Rhode Island 2019 Energy Efficiency Workforce Analysis Final Report

Prepared for:

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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"1 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.

[1] 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[2] on the Rhode Island programs that saved 190,159 annual megawatt hours (MWh) of electricity[3] and 451,466 million British thermal units (MMBtu) of natural gas.[4]

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.[5] 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.

[2] The Narragansett Electric Company d/b/a National Grid, 2019 Energy Efficiency Year End Report.
[3] 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.
[4] The Narragansett Electric Company d/b/a National Grid, 2019 Energy Efficiency Year End Report.
[5] 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
Electric Programs					
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
Gas Programs					
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
Other					
CAP Agencies[6]		35.0	35.0	38.0	34.0
National Grid[7]	43.3	39.5	38.2	39.9	41.6
Marketing[8]	12.1				
Total	**877.6**	**804.1**	**726.5**	**702.2**	**695.8**

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.

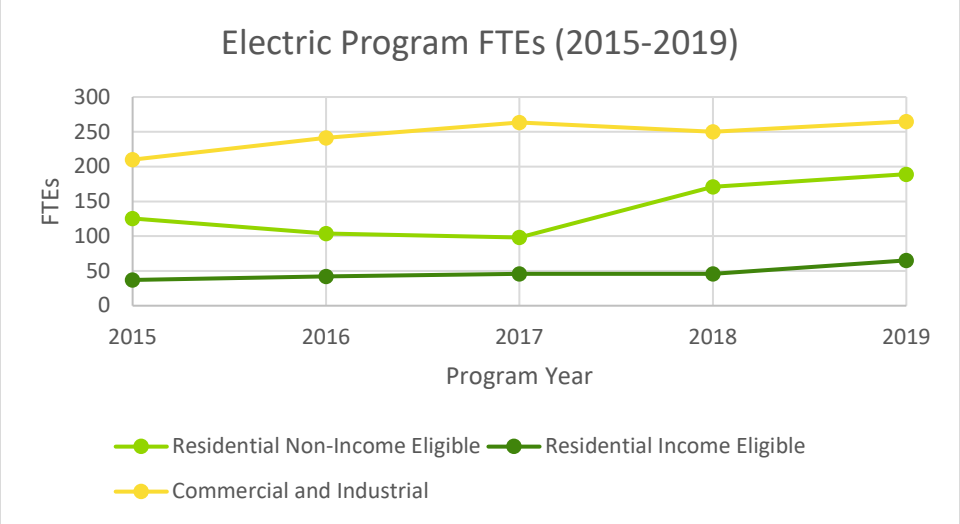
National Grid programs and delivery strategies were substantively the same in 2019 as they had been in 2018. This is due, in part, to 2019 being the second year of the three year Least Cost Procurement Plan for 2018-2020. However, there were some differences, upwards and downwards, in total associated 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.

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

[7] 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.

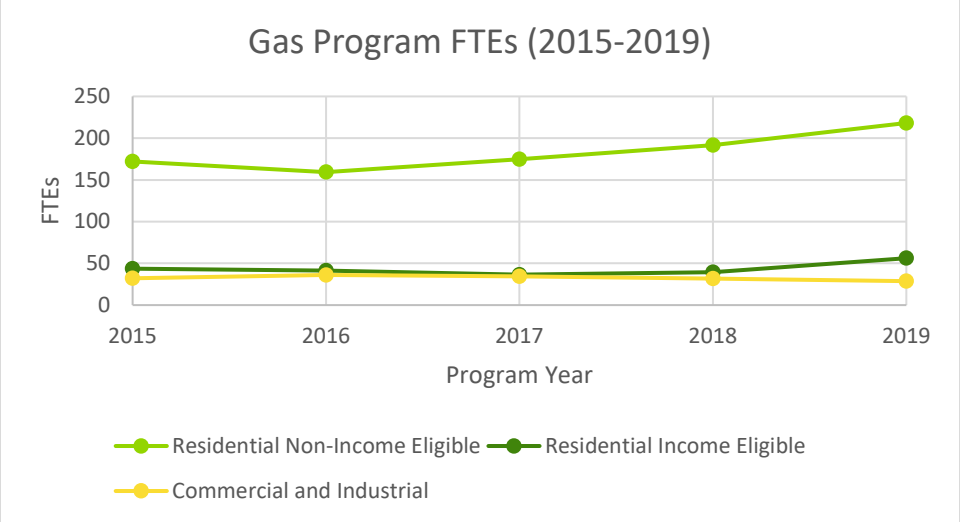
[8] Beginning in 2019, marketing was contracted to a new vendor, resulting in an increase in jobs, these are therefore shown separately.

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"[9] (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[10]. 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.[11] These programs created 451,466 million British thermal units (MMBtu) of natural gas savings and 190,159 megawatt hours (MWh) of electricity savings).[12]

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.

[9] Rhode Island General Laws § 39-2-1.2(b).
[10] Regional Greenhouse Gas Initiative (RGGI) funds also contribute to funding of the municipal streetlighting initiative.
[11] The Narragansett Electric Company d/b/a National Grid, 2019 Energy Efficiency Year End Report and 2018 Year End Spend.
[12] 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.[13] 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[14], 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

[13] 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.
[14] 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[15]

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

[15] 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.[16]
- 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 expediters: 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.

[16]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[17]

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

[17] 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 CLEAResult 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[18]

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.

[18] 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.[19]

- 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 as 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

[19] 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.[20]

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.[21] 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

[20] CLEAResult interview, March 16, 2020.
[21] 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.[22]

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).[23]

[22] CLEAResult interview, March 19, 2020.
[23] 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 ConnectedSolutions

The Commercial ConnectedSolutions 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.[24]

Delivery

Four curtailment service providers (CSPs) were certified and contracted for the Commercial ConnectedSolutions 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.

[24] 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. CLEAResult 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 CLEAResult to deliver the Residential New Construction program in 2019. CLEAResult provided program management, data management, and administrative support to this program out of CLEAResult'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.[25]

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.[26] 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

[25] CLEAResult interview, March 9, 2020.
[26] 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.[27] 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.[28] 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.[29] 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.[30] 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).

[27] RISE Engineering interview, March 9, 2020.
[28] RISE Engineering interview, March 9, 2020.
[29] RISE Engineering interview, March 9, 2020.
[30] 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.[31] 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.[32]

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.[33]

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)[34], 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

[31] RISE Engineering interview, March 19, 2020.
[32] RISE Engineering interview, March 19, 2020.
[33] RISE Engineering, written correspondence, April 16th, 2020.
[34] 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.[35]

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

[35] 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.[36]

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.

[36] National Grid, Annual Energy Efficiency Plan for 2019, October 15, 2018.

5. National Grid Employees Analysis[37]

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.

[37] 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[38]

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.[39] 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

[38] 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.

[39] 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[40] 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.[41] 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.

[40] 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.
[41] 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
Electric Programs					
Residential Non-Income Eligible	189.1	170.9[42]	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
Gas Programs					
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
Other					
CAP Agencies[43]		35.0	35.0	38.0	34.0
National Grid[44]	43.3	39.5	38.2	39.9	41.6
Marketing[45]	12.1				
Total	**877.6**	**804.1**	**726.5**	**702.2**	**695.8**

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.

[42] 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.

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

[44] 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.

[45] 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[46]	2019 FTEs
Electric Programs				
Commercial & Industrial (C&I)		**250.0**		**265.0**
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 ConnectedSolutions			$1,862,846	7.3
Other	$1,799,240	0.1	$15,435	0.0
Low-Income		**64.6**		**65.1**
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
Residential		**170.9**		**189.1**
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 ConnectedSolutions			$167,428	0.3
Other	$1,125,325	1.0	$41,300	0.0
Natural Gas Programs				
Commercial & Industrial (C&I)		**31.9**		**28.7**
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
Low-Income		**55.6**		**56.2**
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
Residential		**191.6**		**218.1**
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
Other				
National Grid Staff		39.5		43.3
Marketing		-		12.1
Total		**804.1**[47]		**877.6**

Source: Guidehouse analysis and 2018 study

[46] 2019 spending has been adjusted for inflation; values shown are in 2018 dollars, assuming an inflation rate of 2%.
[47] 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[48]
Electric Programs		
Commercial & Industrial (C&I)		
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%
Low-Income		
Single Family Income Eligible Services	-4%	-4%
Income Eligible Multifamily	12%	12%
CAP Agencies Staff		3%
Residential		
Residential New Construction	13%	16%
ENERGY STAR® HVAC	31%	18%[49]
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%
Natural Gas Programs		
Commercial & Industrial (C&I)		
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%
Low-Income		
Single Family Income Eligible Services	-13%	-13%
Income Eligible Multifamily	28%	28%
CAP Agency Staff		3%
Residential		
Residential New Construction	-7%	-5%
ENERGY STAR® HVAC	19%	16%[49]
EnergyWise	16%	
EnergyWise Multifamily	-3%	-3%
Home Energy Reports	-1%	-1%
Other		-100%

Source: Guidehouse analysis

[48] 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.

[49] 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.[50] 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.[51] 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.

[50] CLEAResult interview, March 8, 2020.
[51] 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.[52] FTEs for the Commercial and Industrial Multifamily program increased from 4 in 2018 to 4.8 in 2019.

6.3.5 Commercial ConnectedSolutions

The Commercial ConnectedSolutions 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.[53] This 0.5 FTE was evenly split between residential and commercial ConnectedSolutions 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.[54] Through the interview process, CPower indicated that there were 3.5 FTEs working on the program at their company.[55] Given that CPower accounted for 50% of work volume, 7 FTEs were attributed to CSPs for the Commercial ConnectedSolutions program. These 7 FTEs, together with the 0.25 FTE of Energy Hub, lead to 7.3 FTEs for Commercial ConnectedSolutions 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[56] each accounting for 0 FTEs.

Note that in prior years' analysis the spending for the ConnectedSolutions 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.[57] 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

[52] RISE Engineering, interview, March 11, 2020.
[53] National Grid interview, March 6, 2020.
[54] National Grid interview, March 16, 2020.
[55] CPower interview, March 20, 2020.
[56] 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.
[57] 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.[58] 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.[59] 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

[58] CLEAResult interview, March 9, 2020.
[59] 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, CLEAResult 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[60], with RISE indicating an increase in effort from both their employees as well as from subcontractors.[61] 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.[62]

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

[60] National Grid interview, March 10, 2020.
[61] RISE Engineering, interview, March 9, 2020.
[62] 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.[63]

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.[64] 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.

[63] ARCA indicated that the 4 additional FTEs for subcontractors were also present in 2018, however they were unaccounted for in the previous report.

[64] 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
Residential Programs	**407.2**				4.1	12.1	2.9	4.8
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				
Income-Eligible Programs	**121.3**							
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				
Commercial Programs and Initiatives	**293.7**							
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				
National Grid Staff	**43.3**							
Total	**877.6**							

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[65]

- 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.

[65] Leidos interview, March 20, 2020.

7.2 Upstream Lighting Initiative[66]

- In 2018, it was noted that there was a decreasing trend in sales from upstream lighting. When asked about this trend, CLEAResult 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[67]

- CLEAResult 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.
- CLEAResult 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[68]

- CLEAResult 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[69]

- 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[70]

- 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

[66] CLEAResult interview, March 16, 2020.
[67] CLEAResult interview, Match 9, 2020.
[68] CLEAResult interview, March 13, 2020.
[69] RISE Engineering interview, March 9, 2020.
[70] 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[71]

- 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.

[71] ARCA interview, March 10, 2020.

Appendix A. Methodologies Used for Assessing Employment[72]

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[73] 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.

[72] This section is reproduced from pages 53-55 and Attachment A of the 2018 report.

[73] 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 or 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 processers 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 CLEAResult, Community Action Program (CAP) agency staff counts, and calculated labor required to complete installations. CLEAResult staff FTE counts came from direct interviews with CLEAResult's program manager. We determined CAP agency energy staffing for each of the six agencies operating in Rhode Island with the assistance of CLEAResult and then aggregated them to establish the statewide CAP Agency staff count. CLEAResult 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)

<u>Installations</u>

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 Expediters 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
Your Organization	
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?	
Compare 2019 to 2018	
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?	
Business Process	

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?	
Additional Comments	
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.

Vendor	Town	State
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
Addessi 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
Cal 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 Enterpries	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
H20 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 Enginering	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 Stroscio - 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	Greeneville	RI
Matthew Girard	Greeneville	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 Contruction 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
Temptec 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
DelSignore 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
Energyiwise 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
Rensselar 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