of identical schedules for that program year, after completing the 2019 report

# The Series of New Schedules

- To the Company's credit, they were very cooperative and helpful in the development of the new set of cost schedules
- The schedules will be designed to address the following:
  - Costs broken out by the original budgeted sub-categories
  - Further drill down on each cost category
  - Specific data on individual vendor costs
  - Threshold-based segregation of rebates received by customers
  - Visibility to costs not related to specific programs that were allocated across programs
- Examples of some of the new schedules appear in the slides that follow (these are drafts using 2018 electric EE data; final formats may be further edited)



## New Cost Summary Schedule

### Schedule 1 - Program and Sector Cost Summary

#### By Report Category

	(d) (Schedule 4) col a	(e) (Schedule 5) col a	(f) (Schedule 6) col a	(g) (Schedule 7) col a	(h) (Schedule 8) col a	
	Program Planning & Admin.	Marketing	Rebates and Other Customer Incentives	STAT	Evaluation & Research	
	<b>Total Costs</b>					
1	Res New Construction (Electric)	\$81,499	\$1,995	\$393,861	\$273,715	\$15,963
2	ENERGY STAR HVAC (Electric)	\$78,278	\$152,517	\$1,332,017	\$288,274	\$5,982
3	EnergyWise (Electric)	\$348,317	\$385,305	\$12,300,666	\$254,444	\$117,973
4	EnergyWise Mult (Electric)	\$97,721	\$118,540	\$1,634,686	\$322,263	\$22,659
5	Home Energy Reports (Electric)	\$82,689	\$8,787	\$2,466,215	\$3,490	\$7,412
6	ENERGY STAR Lighting (Electric)	\$224,246	\$450,241	\$9,705,254	\$264,724	\$60,384
7	Res Consumer Products (Electric)	\$100,744	\$500,561	\$807,984	\$494,057	\$3,178
8	Res Connected Solutions (Electric)	\$0	\$0	\$0	\$0	\$0
9	Energy Eff. Education (Electric)	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Electric)	\$55,894	\$10,138	\$122,787	\$406,246	\$3,179
11	Community Based Initiatives - Residential (Elec	\$0	\$46,571	\$24,000	\$0	\$0
12	Comprehensive Marketing Residential (Electri	\$5,416	\$451,057	\$0	\$0	\$36
13	OTHER RESIDENTIAL PROGRAMS (Electric)	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-Income Eligible Residential</b>	<b>\$1,074,803</b>	<b>\$2,125,713</b>	<b>\$28,787,471</b>	<b>\$2,307,214</b>	<b>\$236,765</b>
15	Single Family - Inc Elig (Electric)	\$283,731	\$118,556	\$7,698,047	\$1,673,260	\$98,327
16	Income Elig - Mult (Electric)	\$91,458	\$23,170	\$2,114,584	\$344,582	\$16,740
17	<b>Subtotal Income Eligible Residential</b>	<b>\$375,189</b>	<b>\$141,726</b>	<b>\$9,812,631</b>	<b>\$2,017,842</b>	<b>\$115,067</b>
18	Large C&I New Constr (Electric)	\$361,873	\$294,267	\$3,292,877	\$1,143,263	\$84,694
19	Large Comm Retrofit (Electric)	\$1,147,065	\$244,373	\$17,707,740	\$3,236,527	\$321,494
20	Small Business Direct (Electric)	\$392,764	\$340,113	\$4,972,860	\$151,014	\$125,574
21	Commercial Connected Solutions (Electric)	\$0	\$0	\$0	\$0	\$0
22	Commercial Pilots (Electric)	\$119,317	\$4,802	\$678,522	\$132,160	\$3,179
23	Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Electric)	\$188	\$1,774	\$0	\$0	\$0
25	Finance Costs (Electric)	\$0	\$0	\$5,000,000	\$0	\$0
26	OTHER C&I PROGRAMS (Electric)	\$0	\$0	\$0	\$0	\$0
27	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$2,021,206</b>	<b>\$885,328</b>	<b>\$31,651,999</b>	<b>\$4,662,963</b>	<b>\$534,941</b>
28	<b>TOTAL All Sectors</b>	<b>\$3,471,199</b>	<b>\$3,152,767</b>	<b>\$70,252,101</b>	<b>\$8,988,019</b>	<b>\$886,774</b>

Each column will have an accompanying schedule that drills down further on each category. All cost totals in each schedule should tie out to each other.



## New Schedule Breaking Down National Grid Labor

### Schedule 2 - Labor and Employee Expenses

	(a) (b)+(c)	(b) (e)+(h)	(c) (f)+(i)	(d) (e)+(f)	(e)	(f)	(g) (h)+(i)	(h)	(i)
	National Grid Direct Labor + Expenses		National Grid Allocated Labor + Expenses		National Grid Direct Labor Allocated Labor		National Grid Direct Employee Expenses		National Grid Allocated Employee Expenses
	<b>Total National Grid Labor + Expenses</b>			<b>Total National Grid Labor</b>			<b>Total National Grid Employee Expenses</b>		
1	Res New Construction (Electric)	\$73,643	\$46,220	\$70,938	\$26,280	\$44,658	\$2,705	\$1,143	\$1,562
2	ENERGY STAR HVAC (Electric)	\$65,982	\$51,720	\$63,150	\$13,512	\$49,639	\$2,831	\$750	\$2,081
3	EnergyWise (Electric)	\$307,328	\$261,749	\$296,794	\$44,760	\$252,034	\$10,534	\$819	\$9,715
4	EnergyWise Mult (Electric)	\$86,147	\$71,829	\$82,987	\$13,617	\$69,370	\$3,160	\$701	\$2,459
5	Home Energy Reports (Electric)	\$59,911	\$57,397	\$57,836	\$2,458	\$55,378	\$2,075	\$56	\$2,020
6	ENERGY STAR Lighting (Electric)	\$201,171	\$173,744	\$193,409	\$26,684	\$166,726	\$7,761	\$743	\$7,018
7	Res Consumer Products (Electric)	\$92,795	\$76,948	\$88,399	\$15,468	\$72,931	\$4,396	\$379	\$4,017
8	Res Connected Solutions (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Energy Eff. Education (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Electric)	\$15,169	\$0	\$15,747	\$15,747	\$0	-\$578	-\$578	\$0
11	Community Based Initiatives - Residential (Electric)	\$1,059	\$0	\$1,059	\$1,059	\$0	\$0	\$0	\$0
12	Comprehensive Marketing Residential (Electric)	\$23,750	\$23,750	\$21,699	\$0	\$21,699	\$2,051	\$0	\$2,051
13	OTHER RESIDENTIAL PROGRAMS (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-Income Eligible Residential</b>	<b>\$926,955</b>	<b>\$763,356</b>	<b>\$892,019</b>	<b>\$159,585</b>	<b>\$732,433</b>	<b>\$34,936</b>	<b>\$4,013</b>	<b>\$30,923</b>
15	Single Family - Inc Elig (Electric)	\$233,182	\$208,233	\$225,344	\$24,321	\$201,022	\$7,838	\$628	\$7,210
16	Income Elig - Mult (Electric)	\$73,733	\$63,109	\$71,097	\$10,133	\$60,964	\$2,636	\$492	\$2,145
17	<b>Subtotal Income Eligible Residential</b>	<b>\$306,915</b>	<b>\$271,341</b>	<b>\$296,440</b>	<b>\$34,454</b>	<b>\$261,986</b>	<b>\$10,475</b>	<b>\$1,120</b>	<b>\$9,355</b>
18	Large C&I New Constr (Electric)	\$557,589	\$372,829	\$536,222	\$178,837	\$357,384	\$21,367	\$5,922	\$15,445
19	Large Comm Retrofit (Electric)	\$1,753,468	\$1,004,803	\$1,684,677	\$719,116	\$965,562	\$68,791	\$29,549	\$39,242
20	Small Business Direct (Electric)	\$366,100	\$281,852	\$354,936	\$83,779	\$271,157	\$11,164	\$469	\$10,695
21	Commercial Connected Solutions (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	Commercial Pilots (Electric)	\$31,550	\$0	\$27,954	\$27,954	\$0	\$3,596	\$3,596	\$0
23	Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Community Based Initiatives - C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
25	Finance Costs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	OTHER C&I PROGRAMS (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$2,708,707</b>	<b>\$1,659,485</b>	<b>\$2,603,789</b>	<b>\$1,009,686</b>	<b>\$1,594,103</b>	<b>\$104,918</b>	<b>\$39,537</b>	<b>\$65,381</b>
28	<b>TOTAL All Sectors</b>	<b>\$3,942,576</b>	<b>\$2,694,182</b>	<b>\$3,792,248</b>	<b>\$1,203,725</b>	<b>\$2,588,523</b>	<b>\$150,329</b>	<b>\$44,669</b>	<b>\$105,659</b>

# Draft of New Vendor Cost Schedule, Format Not finalized Yet

**Schedule 3 - Expenses Categorized as Vendor Costs in Company's Systems<sup>1</sup>**

	(a) Services, Products, and Rebates Provided to Customers, <sup>2</sup> (also referred to as "Rebates and Other Customer Incentives") <sup>3</sup>	(b) Rebate Payments Made Directly to Customers by National Grid and PEX's to Whom Customer Rebates were Assigned	(c) Payments to Service Vendors for Costs Relating to Services, Products, and Processing Rebates (excluding costs included in col. c) <sup>3</sup>	(d) Direct "External Costs" <sup>4</sup> from Vendor Services	(e) "External Costs" from Vendors Originating from an Allocation	(f) Total of Vendor Costs Categorized as "External Costs" from Service Vendors (excluding costs included in columns a, b, & c)	(g) Total Costs from Service Vendors, Excluding Rebate Payments Made Directly to Customers by National Grid
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
			(a) - (b)			(d) + (e)	(c) + (f)
1	Res New Construction (Gas)						
2	ENERGY STAR HVAC (Gas)						
3	EnergyWise (Gas)						
4	EnergyWise Mult (Gas)						
5	Home Energy Reports (Gas)						
6	ENERGY STAR Lighting (Gas)						
7	Res Consumer Products (Gas)						
8	Res Connected Solutions (Gas)						
9	Energy Eff. Education (Gas)						
10	Residential Pilots (Gas)						
11	Community Based Initiatives - Residential (Gas)						
12	Comprehensive Marketing Residential (Gas)						
13	OTHER RESIDENTIAL PROGRAMS (Gas)						
14	<b>Subtotal Non-Income Eligible Residential</b>						
15	Single Family - Inc Elig (Gas)						
16	Income Elig - Mult (Gas)						
17	<b>Subtotal Income Eligible Residential</b>						
18	Large C&I New Constr (Gas)						
19	Large Comm Retrofit (Gas)						
20	Small Business Direct (Gas)						
21	Commercial Connected Solutions (Gas)						
22	Commercial Pilots (Gas)						
23	Comprehensive Marketing C&I (Gas)						
24	Community Based Initiatives - C&I (Gas)						
25	C&I Multifamily (Gas)						
26	Finance Costs (Gas)						
27	OTHER C&I PROGRAMS (Gas)						
28	<b>Subtotal Commercial &amp; Industrial</b>						
29	<b>TOTAL All Sectors</b>						

<sup>1</sup> The Company's accounting system treats all payments made directly to customers and vendors as one category of vendor expenses.

Rebates paid to customers through service contracts with vendors are included in the service cost of the vendor.

<sup>2</sup> This category has formally been labeled in prior year annual reports as "Rebates and Other Customer Incentives" in annual reports.

<sup>3</sup> This cost category includes service costs plus rebates processed and paid to customers by the vendor, but excludes rebates paid directly to customers by the Company in col (b).

<sup>4</sup> The term "External Costs" has been used in Company reports to identify a subset of vendor costs not included in "Rebates and Other Customer Incentives".

## New Schedule Breaking Down "Program Planning & Admin Costs"

### Schedule 4 - Program Planning & Administration

	(a) (b)+(e)+(h)	(b) (c)+(d)	(c)	(d)	(e) (f)+(g)	(f)	(g)	(h) (i)+(j)	(i)	(j)
	Total Costs	Total National Grid Labor Costs	National Grid Direct Labor	National Grid Allocated Labor	Total National Grid Employee Expenses	National Grid Direct Employee Expenses	National Grid Allocated Employee Expenses	External Vendor Services Costs	Direct External Services Costs	External Services Costs Originating from an Allocation
1	Res New Construction (Electric)	\$81,499	\$55,771	\$19,952	\$35,818	\$2,501	\$1,432	\$23,226	\$28	\$23,198
2	ENERGY STAR HVAC (Electric)	\$78,278	\$51,153	\$11,799	\$39,354	\$1,574	\$1,574	\$25,552	\$64	\$25,488
3	EnergyWise (Electric)	\$348,317	\$217,095	\$27,461	\$189,634	\$8,402	\$7,583	\$122,820	\$0	\$122,820
4	EnergyWise Mult (Electric)	\$97,721	\$62,124	\$10,942	\$51,183	\$2,398	\$2,047	\$33,198	\$49	\$33,149
5	Home Energy Reports (Electric)	\$82,689	\$49,960	\$2,458	\$47,502	\$1,955	\$1,900	\$30,773	\$8	\$30,766
6	ENERGY STAR Lighting (Electric)	\$224,246	\$139,281	\$16,841	\$122,440	\$5,609	\$4,896	\$79,356	\$55	\$79,301
7	Res Consumer Products (Electric)	\$100,744	\$61,708	\$14,463	\$47,245	\$2,218	\$1,889	\$36,817	\$6,218	\$30,599
8	Res Connected Solutions (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	Energy Eff. Education (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	Residential Pilots (Electric)	\$55,894	\$14,991	\$14,991	\$0	\$0	\$0	\$40,903	\$40,903	\$0
11	Community Based Initiatives - Residential (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
12	Comprehensive Marketing Residential (Electric)	\$5,416	\$3,209	\$0	\$3,209	\$128	\$128	\$2,079	\$0	\$2,079
13	OTHER RESIDENTIAL PROGRAMS (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	<b>Subtotal Non-Income Eligible Residential</b>	<b>\$1,074,803</b>	<b>\$655,293</b>	<b>\$118,907</b>	<b>\$536,386</b>	<b>\$24,786</b>	<b>\$21,449</b>	<b>\$394,724</b>	<b>\$47,324</b>	<b>\$347,400</b>
15	Single Family - Inc Elig (Electric)	\$283,731	\$178,084	\$25,341	\$152,742	\$6,721	\$6,108	\$98,926	\$0	\$98,926
16	Income Elig - Mult (Electric)	\$91,458	\$58,086	\$10,133	\$47,954	\$2,269	\$1,918	\$31,103	\$45	\$31,058
17	<b>Subtotal Income Eligible Residential</b>	<b>\$375,189</b>	<b>\$236,170</b>	<b>\$35,474</b>	<b>\$200,696</b>	<b>\$8,990</b>	<b>\$8,026</b>	<b>\$130,029</b>	<b>\$45</b>	<b>\$129,985</b>
18	Large C&I New Constr (Electric)	\$361,873	\$147,221	\$16,023	\$131,198	\$5,619	\$4,146	\$209,033	\$24,156	\$184,878
19	Large Comm Retrofit (Electric)	\$1,147,065	\$388,312	\$27,725	\$360,586	\$12,592	\$11,395	\$746,161	\$238,040	\$508,121
20	Small Business Direct (Electric)	\$392,764	\$165,136	\$7,580	\$157,556	\$4,979	\$4,979	\$222,649	\$628	\$222,020
21	Commercial Connected Solutions (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
22	Commercial Pilots (Electric)	\$119,317	\$18,775	\$18,775	\$0	\$41	\$0	\$100,502	\$100,502	\$0
23	Comprehensive Marketing C&I (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
24	Comprehensive Marketing - C&I (Electric)	\$188	\$0	\$0	\$0	\$0	\$0	\$188	\$188	\$0
25	Finance Costs (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
26	OTHER C&I PROGRAMS (Electric)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
27	<b>Subtotal Commercial &amp; Industrial</b>	<b>\$2,021,206</b>	<b>\$719,444</b>	<b>\$70,103</b>	<b>\$649,340</b>	<b>\$23,231</b>	<b>\$20,519</b>	<b>\$1,278,532</b>	<b>\$363,513</b>	<b>\$915,019</b>
28	<b>TOTAL All Sectors</b>	<b>\$3,471,199</b>	<b>\$1,610,906</b>	<b>\$224,484</b>	<b>\$1,386,422</b>	<b>\$57,007</b>	<b>\$49,994</b>	<b>\$1,803,285</b>	<b>\$410,882</b>	<b>\$1,392,403</b>



# Similar Schedules for Other Cost Categories

- Schedules mirroring Schedule 4 (Program Planning & Administration) and Schedule 5 (Marketing) will be created for two of the other cost categories:
  - Schedule 7: Sales, Technical Assistance & Training (STAT)
  - Schedule 8: Evaluation and Market Research
- Schedule 6 will attempt to address the split between vendor costs and rebates paid to customers, for costs included in the current category labeled “Rebates and Other Customer Incentives”
  - This category may be renamed for clarity

## New Schedule Regarding Costs Shared with Other States

**Schedule 9 - Shared Cross-Jurisdictional Costs (Non-Labor)** (Non-Labor Services/Costs that are Shared with Other Jurisdictions and are Allocated to Rhode Island)  
 <100K only for RI

	(a)	(b) (c) x (a)	(b) (c) x (a)	(b) (c) x (a)	(c)	(c)	(c)	(c)	(c)	(d)	(e)
1	Charged to DSM - InDemand Support & Releas	\$306,133	\$65,942	\$47,492	\$18,450	22%	16%	6%	78%	0%	
2	Charged to DSM - InDemand Support & Releas	\$2,840,469	\$545,732	\$403,045	\$142,687	19%	14%	5%	66%	15%	
3	Charged to DSM - InDemand Support & Releas	\$293,172	\$57,755	\$43,096	\$14,659	20%	15%	5%	67%	14%	
4											
5	DSM & CMS Quarterly Journal Entries	\$368,625	\$74,170	\$54,646	\$19,524	20%	15%	5%	68%	12%	
6											
7	Charged to DSM - Advertising	\$4,605	\$3,323	\$2,109	\$1,213	72%	46%	26%	0%	28%	
8	Charged to DSM - Advertising	\$11,011	\$10,669	\$10,104	\$565	97%	92%	5%	0%	3%	
9	Charged to DSM - Advertising	\$18,886	\$1,572	\$0	\$1,572	8%	0%	8%	18%	73%	
10	Charged to DSM - Advertising	\$6,704	\$2,794	\$2,794	\$0	42%	42%	0%	52%	7%	
11	Charged to DSM - Advertising	\$84,693	\$12,335	\$8,242	\$4,094	15%	10%	5%	40%	46%	
12	Charged to DSM - Advertising	\$335,261	\$61,429	\$43,841	\$17,587	18%	13%	5%	38%	44%	
13	Charged to DSM - Advertising	\$156,761	\$38,174	\$30,316	\$7,858	24%	19%	5%	55%	21%	



# Confidential Vendor Data Schedules

- The Company will provide confidential schedules that provide more specific data regarding costs incurred through outside vendors
- The Division has honored the Company's request to keep these schedules confidential, so as not to publicly reveal individual vendor data
- One schedule will identify vendor costs (by vendor) for each program
- A second schedule will show aggregate total costs of each vendor receiving \$1 million or more from all programs during the program year
  - NOTE: Vendor schedules of this type were produced for the Division relating to the costs from the 2018 Program Year
  - The vendor schedules provide important insight into cost incurrence **(see the next slide)**

# Vendor Costs from 2018 Program

- The total amount of vendor costs from the list of vendors who invoiced the Company \$1 million or more was **\$91 million** in 2018.
- The \$91 million included **both** service costs **plus** rebates paid by vendors to customers
- Placing this in context,
  - the total 2018 electric program vendor costs were \$89 million and the total gas program vendor costs were \$27 million;
  - total for both = \$116 million.
- Thus, the total costs from this subset of vendors (including cost of services plus rebates paid by the vendor) made up **78% of all program costs** charged to ratepayers in 2018.
- Of that total, **only four vendors** on this list made up approximately **71%** of the \$91 million (or 56% of the total combined electric and gas programs).
- It is not clear through the current reporting schedules how much was services cost and how much was rebate funding. This information will be provided in the new schedules



# Where We Go from Here

- The Company is working diligently to file its Year-End Report for 2019 (due May 1)
- Company represented that it will attempt to have a full set of the enhanced schedules included with the filing
- Review of confidential vendor data will require a Non-disclosure agreement, assuming the PUC grants the Company's motion for a protective order
- The Division assured the Company that if more time was needed on any specific schedule, it is better to file quality data than rushing an important schedule to a May 1 deadline
- This will be the first program review with this new data in the new formats
- Further enhancements may evolve as experience is gained
- The schedules could be very helpful for the budget process in planning for the 2021 program
- The granularity also will provide a foundation for further inquiry on some costs that have not been completely visible during the review and budgeting processes in the past