

**The Narragansett Electric Co. d/b/a National Grid—Application for Approval of a Change in Electric and Gas Base Distribution Rates (filed on November 27, 2017)**

Docket 4770

**Request for Information**

**Requesting Party:** New Energy Rhode Island (NERI)  
**To:** National Grid  
**Request No.:** NERI-1  
**Date of Request:** 3.2.18  
**Response Due Date:** 3.23.18 (rolling by agreement)  
**Subject/Panel:** Book 1—Horan

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1. Reference p. 16, ll. 15-18. What are the costs to customers, including decoupling adjustment costs, for the EE savings referenced herein? What is the cost per kWh of savings? Per peak kW?

**Response can be found on Bates page(s) 1-2.**

2. Reference p. 15-16. What is the change in monthly average bill. over the period cited (2009 to present) for each class due to the EE programs? How were the claims about lower bills calculated?

**Response can be found on Bates page(s) 3.**

3. Reference p. 16, ll. 7-11. What is the basis for these assertions? Please provide supporting documentation, in Excel format, where applicable.

**Response can be found on Bates page(s) 4-76.**

4. Reference p. 16, l. 19 to p. 17, l. 4. What is the cumulative rate cost to customers of the investments described?

**Response can be found on Bates page(s) 77.**

5. Reference p. 18, Figure 1. Why have SAIDI and SAIFI performance worsened since 2013/2014? Why did performance improve in prior years?

**Response can be found on Bates page(s) 78.**

6. Reference p. 18 - community investments. Please:

- a. Detail charitable contributions during each year since the Company's last rate case.
- b. List all recipients of the Company's charitable contributions and community investments.
- c. Describe the method used to determine recipients.

**Response can be found on Bates page(s) 79-89.**

NERI 1-1

Request:

Subject: Book 1—Horan

Reference p. 16, ll. 15-18. What are the costs to customers, including decoupling adjustment costs, for the EE savings referenced herein? What is the cost per kWh of savings? Per peak kW?

Response:

The Company's response to this data request pertains to the following reference on Page 15, Lines 15-18 of the pre-filed direct testimony of Company Witness Timothy F. Horan (Bates Page 17 of Book 1), stating:

Since 2009, Rhode Island consumers participating in the Company's energy efficiency programs have saved \$499 million dollars in electricity and \$79 million dollars in natural gas. Energy efficiency reduces the quantity of energy that has to be acquired from wholesale markets, causing wholesale market prices to decline.

It is important to note that this passage from Mr. Horan's testimony is referencing only the *energy cost savings* customers have received as a result of the performance of the Company's energy efficiency programs in the period 2009-2016, and not total benefits. Over that period of time, the total benefits to customers from the Company's energy efficiency programs were \$1.6 billion for electric and \$308 million for gas. The total benefits experienced by customers are created by the combination of energy cost savings; avoided investments in transmission and distribution; non-electric savings from reductions in delivered fuels; reduced operation and maintenance expenses; water savings; and, benefits to low-income customers, such as reduced arrears and health and safety benefits.

The total benefits to customers from the Company's energy efficiency programs outweigh the associated costs. To achieve total benefits from 2009 through 2016 of \$1.6 billion for electric and \$308 million for gas energy efficiency programs, the cost of these programs to customers was \$459 million for electric and \$113 million for gas. Over this period of time, the kWh cost was \$0.034 per lifetime kWh, and the kW cost was \$240 per lifetime summer kW. Also, Rhode Island energy efficiency programs are designed to achieve kWh goals. Therefore, the resulting summer and winter kW reductions are an additional benefit from measures installed to meet kWh goals. Currently, energy efficiency programs provide more winter than summer kW reductions based on the mix of measures offered.

The Company's electric and gas Revenue Decoupling Mechanisms (RDMs) became effective April 1, 2011, and are full RDMs. Full RDMs capture the changes in distribution revenue billed

to customers as a result of all forces, which not only includes impacts from the Company's energy efficiency programs, but also impacts on revenue as a result of the health of the economy, weather, the adoption of distributed generation by the Company's electric customers, and any other event that results in customers being billed more or less than the target distribution revenue in each RDM (electric and gas) as determined in a general rate case. The Company does not quantify the components of its annual RDM over- or under-recoveries of target distribution revenue, and therefore does not know the component of the RDM balances attributable to energy efficiency.

NERI 1-2

Request:

Subject: Book 1—Horan

Reference p. 15-16. What is the change in monthly average bill, over the period cited (2009 to present) for each class due to the EE programs? How were the claims about lower bills calculated?

Response:

The Company utilizes a bill impact model originally developed by Synapse Energy Economics (Synapse) on behalf of the Division of Public Utilities and Carriers (Division). In consultation with Synapse and the Division, the Company began utilizing this model to determine the bill impacts of its Annual Energy Efficiency Plans beginning in 2015. Therefore, bill impacts are only available from 2015 to 2018. The results for each of these years are presented in Attachment 7 of each Annual Plan in the following dockets:

2015 Annual Energy Efficiency Plan (Docket No. 4527)

[http://www.ripuc.org/eventsactions/docket/4527-NGrid-2015-EEPP\(10-31-14\).pdf](http://www.ripuc.org/eventsactions/docket/4527-NGrid-2015-EEPP(10-31-14).pdf)

2016 Annual Energy Efficiency Plan (Docket No. 4580)

[http://www.ripuc.org/eventsactions/docket/4580-NGrid-2016-EEPP\(10-15-15\).pdf](http://www.ripuc.org/eventsactions/docket/4580-NGrid-2016-EEPP(10-15-15).pdf)

2017 Annual Energy Efficiency Plan (Docket No. 4654)

[http://www.ripuc.org/eventsactions/docket/4654-NGrid-EEPP-2017\(10-17-16\).pdf](http://www.ripuc.org/eventsactions/docket/4654-NGrid-EEPP-2017(10-17-16).pdf)

2018 Annual Energy Efficiency Plan (Docket No. 4755)

[http://www.ripuc.org/eventsactions/docket/4755-NGrid-EEPP2018\\_11-1-17.pdf](http://www.ripuc.org/eventsactions/docket/4755-NGrid-EEPP2018_11-1-17.pdf)

Specific to 2017, the bill impacts model analyzes two cases: the fulfillment of the 2017 Plan and the absence of an efficiency plan in 2017. This comparison isolates the effects of the proposed 2017 Systems Benefit Charge and Fully Reconciling Funding Mechanism. It assumes efficiency plans have not been implemented before 2017, nor will be offered after 2017. The analysis also incorporates how system-wide reductions in energy consumption affect the different elements of rates, such as transmission, distribution, and commodity charges. The full methodology is discussed in materials associated with the above referenced dockets.

NERI 1-3

Request:

Subject: Book 1—Horan

Reference p. 16, ll. 7-11. What is the basis for these assertions? Please provide supporting documentation, in Excel format, where applicable.

Response:

Each year, from 2013 through 2016, the Company commissioned Peregrine Energy Group, Inc. to conduct a study of the job impacts of the energy efficiency programs and services it delivered to electric and gas customers in Rhode Island. The 2017 study is currently underway and will be completed by May 1, 2018.

The 2016 Jobs Report<sup>1</sup> details the methodology that is the basis for the statements referenced on Page 16, Lines 7-11 of the pre-filed direct testimony of Company Witness Timothy F. Horan (Bates Page 18 of Book 1). A copy of the 2016 Jobs Report is provided as Attachment NERI 1-3.

As noted in the 2016 Jobs Report Executive Summary, “Peregrine determined that at least 702 full-time equivalent (FTE) workers were employed in 2016 as a result of National Grid expenditures for energy efficiency programs provided to its Rhode Island electricity and natural gas customers.”<sup>2</sup>

Also, as noted in the 2016 Jobs Report Executive Summary:

The study identified 923 companies and agencies involved in National Grid's Rhode Island programs, approximately 82% of which had Rhode Island business addresses. These findings for 2016 again confirm that job creation is an additional significant benefit that National Grid's investments in energy efficiency contribute to Rhode Island's economy overall and directly to the business owners and their employees that deliver these programs and services.<sup>3</sup>

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<sup>1</sup> Peregrine Energy Group, Inc., Analysis of Job Creation from 2016 Expenditures for Energy Efficiency in Rhode Island by National Grid, Prepared for National Grid (April 24, 2016).

<sup>2</sup> *Id.* at 3; *see also id.* at 34, 35, and 38.

<sup>3</sup> *Id.* at 4.

A list of companies involved in the 2016 Rhode Island energy efficiency programs is provided in Attachment C to the 2016 Jobs Report.<sup>4</sup>

Previous jobs studies are presented in the following Year-End Reports:

Attachment 4 of the 2013 Year-End Report (Docket No. 4366)

[http://www.ripuc.org/eventsactions/docket/4366-NGrid-YERept-Revised\(10-24-14\).pdf](http://www.ripuc.org/eventsactions/docket/4366-NGrid-YERept-Revised(10-24-14).pdf)

Attachment 4 of the 2014 Year-End Report (Docket No. 4451)

[http://www.ripuc.org/eventsactions/docket/4451-NGrid-Year-End-Rept\(5-1-15\).pdf](http://www.ripuc.org/eventsactions/docket/4451-NGrid-Year-End-Rept(5-1-15).pdf)

Attachment 5 of the 2015 Year-End Report (Docket No. 4527)

[http://www.ripuc.org/eventsactions/docket/4527-NGrid-YrEndRept\(5-2-16\).pdf](http://www.ripuc.org/eventsactions/docket/4527-NGrid-YrEndRept(5-2-16).pdf)

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<sup>4</sup> *Id.* at 49-71.



# **ANALYSIS OF JOB CREATION from 2016 Expenditures for Energy Efficiency in Rhode Island by National Grid**

Prepared for National Grid

Prepared by:

Peregrine Energy Group, Inc.  
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**April 24, 2016**

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## Executive Summary

Electric and gas energy efficiency programs and services sponsored, supported, and provided by National Grid in Rhode Island help eliminate unnecessary energy use, save money for customers, improve the environment, and increase the health, comfort, and safety of homes and businesses. In 2016, National Grid spent a total of \$97,409,593 on electric and gas energy efficiency programs and services in Rhode Island and saved 214,329 MWh and 417,820 MMBtu.

The focus of this study is less *what* was accomplished by National Grid programs than *how* it was done and by whom. In 2016, for the fourth year in a row, National Grid commissioned Peregrine Energy Group, Inc. (Peregrine) to conduct a study of the job impacts of National Grid's energy efficiency programs and services delivered in 2016 to Rhode Island electricity and natural gas customers. This study meets the requirements of General Law 39-2-1.2, enacted by the Rhode Island General Assembly in 2012. While job creation is not a formal goal of National Grid's energy efficiency programs and services, employment represents a significant additional economic benefit that investments in energy efficiency contribute to Rhode Island and to the businesses participating in National Grid's programs.

Successful delivery of the 2016 energy efficiency programs to National Grid's customers has required the active involvement of a broad range of workers associated with a diverse set of businesses. Workers were employed by companies and organizations involved in energy program design, management and delivery.

Participating employers included program design consultants, energy program management specialists, marketing and advertising specialists, equipment manufacturers and suppliers, equipment and appliance retailers, architectural firms and developers, engineers and energy analysts, installation companies and independent contractors, plumbers and electricians, quality assurance inspection companies, utility rebate processing houses, waste material recyclers, and program evaluators, as well as National Grid. In addition, six Community Action Program agencies under contract to the state Department of Human Services delivered low-income energy efficiency services co-funded by National Grid and the federal Weatherization Assistance Program (WAP).

Peregrine determined that at least 702 full-time equivalent (FTE) workers were employed in 2016 as a result of National Grid expenditures for energy efficiency programs provided to its Rhode Island electricity and natural gas customers. For purposes of this study, Peregrine and National Grid agreed that one FTE would equal 1,760 work hours, or the total of one person working 8 hours a day for 220 work days in an average year. Because a "full-time equivalent" employee very often represents the labors of more than one person over the course of a year, the number of individual workers employed as result of Rhode Island energy efficiency programs funded by National Grid is far greater than the total number of FTEs. The vast majority of the



jobs created as a result of energy efficiency investments were local because they were tied to installation of equipment and other materials.

The total number of 2016 FTEs identified by Peregrine was slightly higher than the 696 FTE workers that Peregrine had attributed to National Grid's Rhode Island energy efficiency program investments in 2015, and National Grid's programs and delivery strategies were substantively the same in 2016 as they had been in the prior year. However, at the more granular level of the three major market sectors targeted by programs (residential, residential income eligible, and commercial and industrial), there were significant, measurable gains and losses of FTEs in 2016 attributable to changes in individual market sector activity.

While 2016 was characterized program-wide by continuing strong levels of customer participation and demand for and acceptance of energy efficiency services (and all markets were positively affected by strong growth in energy efficient lighting installations fueled by falling prices for and expanded availability and increased diversity of light emitting diode or "LED" lighting products), overall FTEs associated with residential markets declined while FTEs associated with the income-eligible and commercial and industrial markets increased.

The study identified 923 companies and agencies involved in National Grid's Rhode Island programs, approximately 82% of which had Rhode Island business addresses. These findings for 2016 again confirm that job creation is an additional significant benefit that National Grid's investments in energy efficiency contribute to Rhode Island's economy overall and directly to the business owners and their employees that deliver these programs and services. A list of companies involved in the 2016 Rhode Island energy efficiency programs is provided at the end of this report.



## Introduction

As part of National Grid's commitment to encourage and assist its Rhode Island customers to use the electricity and natural gas supplies it delivers wisely, National Grid provides a state-approved portfolio of energy efficiency programs and services to all market sectors it serves in Rhode Island. The Rhode Island energy efficiency programs focus on delivering cost-effective energy savings to building owners and tenants, to all-income residential customers residing in single family and multifamily buildings, to government and non-profit institutions, to small and large commercial businesses, and to manufacturers.

2016 is the second year of the current state-approved three-year plan for energy efficiency that was developed collaboratively by National Grid with regulators, customer-advocates, and energy efficiency experts. Overall, the 2016 program offerings and budgets have been similar to those in 2015, with some modest adjustments based on emerging opportunities.

In 2016, National Grid spent a total of \$97,409,593 on electric and gas energy efficiency programs in Rhode Island. These programs created 214,329 megawatt hours (MWh) of electricity savings and 417,820 million British thermal units (MMBtus) of natural gas savings. These energy efficiency expenditures by National Grid leveraged significant spending by its Rhode Island customers, including building owners' and tenants' share of the cost of purchasing and installing energy efficient equipment and materials. It also leveraged other public funding of energy efficiency initiatives such as Regional Greenhouse Gas Initiative (RGGI) and the federal Low Income Heating Assistance Program (LIHEAP) delivered by Rhode Island Department of Human Services.

In 2016, for the fourth year in a row, National Grid commissioned Peregrine Energy Group, Inc. (Peregrine) to conduct a study of the job impacts of National Grid's energy efficiency programs and services delivered in 2016 to Rhode Island electricity and natural gas customers. This study meets the requirements of General Law 39-2-1.2, enacted by the Rhode Island General Assembly in 2012. While job creation is not a formal goal of National Grid's energy efficiency programs and services, employment represents a significant additional economic benefit that investments in energy efficiency contribute to Rhode Island and to the businesses participating in National Grid's programs.

Peregrine's research objective for 2016 was, again, to count or otherwise estimate the number of jobs directly attributable to National Grid's 2016 energy efficiency programs. Unlike the energy savings resulting from National Grid's energy efficiency programs that are predicted, analyzed, measured, and recorded, job impacts from energy efficiency spending are identified, if they are tracked at all, as labor expense. Numbers and types of employees engaged, be they full-time or part-time, and number of hours worked to deliver programs and services are not captured and reported, except by employers themselves for payroll and business planning

purposes. For this reason, calculating job impacts from the outside looking in can be more art than science.

For 2016, as in years past, Peregrine has endeavored to find and count the full-time equivalent (FTE) employees engaged in all aspects of National Grid's energy efficiency programs. In many, if not most, instances, each FTE attributable to a National Grid program represents the actual part-time labors of many individuals who are employed not only in delivery of National Grid programs in Rhode Island but also in other endeavors. Peregrine assumes that one FTE, regardless of job type or responsibilities, equals for purposes of this study 1,760 work hours, or the equivalent of one person working 8 hours a day for 220 work days in an average year.

As has been the case with prior years' studies, this year's study findings were developed through direct interviews with employers and through analysis of energy efficiency improvements installed that had been documented by National Grid. Peregrine interviewed with managers at energy services companies, equipment vendors, and contractors identified by National Grid for Peregrine or identified as sub-contractors by companies that Peregrine interviewed. These companies voluntarily shared information on how they staff their contracts and services and even researched payroll records to provide payroll hours and FTE counts. Where possible, the study cites the companies that provided information to Peregrine. Peregrine also completed a detailed review of National Grid's records of all energy efficiency measures installed in homes, apartment buildings, businesses and industrial facilities throughout Rhode Island in 2016. Peregrine then calculated typical or average labor hours required for each installed energy savings measure, based on industry standards and discussions with the contractors themselves and other experts, and extrapolated total FTE employment using counts of measures installed in 2016 that were reported to and by National Grid.

The report is divided into four primary sections:

1. An Efficiency Workforce Overview that describes the types of companies and workers engaged in providing efficiency program-related services and support in Rhode Island
2. The Delivery Approach used for individual programs
3. Summary Counts of FTEs with observations on their significance, with discussion of any year-to-year changes in job impacts attributable to National Grid investments comparing 2016 to previous years' study results.
4. Attachments describing Peregrine's methodology in more detail, providing Peregrine's interview guide, and listing specific companies that supplied the workforce.



## Efficiency Workforce Overview

Peregrine recognizes two main categories of employers/employees that participate in the delivery of National Grid’s energy efficiency programs. These categories are:

- “Program Support Service Providers” that are employers and employees involved in program planning / administration, marketing, rebate processing, and evaluation and market research.
- “Direct Service Providers” who are responsible for sales, technical assistance and training, and for supplying and installing approved efficiency measures that National Grid promotes and encourages with incentives and rebates.

### Program Support Service Providers

The Program Support Services category includes:

- Companies engaged to provide marketing, outreach, public information, and other related support services, including media placement and design of collateral marketing materials;
- Specialized firms processing and paying out rebates offered for purchase and installation of install high efficiency equipment; and
- Evaluators of the overall performance of and savings associated with the National Grid programs.

### National Grid Employees

National Grid staff engaged in energy efficiency program design, regulatory matters, administrative management of contractors, marketing, and evaluation are included in the Program Support Services category. Information provided by National Grid for 2016 identified 80,433 person-hours of time associated with Rhode Island energy efficiency program activities, equal to 39.9 FTEs, down slightly from 2015. Peregrine is reporting all National Grid FTEs as a separate category for purposes of this study and not allocating them to specific programs or groups of programs.

### Support Services Contractors

Peregrine interviewed the majority of lead vendors who supported National Grid in these activities to obtain information on their roles and responsibilities in program delivery as well as FTE counts. Often, these FTEs represented the aggregation of small numbers of hours by many employees. In some instances, this was because a contractor’s role may have been limited in duration and/or required contributions from a multi-disciplinary team. In other instances, it was because a team with multi-disciplinary capabilities was, for reasons of cost effectiveness,



providing services to National Grid in Rhode Island and other states or to National Grid and other utility companies.

Depending on the nature of the services the vendor provided and whether the support provided could be associated with specific programs, labor hours and FTEs of Support Services Contractors were allocated across the three major program sectors (Residential, Income Eligible Residential, Commercial and Industrial), consistent with the ratios of actual 2016 gas and electric program expenditures by program sector, or were allocated to a specific program sector.

### ***Program Planners and Administrators***

Vermont Energy Investment Corporation (VEIC) and its subcontractors Optimal Energy and Energy Futures Group continued to serve as consultants to Rhode Island's Energy Efficiency and Resource Management Council (EERMC) in 2016. Optimal Energy primarily provided services out of offices in Providence, Rhode Island. The VEIC team of market sector specialists assisted with ongoing program planning and refinement, provided guidance for spending of Regional Greenhouse Gas Initiative (RGGI) funds for efficiency, and helped with oversight of programs offered by National Grid. The twelve staff associated with the three organizations that provided these direct services billed approximately 2.8 FTEs of time. These services were paid for out of system benefits charges and the energy efficiency budget.

### ***Marketers***

National Grid's energy efficiency marketing spend for Rhode Island in 2016 was just over \$3,640,000, equal to just under 4% of the total Rhode Island energy efficiency expenditure. National Grid had reorganized and consolidated marketing activities in 2014 making Kelliher Samets Volk (KSV), a Vermont-based regional marketing firm specializing in the utility sector, National Grid's primary marketing consultant. KSV collaborated with and coordinated marketing activities by other additional, specialized marketing firms engaged by National Grid in a variety of marketing roles designed to increase general efficiency awareness, target specific customer segments and sub-segments for programs and services, and engage and promote trade allies. These firms conducted mailings to customers and trade allies, provided telemarketing services, and disseminated emails. KSV also coordinated its activities with National Grid's program delivery contractors to help them maintain and regulate demand for program services. Additional marketing firms supporting National Grid in Rhode Island in 2016 included Questline Inc., Ideas Agency Inc., Integrated Marketing Services, and InnerWorkings, Inc., Impressions ABA, Sacks Exhibits, and RAM Marketing, among others.



In addition to coordinating all the efforts of other specialized marketing firms supporting National Grid, KSV's role included media placement, web-based initiatives, organizing social media campaigns, and organizing phone messaging. Most of marketing budget spend was used for media message placement, printing and direct mailing, and electronic communications.

KSV researched, developed marketing strategies and designed targeted brand marketing campaigns directed at residential, commercial and industrial customer segments that focused on specific programs and generated awareness about the breadth of National Grid's energy efficiency program offerings. KSV also ran campaigns directed at trade allies and other implementers to encourage their use of the incentives and product discounts National Grid had developed and increase their active engagement with National Grid customers in programs. As KSV marketing director Ashley Nichols described it in 2016, the marketing team's goal was "the marriage of awareness and hyper-targeting." They analyzed and reported to National Grid monthly on leads generation for each market segment, monthly marketing activities by different parties, and going forward marketing efforts planned.

KSV identified 40 individuals at the firm that touched the National Grid Rhode Island account in one way or another. These included: brand and project managers; creative, art, and media directors; media and brand strategists; media buyers; a production designer, video producer, and copywriters; and the KSV executive leadership team. Ten of this number accounted for 80% of the total 5,378 hours KSV billed to Rhode Island in 2016, about the same as in 2015. Total KSV 2016 hours equaled 3.1 FTEs. Staff supporting National Grid in Rhode Island included a three quarter (0.75 FTE) time Senior Brand Manager based in Little Compton who focused on trade ally relationships.

Total marketing jobs calculated for Rhode Island equaled 3.9 FTEs. Marketing FTEs are allocated across all program sectors, consistent with the ratios of actual 2016 gas and electric program expenditures.

### ***Rebate Processors***

National Grid contacted with two firms in 2016, Blackhawk Engagement Solutions (BES), based in Texas, and Energy Federation, Inc. (EFI), based in Westborough, Massachusetts, to process rebates both to consumers who purchase targeted products and to equipment suppliers and installers providing point-of-sale discounts to customers. Point-of-sale efficiency initiatives, also called "upstream programs" are described in detail in the Delivery Approach discussion below.

Blackhawk Engagement Solutions processed incentives offered by National Grid for purchase of preferred energy efficient products installed under residential heating programs (Gas High Efficiency Heating Equipment Rebate and Programmable & WI-FI Thermostat Offer), commercial heating programs (Commercial Kitchen Equipment Incentive and Commercial High Efficiency Heating Equipment Incentive), and the Rhode Island hot water and cooling programs (Cooling

Rebate Offer and Heat Pump Hot Water Heater). BES scanned, data-entered, and validated rebate applications, processed payments, and cut and mailed checks. The staffing roles required included a senior manager, account management, data entry operators, quality assurance specialists, customer service, reward fulfillment staffing, and IT support. All told, BES required 1.72 FTEs to service Rhode Island programs, equal to just over 3,000 hours. BES also supports National Grid programs in other states and other utility clients nationwide.

EFI also provided rebate processing for programs provided by National Grid in both Massachusetts and Rhode Island, with Rhode Island accounting for about 20% of the total workforce hours for this effort. Programs supported included Upstream Commercial HVAC, ENERGY STAR® Appliances, and ENERGY STAR® Lighting. Supporting ENERGY STAR® Lighting program was far and away 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. Rhode Island's share of the combined incentive processing operation for the two states was about 0.4 FTEs.

### ***Evaluators***

Contracted firms specializing in utility program evaluation included DNVGL, Opinion Dynamics Corp., The Cadmus Group, Inc., and others. Generally, outside evaluator time was attributed to specific programs and the FTEs associated with those hours added to program totals. Peregrine calculated 4 FTEs of labor were associated with evaluation activity in 2016.

### **Direct Service Providers**

The Direct Service Provider category is comprised of specialized firms engaged by National Grid to promote and deliver Rhode Island energy efficiency programs, engineers and other technical support providers, and the suppliers and installers of energy saving equipment.

This category includes, but is not limited to:

- **National Grid account managers.** National Grid staff will provide outreach and direct technical assistance to customers, particularly for large commercial and industrial retrofits, and new construction<sup>1</sup>.

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<sup>1</sup> As noted above in the National Grid description under Program Support Services, all National Grid FTEs are reported together in a separate category for purposes of this study and not allocated to specific programs or groups of programs.

- **Energy services companies specializing in providing field services and installation program management.** National Grid contracts with these firms to deliver individual programs to particular market sectors. In this capacity, they can provide outreach and intake of service requests, schedulers, technical specialists, engineers, installers and trades people, managers and supervisors, warehouse materials handlers, quality assurance inspectors, bookkeepers, and data entry staff.
- **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.
- **Electrical and mechanical engineers employed by contracted consulting firms.** National Grid assigns and dispatches these 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.
- **Equipment suppliers.** National Grid encourages suppliers throughout the Rhode Island service territory to market and sell targeted energy efficient equipment and approved materials directly to National Grid customers and installation contractors.
- **Independent installation contractors.** These are the “feet-on-the ground” that install energy efficient equipment and approved materials for National Grid customers in one or more market sectors, often as subcontractors to National Grid-designated Program leads, but also, increasingly, as self-directed installation vendors.
- **Quality assurance inspectors.** National Grid also contracts with inspectors that are independent of service delivery contractors to check a sample of completed installations to ensure that program standards are being met and that projected savings will likely be realized.

The role and contributions of Direct Service Providers is described in detail in the next section.



## Energy Efficiency Program Delivery

National Grid uses different energy efficiency program delivery strategies for different market sectors and sub-sectors. These strategies will vary with fuel type (i.e. electric vs. natural gas customers), purchasing requirements and characteristics of different customer rate classes, cost and benefits to customers of different end-use technologies, and whether the program's objective is to affect energy efficiency in current operations or to reduce future energy use in new construction.

While program strategies remained relatively constant from 2015 to 2016, individual programs were adjusted and tweaked in response to emerging technology and market opportunities. This section describes how National Grid delivered specific electric and gas energy efficiency programs and services in 2016 and who was responsible for program delivery.

### Residential Programs

In 2016, National Grid's residential programs offered 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. Program services included home energy audits with installation of low-cost materials, facilitation of full weatherization (insulation and air sealing) and heating system replacement, rebates through National Grid-sponsored market channels to encourage purchase of high efficiency appliances and lighting, and a number of behavioral modification initiatives. Programs sought energy use reductions by all residential customers, regardless of income level, living in single-family dwellings, 2 to 4 unit buildings, and larger multi-family residences of 5 to 20 units and 20 units or greater.

One of the greatest challenges to delivering efficiency services to the large number of diverse residential customers across Rhode Island is to get their attention. In response, National Grid has created a set of residential programs that are multi-faceted market interventions, which use mass-marketing and branding strategies to deliver services at scale. Larger energy services companies who specialize in supporting utility energy efficiency initiatives have been hired to manage and deliver individual programs. An energy service company's role is, typically, to engage a wide range of players, both buyers and sellers of energy efficiency products and services, that are needed to make a residential sector sub-market work, bring them together through education, training, and technical support, and facilitate investment decisions that resulted in energy use reduction.

The primary focus of residential programs in 2016 continued to be weatherization and heating system replacement, residential lighting conversion to LED technology, energy efficient appliances and equipment, and energy efficient new construction. National Grid staff described

achieving weatherization goals in 2016 to be a “harder lift” than in 2015<sup>2</sup>. More funds had to be committed to marketing, and financial incentive levels were increased. While total customer engagement and audit delivery remained pretty consistent with 2015, the much warmer winter and low energy prices dampened interest in follow-on weatherization and replacement of heating systems.

Delivery information on each program is detailed below.

### **EnergyWise Single Family (gas and electric)**

In 2016, 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.

- Participants received technical assistance to identify how and where to improve building insulation and whether to replace appliances, heating systems, and thermostats with high efficiency models.
- As part of the energy assessment, field staff installed energy efficient lighting, low-flow showerheads, faucet aerators and smart power strips.
- They also wrote work orders for weatherization services (insulation and air sealing) by insulation contractors and for new high efficiency heating and hot water system installations by plumbing and heating contractors, if warranted. EnergyWise would pay a significant portion of the cost of weatherization and/or a qualifying replacement heating system.
- After the installation of insulation and heating equipment, quality assurance inspections were provided to confirm that equipment was installed properly.
- The program continued to offer the Rhode Island Heat Loan, which provides 0% interest financing to eligible single-family customers to support the adoption of recommendations made during the assessment. Customers who live in one to four unit single-family residences are eligible for a 0% interest loan of a minimum of \$500 up to \$25,000 with terms up to seven years.

### ***Delivery:***

For 2016, National Grid again contracted with RISE Engineering, based in Cranston, Rhode Island, to manage and deliver the EnergyWise Single Family program. RISE employees, totaling 53 FTEs, involved in program delivery included program managers, office and field staff supervisors, field auditors, field installers and technicians, field inspectors, intake staff and

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<sup>2</sup> Interview with National Grid Residential Program Manager Angela Li, March 8, 2017.

schedulers, warehouse and material management staff, electricians, quality assurance / quality control inspectors, and accounting and contract oversight personnel.

RISE confirmed that demand for EnergyWise program services declined in 2016<sup>3</sup>, compared to high service demand the previous year driven by higher fuel prices and cold winter weather. While RISE had added field auditors, field technicians, and inspectors in 2015 in response to increased customer participation, RISE field staff completed 9,522 energy audits in 2016, down from 10,550 in 2015 (but still up from the 8,654 home energy audits completed in 2014)<sup>4</sup>. While RISE once again sub-contracted with Ocean State Energy Audits<sup>5</sup> to perform single-family audits and related installation work, they only required 0.5 FTEs in field support from Ocean State, compared to 3 FTEs in 2015.

Work orders written by auditors resulted in 2,674<sup>6</sup> customers proceeding with weatherization services (i.e. insulation and air sealing) in 2016. This was 5% fewer than in 2015. 25 independent insulation contractors, 17 of which were based in Rhode Island, installed the insulation and air-sealing materials recommended by RISE. Insulation crews were led by a BPI-certified crew chief. RISE received a program management fee for its services for this program that included a fee per audit, a fee per item installed by RISE staff, and a percentage mark-up (i.e. cost plus) on insulation work completed by contractors.

Independent heating contractors installed high efficiency heating system components, again using work orders generated by field auditors. Almost 1,000 gas-fired systems, up 10% from 2015, and 320 liquid fuel-fired systems (oil or propane), down 20% from 2015, were installed as a result, as well as many new energy-efficient domestic hot water systems.

As part of EnergyWise Single Family, RISE helped customers to secure HEAT loans to finance the installation of more efficient heating systems, hot water systems, and insulation upgrades. There were 806 closed HEAT loans in 2016 through private lending institutions.

CMC Energy Services, Inc. provided 864 quality assurance (QA) inspections of a sample of EnergyWise Single Family residential customers served<sup>7</sup>. 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

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<sup>3</sup> Peregrine interview with Brian Kearny of RISE Engineering, February 23, 2017

<sup>4</sup> Rise provided raw activity data for work occurring in 2016. These numbers may differ from what is included in the National Grid 2016 Annual Report due to when projects were invoiced and paid.

<sup>5</sup> Ocean State Energy Audits also provides audits for income-eligible National Grid customers on a sub-contracted basis for RI Community Action Agencies.

<sup>6</sup> Source: RISE Engineering

<sup>7</sup> Source: CMC Energy Services, Inc.

customer satisfaction with results. A unified workforce of 21 field inspectors conducted single family and multifamily residential QA visits, as well as commercial program inspections, in Rhode Island and Massachusetts, supported by schedulers and data entry staff. Approximately 2.1 FTEs of this team were engaged in all of National Grid's residential programs (single family and multifamily) in Rhode Island.

### **EnergyWise Multifamily (gas and electric)**

In 2016, 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. A designated primary point-of-contact managed and coordinated services offered through the full portfolio of National Grid programs, including EnergyWise Multifamily, Large Commercial Retrofit, Income Eligible Services (i.e. Low Income), and ENERGY STAR® HVAC.

#### ***Delivery:***

RISE Engineering also managed the EnergyWise Multifamily Program for National Grid. RISE staff included a program manager, a technical services director, field coordinators, field auditors, warehouse materials handlers, and project intake and coordination staff. This same staff was responsible for providing the Income-Eligible Multifamily Program described below. RISE had a combined 17 FTEs working on the EnergyWise and Income Eligible Multifamily programs<sup>8</sup>.

RISE engagements in this sector resulted in a total of 11,402 units (5,501 income-eligible and 5,901 market rate) participating in the program in 2016, up from 4,876 income-eligible and 4,312 market rate units in 2015. Market rate units were in 64 apartment sites and 70 condominium complexes. Income-eligible units were at 81 different sites.

RISE staff 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). RISE assigned weatherization, electrical, and plumbing installation work to 30 sub-contractor companies for 5-20 unit buildings. For larger buildings, work was competitively bid out to independent contractors who installed weatherization materials (insulation and air sealing) and other equipment. This program was coordinated with the Commercial Multi-family program for

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<sup>8</sup> Source: RISE Engineering



gas heating systems in centrally gas-metered buildings.

As noted earlier in the description of the EnergyWise Single Family program, National Grid engaged CMC Energy Services to perform independent quality assurance checks on multifamily services.

### **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. Builders say that the incremental cost of these enhancements are more than offset by faster home sales and fewer call backs to address owner concerns.

In 2013, the program had adopted a performance-based tier structure with corresponding financial incentives and began to capture savings from the Renovation/Rehabilitation and Deep Energy Retrofit offerings. This continued in 2014, 2015, and 2016, with additional incentives being offered, but with increases in performance verification as well. Incentives paid were based on the percentage of improvement over an established baseline.

Program performance in 2016 exceeded performance in 2015 according to National Grid. The availability of better heat pumps resulted in an increase in the number of electrically heated homes that met program guidelines. A total of 16 homes qualified as “Tier 3”, well beyond the year’s goal of 10 homes in this Tier, meaning that their performance significantly exceeded the efficiency of the “user defined reference home”, (i.e. the average performance of actual homes). These homes received a \$4,000 incentive ‘bump’. National Grid also received two applications for its Zero Energy Challenge from homes that were energy neutral.

### ***Delivery:***

National Grid contracted with CLEAResult, a rapidly growing national energy services provider that has been expanding its foothold in southern New England, to deliver the Residential New Construction program in 2016. CLEAResult had purchased Conservation Services Group (CSG), based in Westborough, Massachusetts, in mid-2015. CSG has delivered this program since 1998.

CLEAResult continues to provide this program out of Westborough and East Greenwich (Warwick), Rhode Island. Staff located at the Westborough office focused on program management, data management, and administrative responsibilities, while four staff based in

the Rhode Island office, up from three in 2015, provided field support and project management services for individual projects.

Field personnel provided trainings and reviewed plans submitted by builders and developers. A continued emphasis has been to try to reach out to all Rhode Island builders to continue to expand the impacts of the program statewide. Field staff also modeled proposed buildings and completed inspections that verified and certified that construction practices for participating buildings receiving performance ratings. In 2016, 526 units of housing and homes received HERS ratings, up from 442 the year before<sup>9</sup>. 351 of these units rated in 2016 were multifamily housing units, up from 239 in 2015. The program team continued to bring new builders and developers into the Residential New Construction program in 2016, continuing National Grid's success with market transformation.

With approval from National Grid, Peregrine has not included labor hours associated with any new construction affected by the program, beyond the hours for program implementation services provided by CLEAResult. While incentives offered by National Grid influence the installation of more efficient materials and products in a new home, such installations do not substantially increase total labor hours. The labor needed to construct a high-efficiency home is more or less the same as for buildings that meet current code requirements. In addition, these new homes would likely have been built without the intervention and support of the program, even though they would not achieve the same standards for efficiency in their design and function. Therefore, no construction labor component is counted for purposes of this study.

### **Residential Codes and Standards Initiative**

The Codes and Standards Initiative has been the complement to the New Construction program. The Initiative's goal has been to provide information and technical support to the construction / design community and to code officials in municipalities to increase code compliance. It has also sought to promote advanced and stretch codes like the Rhode Island Green Construction Code.

The Rhode Island Building Commission had anticipated adopting a new energy code in 2016, but the Office of Regulatory Reform requested that all sections of the building code undergo an economic analysis. This has resulted in a delay in adoption of the new energy code. While the energy code was reviewed first and successfully passed the economic test, review of the remainder of the code is ongoing and may not be completed until late 2017. National Grid had planned to support trainings concerning the new energy code in 2016, but that effort was put

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<sup>9</sup> Source: CLEAResult

off until the code is fully adopted. Instead, training in 2016 focused on areas of the existing code where compliance has been most problematic<sup>10</sup>.

***Delivery:***

National Grid continued to contract with CLEAResult in 2016 to lead this initiative in parallel with the Residential New Construction program. CLEAResult coordinated and conducted nine residential classroom trainings attracting 256 attendees and 17 in-field residential trainings that had 109 participants<sup>11</sup>. In addition, trainers delivered three commercial classroom trainings with 66 attendees and three in-field commercial trainings that had 48 attendees. Two subcontractors assisted with these trainings: Energy Resource Solutions from Andover, Massachusetts, and Steven Turner, Inc. from Providence, Rhode Island. CLEAResult also had a circuit rider to provide on-site technical assistance to municipalities as needed.

**Residential Home Energy Report Program (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 through 2016. The Rhode Island HER program uses historical energy usage benchmarking and social comparisons to encourage energy efficient behaviors by residential customers.

The program provides a high volume of emailed and mailed reports to customers multiple times per year, with customer-personalized energy usage information, recommendations, and links to National Grid's other residential energy efficiency programs and services. The objective of these reports is 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:***

Opower, with offices in Arlington, Virginia, originally developed the Rhode Island HER program, using proprietary behavioral analysis and energy audit software. In May 2016, Oracle Utilities purchased Opower. 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 audit reports in Rhode Island and elsewhere across the U.S. In 2016, these data-driven, software-generated reports were provided to 270,257 residential electric and 134,177 residential gas National Grid customers in Rhode Island. Comparing program participants to a control group, Opower has estimated that their

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<sup>10</sup> Source: CLEAResult

<sup>11</sup> Source: CLEAResult

reports result in a 10% – 20% lift in program participation<sup>12</sup>.

### **Residential Community Based Initiatives (gas and electric)**

Rhode Island Energy Challenge has been a collection of local marketing initiatives intended to leverage trusted community-based relationships in order to promote National Grid’s residential energy efficiency programs in targeted communities. Community-based initiatives resemble political campaigns that are trying to get out the vote. They are run through communities as municipality-wide initiatives or as market-segment focused efforts, with the goal of increasing awareness of and participation in National Grid offerings and driving residential customers to make behavioral changes that reduce energy use.

#### ***Delivery:***

National Grid contracts with Connecticut-based Smart Power to coordinate the Rhode Island Energy Challenge. The program had a Rhode Island-based manager and is supported by operations staff in Connecticut. At the community level, the program enlisted volunteers to promote participation, though these volunteers are not counted for purposes of this study. Major community-based energy efficiency initiatives in 2016 targeted Charlestown, Narragansett, Bristol, and Barrington and challenged each to get 5% of its households to reduce their energy use by participating in National Grid programs and changing behaviors. Successful communities received cash prizes that could be used for local municipal energy upgrades. Another initiative in Tiverton/Little Compton focused on installation of photovoltaic technology.

### **ENERGY STAR® Lighting (electric)**

ENERGY STAR® Lighting is an “upstream” or “point-of-purchase” initiative implemented jointly with other regional utilities. The program’s approach is to have retailers discount lighting products that National Grid would like residential customers to purchase, providing instant rebates and special promotions at retail stores. A mail-order catalog and online store were also available to customers for lighting purchasing.

LED lighting is at the center of this program, displacing both traditional incandescent lights and the compact fluorescent lights that dominated screw-in incandescent lighting replacement in recent years. By bringing the cost of these highly efficient and long-lasting LED lamps in line with incandescent lamps at the check-out line, the program has accelerated the transformation of this market. National Grid reported that new retailers joined the program in 2016 and that sales of LEDs were significantly higher than in 2015, with energy savings exceeding goals by 34%.

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<sup>12</sup> Source: Oracle / OPower

***Delivery:***

Lockheed Martin Services, with an office in Marlborough, Massachusetts, again supported the residential consumer lighting initiative in 2016, providing direct outreach and education to both product retailers and manufacturers. Lockheed works with corporate decision makers to enlist chains of stores such as Home Depot, Lowe's, TrueValue Hardware, ACE Hardware, Aubuchon and other in 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.

Staffing in 2016 included a full-time Rhode Island-based field representative and a nearly full-time (90%) Rhode Island-based account representative to work with retailers statewide, providing product information, training them to upsell to more efficient products, offering staff events, conducting in-store surveys and point-of-sale promotions. Lockheed Martin again employed a half-time School Fundraising Coordinator in 2016, who helped organize school-based lighting product and power strip purchasing and distribution.

Massachusetts-based Energy Federation, Inc. (EFI) provided a product catalogue and online store for National Grid and other regional utilities to promote and supply qualified products and to provide technical assistance to customers. This fulfillment function employed a manager, required a call center that took orders, and included warehouse personnel serving orders from Rhode Island customers, customers from elsewhere in New England, and nation-wide. As noted earlier in this report, EFI also processed incentive payments to retailers and manufacturers that provided point-of-purchase discounts for lighting.

As outlined in the program description, the ENERGY STAR® Lighting initiative provided point-of-sale discounts on preferred products at retail outlets. With respect to job impacts of the program, while both participating Lockheed Martin and EFI staff were counted by Peregrine, no retail outlet employees were included in study counts since the sale of these products had no discernible incremental effect on store employment.

**ENERGY STAR® Appliances (electric)**

In 2016, ENERGY STAR® Appliances was again run in collaboration with other regional utilities to promote the purchase of high efficiency household appliances, including kitchen appliances, and electronics. These appliances carry an ENERGY STAR® label. The program also offered refrigerator recycling, which helped address a significant barrier to purchasing a more efficient refrigerator, while removing non-efficient units from the market, recycling their components, and capturing and properly disposing of refrigerants.

Unfortunately, as ENERGY STAR® has become the standard for refrigerators, consumers have become resistant to spending more for the next level of increased efficiency, and additional



utility incentives are not cost effective for many products. On the other hand, other consumer products like energy efficient dehumidifiers and pool pumps are proving to be applicable to this upstream, point-of-purchase strategy and volume of these products sold increased in 2016.

***Delivery:***

As is the case with ENERGY STAR® Lighting, ENERGY STAR® Appliances is primarily a retail-store based initiative. And as was the case with ENERGY STAR® Lighting, retail outlet employees were not counted for this study since the sale of these products had no discernible incremental effect on store employment (i.e. it primarily resulted in different appliance choices by consumers). Again, as with ENERGY STAR® Lighting, Lockheed Martin Services engaged major retail outlets, providing the same support as for ENERGY STAR® Lighting.

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. In 2016, ARCA acquired the assets of the previous service provider in Franklin, Massachusetts for refrigerator collection, dismemberment, and recycling. Lockheed Martin also engaged the ECO Depot (Rhode Island Resource Recovery Corporation) in Johnston, Rhode Island to recycle replaced dehumidifiers.

**ENERGY STAR® HVAC (gas and electric)**

The Rhode Island Heating and Cooling program (formerly the High-Efficiency HVAC programs: *Gas Heat* [heating] and *CoolSmart* [cooling]) promotes the installation of high efficiency gas heating and electric cooling systems via tiered rebate levels for more efficient technologies including ductless mini-splits, heat pumps, heat pump water heaters, boilers, furnaces, Wi-Fi thermostats, boiler reset controls, and furnaces equipped with high efficiency fans. The program has provided in-depth contractor training for design, installation, and testing of high efficiency systems. Furthermore, the program provided quality installation verification training, ensuring that all equipment is properly sized, installed, sealed, and performing. In 2016, the high price point for condensing gas water heaters, their relatively low efficiency, and a lack of utility incentives for purchasing this equipment resulted in very little activity in this market. With respect to electric heating products, the volume of heat pump water heaters purchased and the installation of mini-splits providing both heating and cooling has increased.

***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. Staffing associated with this program is quite modest. Lockheed Martin Services has also been involved in this program, promoting advanced thermostats and energy efficient water heaters to big box home improvement retailers.



In evaluating FTEs associated with the program, Peregrine counted the employees of vendors under direct contract to National Grid, but did not include labor associated with installation of this equipment, since it did not increase incrementally as a result of the Program.

### Income Eligible Residential Programs

National Grid offers Income Eligible (low-income) 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 was already eligible to receive energy-related assistance through federal and state programs. National Grid's program strategy in this market was to support, complement, and leverage the resources and services provided by these other programs.

Specific 2016 Income Eligible Residential Programs included:

#### **Income Eligible Single Family (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 lighting, appliances, heating systems, domestic hot water equipment, and weatherization measures. Traditionally, energy services were 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) to deliver the federally funded Weatherization Assistance Program (WAP) and the Low Income Heating Assistance Program (LIHEAP). Services were fuel-blind and available to gas, oil, and electric heat customers as budgets allowed. Six CAP agencies provided statewide coverage to income-eligible Rhode Island residents. With the participation of National Grid in energy efficiency services delivered by the CAP agencies to this market, WAP budgets were significantly leveraged and energy efficient installations significantly expanded. In 2016, 38 full-time CAP agency staff provided weatherization-related services across Rhode Island, up from 34 FTEs in 2015 and 32.5 FTEs in 2014.

#### ***Delivery:***

In July 2013, CLEAResult, working out of offices in Providence, Rhode Island, was selected by National Grid to manage its Income Eligible Single Family program and has continued in that role through 2016. Under CLEAResult's management, productivity and quality of service delivery to low income residents has markedly improved. CLEAResult has provided training, quality control, and oversight of National Grid-funded services and installations delivered through CAP agencies. CLEAResult also 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. CLEAResult staffing included a program manager, an installation quality assurance / quality control inspector, and

administrative support.

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 installers, and fans; and comprehensive audits that do both. BPI-certified auditors complete building assessments and work orders. Special AMP (Appliance Management Program) auditors install lights and refrigerator measures. In 2016, 2,504 AMP installations were provided, up from 2,400 in 2015<sup>13</sup>.

Independent weatherization contractors install the insulation and completed air sealing for the CAP agencies. These contractors were selected off a state-approved list and offered fixed pricing statewide for installed measures. Each agency had three to five insulation contractors it typically worked with. The CAP auditing staff inspects completed insulation work post-installation to ensure it was properly installed. Heating system upgrades are put out to bid to heating contractors, and heating contractors also were used for post-installation inspections.

In 2016, CAP agencies delivering the combined National Grid program and WAP achieved weatherization (insulation and air sealing) installations for 659 National Grid gas customers and the installation of 213 high-efficiency, gas-fired heating systems. In addition, 456 oil- and propane-heated buildings received weatherization, and 270 received new oil heating systems<sup>14</sup>.

ACTION, Inc., based in Massachusetts, manages 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.

#### **Income Eligible Multifamily (gas and electric)**

Since 2013, National Grid has consolidated energy efficiency offerings for income eligible multifamily properties with five or more units into 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 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

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<sup>13</sup> Source: CLEARResult

<sup>14</sup> Source: CLEARResult

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.

Support for energy efficient construction of new income-eligible units is provided by CLEAResult through the Residential New Construction program.

### Commercial and Industrial Programs

In 2016, 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 targeted 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 or "comprehensive" measures are evaluated and approved for incentives based on actual total savings these often more complex measures are 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" or "deeper" efficiency improvement.

Over the past five years, the delivery of C&I offerings has become increasingly "market-based", compared to residential programs (though the Small Business program, described below, uses a preferred contractor to install energy conservation measures, primarily lighting, at a heavily subsidized cost to customers, in the same way EnergyWise does in the residential market).



C&I programs are largely structured to allow and encourage independent product and service providers to market and deliver services to National Grid customers, driving sales using incentives available to them from National Grid for purchase and installation of qualifying products. This strategy enables customers to work within existing contractor relationships to receive program incentives, and likewise allows contractors to work within existing customer relationships to identify opportunities for installing energy efficient equipment that National Grid wants to promote. It also meant that multiple vendors can compete for a customer's business, while assuring the customer that they could bring the same National Grid incentives.

From both a jobs and a savings perspective, this has resulted in the numbers of energy services businesses directly participating in National Grid programs increasing significantly and has created new and additional opportunities for diverse vendors to promote emerging energy efficient technology to new and existing clients.

Comparing 2016 to 2015 commercial and industrial programs, National Grid program manager Ben Rivers observed the following trends:

- The Upstream Lighting program, described below, with its strategy of bringing LED lighting to customers at discounted prices is cutting into customer participation in the Small Business Direct Install program.
- Participation by municipalities in efficiency initiatives is increasing, with conversion of streetlights to LED technology a growing part of municipal energy reduction strategies.
- Customers are installing an increasing number of combined heat and power systems.
- More industrial process improvements are being identified and installed, and grocery stores are continuing to opt for improvements to energy efficiency in refrigeration.
- An increasing number of three-year Strategic Energy Plans for large comprehensive retrofits were negotiated with large organizations and institutions.

#### **Small Business Direct Install (electric)**

In 2016, 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 demand of less than 200 kW were eligible to participate. The customer cost share for installations was 30% of the total cost of a retrofit.

While the program met its goal for the year, driven by new opportunities to replace linear fluorescent lighting with new linear LED products, customer participation in the program declined. This may reflect higher market saturation levels or the direct availability of discounted LED lighting to customers through the Upstream Lighting program. Other Small Business program changes in 2016 included elimination of custom measures through the program and corresponding reallocation of some program budget to other programs.



***Delivery:***

The Direct Install program's lighting and non-refrigeration measures were delivered by RISE Engineering of Cranston, Rhode Island and sourced from one product vendor (Rexel, formerly Monro Distributing). Both RISE and Rexel were selected through a competitive bidding process.

There were 1,111 customers who participated in the Direct Install program in 2016, down by 17% from the 1,340 customers who participated in this program in 2015<sup>15</sup>. RISE provided turnkey installation services to this market, with annual goals, and accounted for just over 88% of the customers serviced. The remaining 11.6% of customers served was through the Customer Directed Option or "CDO", described below. CDO projects secured 19% of incentives provided through the Direct Install program, reflecting that these projects were larger on average than those completed by RISE.

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.

RISE maintained a supervised warehouse for material distribution and materials handlers. Electricians were both RISE employees and employees of sub-contractor Superior Electric. RISE also employed back office and accounting staff to service this program. In general, RISE employees supporting this program were salaried or hourly, while subcontractors were paid for installation work on a piece basis.

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. In 2016, total employment from RISE and its sub-contractor Superior Electric associated with the Small Business program totaled 38.9 FTEs, down just over 10% from 43.5 FTEs in 2015<sup>16</sup>. RISE also used two HVAC firms as controls subcontractors for installation of custom measures.

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<sup>15</sup> Source: RISE Engineering. These numbers may differ from National Grid's year-end report participation counts due to the fact that it applies net-to-gross factors and ratios to obtain an estimate of unique participants.

<sup>16</sup> Source: RISE Engineering

As noted above, customers could also choose to use their own preferred electrician through the “Customer Directed Option” of the Small Business program. In 2016, 129 customers used this option<sup>17</sup>.

As was the case with residential programs, National Grid used CMC Energy Services, Inc. to provide quality assurance inspections of Small Business projects. Field inspectors conducted QA visits in Rhode Island and Massachusetts for the Small Business program as well as for the Large Commercial Retrofit and Upstream Lighting programs (described below), supported by schedulers and data entry staff. Approximately 2.25 FTEs of this team were engaged in National Grid’s commercial and industrial programs in Rhode Island.

### **Large Commercial Retrofit (electric)**

Large Commercial Retrofit is a comprehensive program designed to promote replacing old, but still operating, less efficient energy equipment and systems with prescriptive and custom configurations of energy efficient electric equipment. Energy efficiency improvements installed through the program include: lighting; motors and drives; heating, ventilation and air conditioning (HVAC) systems; building controls; combined heat and power systems; and street lighting.

As a retrofit program, it targeted replacement of existing equipment or reconfiguration of existing systems. All commercial, industrial, and institutional customers were eligible to participate. Participating customers tended to be larger (i.e. have a monthly demand of 200 KW or more) or were pursuing “custom” electricity saving measures not available through the prescriptive Direct Install program. As was the case for the Small Business program, National Grid paid incentives to assist with defraying part of the material and labor costs associated with installing energy efficient equipment; but incentives available through this program were generally less generous than through the Direct Install program, with customers paying a larger percentage of the installed cost of measures.

National Grid also offered technical assistance to customers to help them identify cost-effective conservation opportunities.

### ***Delivery:***

The Large Commercial Retrofit program in 2016 continued to be primarily a market-based initiative with no formal program administrator or designated suppliers. National Grid established performance standards for energy measures and allowed customers to select suppliers and installation vendors. Again, as described above, National Grid paid incentives that

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<sup>17</sup> Source: RISE Engineering

helped defray a portion of the material and labor costs associated with installed energy efficient equipment.

National Grid statistics for the 2016 Large Commercial Retrofit program identified 520 project applications for 394 individual customer account numbers. Installers of record for these projects, based on National Grid statistics, were National Grid-approved Project Expeditors or “PEX” (177 projects or 34%), other installation contractors (246 projects or 47%), and the customers themselves (96 projects or 18%). It is likely that the customer-installed projects also involved installation contractors though no FTEs for these projects are included in counts since installer information is not available.

National Grid’s program statistics for 2016 showed that the total value of project installations performed through the electric Large Commercial Retrofit program was nearly \$40,400,000. Of this total, nearly 70% of these projects (\$27,500,000) based on project value, was lighting retrofits.

Of 177 projects pursued, secured, managed, and installed by 11 Project Expeditors, 115 (65%) were lighting retrofits, 22 were HVAC projects (including controls), eight (8) were variable speed drives, and the additional 32 were “custom” or comprehensive projects, often involving multiple energy efficient technologies that could also include lighting retrofits, that received customized incentives from National Grid. Four PEX vendors installed 158 (89%) of the 177 projects developed and installed by the PEX vendor group: Energy Source, Inc. (78), RISE Engineering (43) Energy Conservation, Inc. (21), and ENE Systems (16). Continuing a growing trend observed since 2013, these PEX engaged dedicated sales / project management staff and aggressively pursued potential customers, in many cases then subbing out the field work to licensed electrical contractors and technology specialists who received unit-based fees for completing installations.

In addition to the Project Expeditors, there were one hundred other named Installation Contractors active in 2016 in the Large Commercial Retrofit program that used the program to induce customers to upgrade existing systems to improve energy efficiency or to purchase and install qualifying energy efficient equipment. These vendors included general energy contractors and energy services companies, as well as purveyors of energy saving technologies, such as energy management systems, advanced lighting systems, process equipment, HVAC components, etc. Again, between them, they completed an additional 246 projects. Of these projects, 135 were for lighting (55%), 62 were “custom” projects, 29 were for variable speed drives, and 18 were HVAC projects.

### **Upstream Lighting (electric)**

National Grid’s Commercial and Industrial Upstream Lighting program encourages customers to choose higher efficiency lighting products at the point of purchase. The original big idea that launched this program was the recognition that commercial customers were going to larger

lighting distributors to purchase stocks of replacement lighting to have on hand as lamps burned out and for large-scale change-outs. National Grid reasoned that if a customer again purchased and installed the same product as was being replaced, this could be a major lost opportunity for efficiency improvement. But if the customer could be induced to purchase and install a more efficient product, both National Grid and the customer would realize the benefits and savings of energy use reduction. With the rapid advent and availability of more efficient and longer-lived LED alternatives to fluorescent lighting, the cost of this potential lost opportunity increased significantly.

The Upstream Lighting's success has been driven by three key program design elements: first, bring the incremental cost of the more efficient National Grid-preferred lighting products available from distributors in line with now-conventional products so customers would opt for high efficiency; second, offer instant rebates by working with manufacturers and distributors to create purchase price parity at the point-of-sale and eliminate the stigma of the mail-in rebate process; and third, stipulate that the purchased products could not be purchased and stored to replace failed lamps in the future or be resold, but must be installed immediately to generate savings for National Grid and the customer.

Over the past three years, the program has seen a rapid growth in sales of easily installed LED products that can substitute for compact and linear fluorescents in existing fixtures. While there is some market saturation already in PAR lamps, there remains considerable opportunity for substituting linear LED lamps in existing fluorescent fixtures. There is also a growing movement to drive more luminaire and fixture sales (e.g. stairway fixtures) that would result in additional savings by also replacing the ballasts in older fluorescent fixtures with the lower watt LED drivers in new fixtures<sup>18</sup>.

- In 2014, 429,034 units of lighting were sold through Upstream Lighting. Of these, 261,820 (61%) were high efficiency linear fluorescent lamps (LFLs). There were also 167,214 units of LED product sold.
- In 2015, the total volume of product sold through Upstream Lighting fell to 327,420, in part due to less promotion of the program by National Grid, a drop of 24%. During that year, the number of LFLs sold fell 75,520, a drop of 71%, while sales of LEDs increased to 251,900, growing 50%.

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<sup>18</sup> Interview with Ben Rivers, National Grid, March 6, 2017

- In 2016, 292,156 units of lighting were sold through Upstream Lighting. Of this sales volume, only 46,882 units of LFLs were sold, down 82% from 2014. LED sales through upstream represented 245,274 units of lighting, equal to 84% of total sales.<sup>19</sup>

***Delivery:***

National Grid contracts with ECOVA to manage, support, and promote Upstream Lighting. ECOVA has engaged manufacturers and enlisted a growing number of distributors, offering incentives from National Grid, if they will reduce list prices of specified energy efficient products to electrical contractors and businesses, all with the goal of transitioning and transforming stocking practices and customer purchasing behavior. ECOVA processed reimbursement of suppliers for discounts provided and managed a quality assurance process to ensure that recorded sales were legitimate. In 2016, new products continued to be added to what is available through the program to continue to accelerate the market transformation process.

National Grid also contracted with CMC Energy Services in 2016 to conduct inspections of 5-10% of sales, using lists provided monthly by ECOVA, to confirm that purchased product had been installed<sup>20</sup>. Larger distributors were audited monthly to verify that product was going to the customers of record.

In reviewing records maintained by ECOVA of who was purchasing products from distributors, Peregrine determined that installation contractors were also making use of the Upstream Lighting program. Digging into program data provided by ECOVA and National Grid, Peregrine found that over 115,000 units of product (39% of the Upstream total in 2016) were purchased by electricians that were, presumably, installing products at customer facilities. Electrical contractors were, it seems, using the discounted pricing of these products available from the lighting distributors they frequent to convince their customers to replace standard efficiency lighting with high efficiency product, further driving the market transition.

Peregrine applied the same product-specific per-unit-installed times that Peregrine used to calculate FTEs for lighting installations by electricians under the Direct Install and Large Commercial Retrofit programs. We reasoned that because those installation times reflected the high productivity of experienced electricians incentivized to work quickly, the resulting FTEs calculated would be a conservative number that did not overstate labor hours. Using this methodology, we calculated that 18.5 FTE field electricians would be needed to install the production purchased through Upstream Lighting by installation contractors. Further, it is likely that a significant portion of Upstream Lighting product sold where customers were the buyer of

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<sup>19</sup> Source: Ecova

<sup>20</sup> Source: CMC Energy Services

record was also being installed by uncounted contracted labor, though Peregrine was not able to confirm this hypothesis.

### **Technical Support Services (gas and electric)**

#### ***Engineering support***

To further support large commercial customers, National Grid contracted with consulting engineers who could be assigned at the request of an account manager to assist a customer with identifying potential custom projects and to evaluate or model the energy savings that would result, including completing required program applications. Some of these consultants brought expertise in such specialties as data center energy efficiency improvement or laboratories and clean room technology. In other situations, the customer could propose his own engineer with a scope of work that National Grid might elect to support. Additional support was available through National Grid from contracted consulting engineers 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.

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

In a similar vein, National Grid contracted with CLEARResult, the parent company of Portland, Oregon-based PECl, 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. Working in 60 kW or larger supermarkets, CLEARResult has focused on refrigeration improvement and some lighting. CLEARResult employed auditors and other technical staff to identify and develop refrigeration improvement projects, helped them engage contractors to complete upgrades, provided technical support as needed, and performed quality assurance inspections of installations.

In 2016, as a result of CLEARResult's efforts, 133 equipment upgrades were completed at 58 locations for 14 customers, up from 114 projects in 2015<sup>21</sup>. Savings exceeded 4,000,000 kWh. Participating customers were part of local and regional chains and secured through outreach in partnership with the RI Food Dealers Association. Three CLEARResult field staff visited and worked on-site with Rhode Island retailers to develop these projects. Over 25 CLEARResult staff logged 2.3 FTEs providing support services, with installations through the Large Commercial Retrofit program completed by 19 independent contractors selected by customers.

National Grid recognized Dave's Marketplace, a local independent grocer with nine stores and a commissary all in Rhode Island, as Energy Smart Grocer of the Year for 2016, based on savings

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<sup>21</sup> Source: Peregrine interview with CLEARResult

through the program.

### ***Industrial Energy (gas and electric)***

In 2016, National Grid focused and expanded the support provided by Reston, Virginia-based Leidos Engineering, Inc. to help Rhode Island and Massachusetts manufacturers to identify and implement energy efficiency improvements in industrial processes. Working out of offices in Framingham, Massachusetts, Leidos assisted National Grid customers to prepare 53 applications for custom measures through the Large Commercial Retrofit program. 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 users, and any current production issues. Following a guided walk-thru of the facility, Leidos engineers prepare a summary of opportunities and next steps, and depending on the interests of the facility, help identify vendors and prepare applications for National Grid incentives. Leidos had six staff supporting Rhode Island and Massachusetts manufacturers in 2016, with their Rhode Island involvement equal to 1.4 FTEs.

### **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.

For purposes of this study, only the engineering support assigned by National Grid has been counted towards the labor impacts associated with National Grid programs in 2016. As is the



case with Residential New Construction, construction jobs associated with commercial new construction were not counted because National Grid's involvement primarily impacts what equipment is installed, and construction labor does not measurably increase in these projects.

### **Commercial and Industrial Gas Programs**

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. Retrofit measures must demonstrate that they will result in added efficiency beyond existing still functional equipment. For new construction or with failed equipment, the "lost opportunity" rules apply. New equipment, to be eligible for incremental incentives, must exceed the efficiency of what codes require. All commercial, industrial, and institutional customers were eligible to participate. The Commercial and Industrial Gas programs also 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.

#### ***Delivery:***

RISE Engineering served as National Grid's Program Administrator for gas programs. RISE employees working on this project included a program manager and project coordinator, mechanical and electrical engineers, field staff performing audits and minor installations, and administrative personnel and support staff. A total of 5.7 FTEs from RISE serviced the Rhode Island program.

RISE Engineering's Program Manager has described RISE's role in the program as "the gears that keep moving applications forward." In 2016, 176 custom applications for gas customers were approved, completed, and paid in Rhode Island, with an additional 177 applications handled and still being processed. RISE received leads from a variety of sources, including project expeditors, mechanical contractors, and suppliers of equipment such as steam traps. RISE would then generate a Program application and as necessary or appropriate, review the customer proposal or undertake a scoping study. If the project proposed was acceptable (i.e. met National Grid's standards), RISE issued an offer letter to the customer authorizing the project to proceed. Customers had responsibility for arranging for and completing the installation. RISE performed a post-installation inspection and closed out the application so that the rebate could be issued. Total gas savings from the program increased in 2016.



## Employment Impacts of National Grid Programs

### 2016 Program Budgets and Full Time Equivalent Employment

Peregrine found that in 2016 an estimated 702 full-time equivalent jobs or “FTEs”<sup>22</sup> resulted from National Grid Rhode Island energy efficiency programs. The following table, “2016 Full Time Equivalents by Program,” summarizes the estimated job impacts from the 2016 electric and gas energy efficiency programs, by program sector and by individual program. In the table, Program Support Service Provider FTEs have been allocated and integrated into individual program FTE counts and program sector FTE counts based on spend. These are added to the Direct Service Provider count for each program. Smaller programs with limited FTE counts, including pilots and community initiatives were combined into the category titled “other”. Community Action weatherization assistance program staff and National Grid staff are counted in the 702 FTE total, but presented separately in the table.

#### Head counts vs. FTE counts

Peregrine was not able to develop actual head counts of individual workers participating in delivery of and support for the 2016 National Grid programs in Rhode Island. However, Peregrine can say with confidence, based on interviews with companies directly involved in the implementation of National Grid’s energy efficiency programs and through our analysis of field delivery of program services, that the number of individual workers employed in and compensated for work on Rhode Island energy efficiency programs far exceeds the total FTEs. Many companies we interviewed told Peregrine that they employed multiple individuals with specialized skills or in discrete roles who were necessary and important to delivering a comprehensive, high quality product or service; but only a portion of each employee’s total annual hours were attributable to Rhode Island energy efficiency activity. Some examples:

- National Grid reported over 80,433 employee hours billed against Rhode Island energy efficiency program-related accounts, equal to 39.9 FTE employees. Those hours and that FTE count represent the aggregate contributions of 198 individual National Grid staff supporting energy efficiency in Rhode Island: a mix of Rhode Island-dedicated employees and also employees with system-wide or similar other-state responsibilities who contributed fractionally to the Rhode Island FTE total.

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<sup>22</sup> Peregrine and National Grid have defined a FTE for purposes of this study as an average 1,760 annual hours of employment (or 220 total days of employment per FTE).

## 2016 Full Time Equivalents by Program

PROGRAMS	2016 SPEND	2016 FTES
<b>ELECTRIC PROGRAMS</b>		
<b>COMMERCIAL &amp; INDUSTRIAL (C&amp;I)</b>		<b>241.1</b>
Large Commercial New Construction	\$5,417,105	1.5
Large Commercial Retrofit	\$19,719,268	192.2
Small Business Direct Install	\$6,994,396	47.4
Other	\$76,738	
<b>LOW-INCOME RESIDENTIAL</b>		<b>42.3</b>
Single family Income Eligible Services	\$7,426,401	30.6
Income Eligible Multifamily	\$2,066,708	11.7
<b>RESIDENTIAL</b>		<b>104</b>
Energy Wise	\$8,906,422	79.2
EnergyStar Appliances	\$1,706,388	1.3
EnergyWise Multifamily	\$2,666,311	15.5
Home Energy Reports - Residential	\$2,722,434	2.7
Residential New Construction	\$656,845	2.4
Energy Star HVAC	\$1,169,809	0.3
Energy Star Lighting	\$7,705,936	1.3
Other	\$1,025,686	1.3
<b>NATURAL GAS PROGRAMS</b>		
<b>COMMERCIAL &amp; INDUSTRIAL (C&amp;I)</b>		<b>36.1</b>
Large Commercial New Construction	\$1,664,051	0.3
Small Business Direct Install - Gas	\$133,794	0.9
Large Commercial Retrofit	\$3,739,711	32.3
Commercial & Industrial Multifamily	\$580,145	2.7
Other	\$19,783	
<b>LOW-INCOME</b>		<b>41.4</b>
Single family Income Eligible Services	\$3,602,082	32.3
Income Eligible Multifamily	\$1,169,105	9.1
<b>RESIDENTIAL</b>		<b>159.3</b>
Energy Star HVAC	\$1,252,642	0.3
Energy Wise	\$6,824,093	140.1
EnergyWise Multifamily	\$1,372,422	15.4
Home Energy Reports - Residential	\$453,615	0.4
Residential New Construction	\$846,968	3
Other	\$70,436	0.1
<b>COMMUNITY ACTION AGENCY STAFF</b>		<b>38</b>
<b>NATIONAL GRID STAFF</b>		<b>39.9</b>
<b>GRAND TOTAL</b>		<b>702</b>

- Engineering firms that provided technical support, both general and specialized, to Rhode Island commercial and industrial programs, also provide energy efficiency services to multiple electric and gas utility companies and/or to multiple National Grid-served states. They dispatch staff, when requested, to assist individual Rhode Island customers. The intermittency of Rhode Island service requests, the desire of National Grid to only pay for expert engineering support when it is being used, and the necessary business economics for engineering firms of maximizing staff utilization create a situation where Rhode Island customers are best, and most cost effectively, served by engineering firms that also serve other larger markets. The Energy Smart Grocer program delivered by CLEAResult exemplifies this situation, with 25 employees based in Portland, Oregon and Westborough, Massachusetts, including three “local” field staff that actually visits Rhode Island, used 2.3 FTEs in 2016 to work on 133 projects for Rhode Island customers. Over the same period, CLEAResult supported many times that many projects for National Grid customers in Massachusetts. The Industrial program operated by Leidos Engineering is another similar example of how National Grid’s Rhode Island customers benefit from multi-state vendor deployments.

At the same time, for other large energy services providers whose business focus is supporting one or more of the larger, labor intensive National Grid Rhode Island programs, the total FTE counts and the number of individual personnel contributing to those counts may be nearly equal. For example, Cranston, Rhode Island-based RISE Engineering was the lead vendor for many of the largest programs offered in Rhode Island by National Grid, including EnergyWise Single Family, EnergyWise Multifamily, Small Business Direct Install, and the Commercial and Industrial Gas programs.

The larger size of these programs required and enabled RISE to employ full-time staff to serve in specific program roles, such as auditors and inspectors. Also, similarities between staffing needs across multiple programs, e.g. for engineering, materials handling, or accounting, 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 supplemented them on an as needed basis with sub-contracted assistance.

This staffing has, in turn, also enabled RISE to be a major player as a Project Expediter in 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.

### **Program budgets and FTE counts**

A comparison of program spending and program FTE counts in prior table shows that the number of FTE jobs attributable to each program is not proportionate to the amount spent by National Grid on programs.

Looking at the commercial retrofit and new construction programs, for example, the Large Commercial Retrofit program had both a significant budget and jobs impact because replacing old, but functioning equipment in existing facilities with new energy efficient equipment required significant incremental installation labor. Contrast that with the Commercial New Construction program, which had limited job impacts despite its significant budget. New Construction pays the customer's incremental cost of opting for higher efficiency, impacting the customer's choice of materials, equipment, and construction techniques, but does not significantly increase amount of labor and time needed to construct the building.

Another factor influencing the number of FTEs associated with program spending is whether energy efficiency measures installed, on a per dollar spent basis, are more labor intensive or equipment intensive. For example, weatherization materials (e.g., cellulose insulation, caulking, foam) to improve thermal performance and reduce air leakage in residential buildings (i.e. for installed insulation and air sealing) are simple and inexpensive. Most of the cost associated with weatherization is for labor during the installation process. Other energy efficiency measures such as energy management controls systems, chiller and boiler replacement, or major HVAC upgrades deploy sophisticated, factory-manufactured equipment where the equipment is perhaps the greatest portion of the measure 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 per dollar spent is lower.

A counteracting force in terms of job impacts of National Grid supported energy efficiency continues to be the importance of cost-effectiveness of program design and the ongoing desire of regulators and program administrators to increase and maximize the energy saved for each dollar spent. National Grid uses competitive bidding where practical to secure materials and labor vendors, requiring would-be contractors to devise strategies to "tighten their belts" and structure their workforce evermore cost effectively. Contractors are increasingly paid a fixed fee for services or compensated based on performance, encouraging them to keep their labor costs down, not only to be more competitive, but also to maximize margins. A vendor delivering a program or performing an installation who is not compensated on an hourly basis naturally looks for ways to maximize worker productivity, resulting in less labor required overall to achieve energy reduction goals and fewer FTEs for Peregrine to count.



## Comparing 2016, 2015, 2014, and 2013 FTEs

Over the past four years, National Grid’s program designs have remained relatively constant, except for the expanding use of Upstream-type strategies. Observed changes in year-to-year job impacts mostly reflect adjustments to program budgets, new marketing initiatives that have increased customer and trade ally participation, weather and energy prices, and opportunities created by emergence of new energy efficient products.

### FTE Job Impacts by Market Sector: 2016, 2015, 2014, and 2013

	2016 FTEs	2015 FTEs	2014 FTEs	2013 FTEs
<b>Electric Programs</b>				
Residential Non-Income Eligible	104.0	125.4	109.0	98.8
Residential Income Eligible	42.3	37.0	38.6	24.1
Commercial and Industrial	241.1	210.0	199.5	142.6
<b>Gas Programs</b>				
Residential Non-Income Eligible	159.3	172.1	178.0	159.1
Residential Income Eligible	41.4	43.8	42.5	34.9
Commercial and Industrial	36.1	32.0	27.0	30.3
<b>Community Action Agency staff</b>	38.0	34.0	32.5	30.7
<b>National Grid staff</b>	39.9	41.6	38.9	38.5
<b>TOTAL RHODE ISLAND FTE JOBS</b>	<b>702.2</b>	<b>695.8</b>	<b>666.1</b>	<b>558.9</b>

Peregrine counted or calculated 702 full-time equivalent jobs or “FTEs” attributable to National Grid’s energy efficiency program spending in 2016. This modest increase over the 696 FTEs identified in 2015 maintains the historic trend of job impact growth since 2013. While total numbers of FTEs identified were very similar in 2016 and 2015, Peregrine found there were significant gains and losses in total jobs associated with individual market sectors.

#### *Residential Non-Income Eligible*

Peregrine has seen in past years that total FTEs in the residential sector, generally associated with installation of energy efficiency measures to manage heating costs, can vary significantly year-to-year. In 2016, Peregrine calculated a 12% decrease, 35 FTEs, in jobs associated with both electric and gas programs targeting the Residential Non-Income Eligible market sector. Demand for EnergyWise Single Family building audits was down (likely due to lower energy costs and the



mild winter in 2016 compared to the previous year), resulting in less field labor needed to evaluate residences and prepare work orders; and installation contractor labor also declined as the number of both single family and multifamily customers proceeding with weatherization and heating system replacements fell, again perhaps reflecting the lower fuel prices and warmer winter weather.

#### *Residential Income Eligible*

For the Residential Income Eligible sector, combined gas and electric FTEs increased by around 4%, approximately 3 FTEs. In addition, energy staffing at Community Action Agencies increased, totaling 38 FTE, 10% above 2015 and up over 25% compared to 2013. Budgets and installation services for 1-4 unit income eligible residences were up for both gas and electric customers as an increased number of low-income residential customers received free weatherization services and new heating systems. The electric program showed a combined net FTE increase for the combined Residential Income Eligible market, single family and multifamily, of 14% (5.3 FTEs) in 2016 compared to 2015. On the other hand, installation of weatherization materials in income eligible multifamily buildings, largely gas-heated, was lower than in 2015, resulting in a net decline of just over 2 FTEs associated the Residential Income Eligible gas programs.

#### *Commercial and Industrial*

In 2016, the Commercial and Industrial sector showed a net increase of 35 FTEs (14%) over 2015 for gas and electric programs combined. Despite a fall-off in Electric Program installations and related FTE jobs associated with the Small Business Direct Install program, there was a net Electric Program Commercial and Industrial sector increase of 30 FTEs (almost 15%). This was driven by a 20% (40 FTE) increase associated with Large Commercial Retrofits. Some of this increase associated with the Large Commercial Retrofit program is attributable to Peregrine's undercounting in prior years of sales and project management staff of installation contractors. This is described in more detail in the methodologies section included as Attachment A of this report. Commercial and Industrial FTEs associated with gas programs also increased by 4 FTEs (12%) in 2016, reflecting increased program activity and savings realized.

National Grid has continued to expand the opportunities for trade allies to initiate projects with their existing or new commercial and industrial customers, supported by direct access to National Grid incentives. In both the Large Commercial Retrofit electric program and Large Custom Retrofit gas program, installation contractors and equipment suppliers, often assisted by program facilitators engaged by National Grid (i.e. RISE Engineering, CLEAResult, and Leidos Engineering), have driven the identification, acceptance, and installation of energy efficient projects. Likewise, through the Commercial Upstream Lighting, electrical contractors have been able to use the discounted pricing of products available from lighting distributors to convince customers to replace standard efficiency lighting with high efficiency product, further driving the LED market transition.



## Conclusions

The numbers of FTE jobs associated with the implementation of energy efficiency services should remain stable during the coming years as long as qualifying customers can be found and motivated to participate in National Grid programs, opportunities for equipment retrofits remain cost-effective for customers and National Grid, and funds are committed to energy efficiency improvement. While the numbers of customers who can be identified to participate in programs and the level of National Grid spending will, of course, affect the numbers of workers involved in energy efficiency activities and the FTE jobs that result, there are other factors in play that will dampen or increase such jobs over time.

- Markets are limited in size, and the cost of securing customers will increase as market penetration levels grow, potentially causing installation companies rethink their business strategies and retrench and shrink their workforce or exit certain markets altogether.
- Changing energy costs will affect customer behaviors, encouraging or discouraging customer interest in investing in energy efficiency improvements.
- Continuing evolution of and price drops for energy technology, as has been demonstrated by the emergence and growth of LED lighting, could create new cost-effective installation opportunities for energy efficient products. In the case of LEDs, the availability of low-cost LED linear lamps in the last year has resulted in an opportunity to replace all existing linear fluorescents and re-opened a huge, labor-intensive lighting retrofit market that had been maxed out by the limits of fluorescent technology.
- Program design adjustments that further encourage all natural trade allies to make use of incentives available from National Grid, enabling them to sell products and services to existing and new customers, could lead to increases in FTEs.



## Attachment A: Methodologies used for Assessing Employment

### Program Support Service Providers

#### **National Grid**

National Grid provided to Peregrine a summary of billed hours and FTE counts for employees involved with individual energy efficiency programs in Rhode Island in 2016. 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.

#### **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. Often, the FTEs Peregrine is reporting represent the aggregation of small numbers of hours by numbers of employees. Often, this was because the contractor's role was 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.

### 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 2016 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 time cards were not available.

Where employer-sourced information on employment was not available, Peregrine relied on program records and statistics for 2016 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 2016 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 work days 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.

## **Residential Programs**

### ***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 2015, 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 in 2016 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 2016. We 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 2016 from Blackhawk Engagement Solutions, 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 replacement residential oil or propane heating equipment was 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.

### ***EnergyWise Multifamily Residential Program***

As with the EnergyWise 1-4 Unit Residential Program, Peregrine interviewed RISE's program manager and was provided with staffing counts. In addition to general program supervision, responsibilities included technical leadership, auditing, field coordination and inspections, and electrical installation work. Again, RISE was able to convert staff counts to FTEs associated with this particular program. Peregrine relied on installation counts from National Grid to determine numbers of individual measures that had been installed by independent weatherization contractors and heating contractors in these buildings. As was the case for contractors installing measures in 1 to 4 unit buildings, these counts were multiplied by average times for installations in hours or portions of hours, and the resulting total hour counts were divided by 1,760 hours per FTE to arrive at annual FTE counts.

### ***Residential New Construction***

#### ***Residential Home Energy Report Program***

#### ***Residential Community Based Initiatives***

#### ***ENERGY STAR® HVAC 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 for 2016 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.

#### ***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 2016 from their accounting records. Total FTEs were then allocated to the residential electric spend.

## **Low Income Residential Programs**

### ***Income Eligible 1-4 Unit Residential***

FTE counts for this program for 2016 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 Community Action Agency staff count. CLEAResult also provided counts of weatherization and heating system installations completed in 2016. Peregrine used CAP agencies guidance on contractor crew sizes and installation practices to calculate the numbers of FTE installers who performed this work.

### ***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.

## **Commercial and Industrial Programs**

### ***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.



## ***Large Commercial Retrofit Program (electric)***

### Installations

As described in the section on energy program delivery, the Large Commercial Retrofit program was the most market-based of all electric programs provided. 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 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), we 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, where installed material counts might not be available or no separate total cost for projects was identified, Peregrine used incentive amounts paid by National Grid to tease out the total efficiency project cost. This required comparing incentives paid for simple projects with incentives paid for complex custom projects to determine the larger projects' size. 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.

Upstream Lighting-related installations were rolled into the Large Commercial Retrofit FTE counts. Peregrine calculated the FTEs required for installations by electrical contractors that purchased these materials through Upstream on behalf of customers, taking counts of product purchased by the contractor, applying per unit labor times, and then calculating the total FTEs for installations.

### 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 2016 to secure and oversee projects. Reflecting on those interviews, Peregrine realized that, in past years, we had not accounted for sales and project management personnel that were employed by other installation contractors active in Large Commercial Retrofits. To remedy this undercounting for 2016, Peregrine extrapolated the sales and project management staffing identified for Project Expeditors to calculate numbers of like staff employed by other installation contractors. This extrapolation used the total dollar value of Large Commercial retrofit projects installed by PEX and by other contractors under to estimate the additional sales and project management staff employed by the other installation contractors. This added 24 FTEs to the total employee count.



### Engineering support

For engineering support services provided to commercial customers, Peregrine used the recorded payouts for technical assistance services provided in 2016 to calculate workforce FTEs. National Grid provided engineering services to customers through retained contractors, in particular where “custom” 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.

### ***Commercial and Industrial Gas Programs***

For Commercial and Industrial Gas programs managed by RISE Engineering, Peregrine interviewed RISE to secure counts of RISE employees and FTEs. A variety of contractors installed energy efficiency measures installed and much of this work was done 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.



## Attachment B: Interview Guide

### National Grid 2016 RI Labor Study Organization Interview Guide

Interview date:

National Grid Program:

[Program overview/Targets/How delivered/Program volumes in 2016]

Supplier company/organization [with primary address]:

Interviewee/position/phone/email:

Company role (i.e. services provided):

How long has company been involved in the program? \_\_\_\_

Location(s) of office(s) providing services and activities: \_\_\_\_\_

RI based staff?: Yes/No.      Head count? \_\_\_\_\_

Changes from prior year(s):

Employees? More/Less \_\_\_\_\_

Payroll hours? More/ Less \_\_\_\_\_

Customers served? More/ Less \_\_\_\_\_

Revenue? More/ Less \_\_\_\_\_

Other? \_\_\_\_\_

Staff assigned:

[Title/Role/Name                      Count/FTEs                      Compensation (salary, hrly, piece, commission)]

1

2

3

4

5

6

7

8



Sub-contractors used?

[Name/Address	Roles	comp type	Add'l contact info]
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1

2

3

4

Are there installation contractors involved in service delivery to Nat Grid customers?

[Name/Address	Roles	comp type	Add'l contact info]
---------------	-------	-----------	---------------------

1

2

3

4

Does Program result in increased employment in RI or additional hours for RI contractors?

Additional comments:



## Attachment C: Participating Companies

The list includes contractors and subcontractors performing work directly for National Grid Energy Efficiency programs in 2016 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.

Of the 923 companies, agencies, contractors and sub-contractors listed here, 759 (82%) are either headquartered in Rhode Island, or have a physical presence in Rhode Island. The list is organized first by state (alphabetically), and then alphabetically by company name. To find the Rhode Island companies, move to the first appearance of “RI” in the far right column.

<b>Vendor</b>	<b>Town</b>	<b>State</b>
Association of Energy Services Professionals	Phoenix	AZ
Accurate Background, Inc.	Irvine	CA
Bigspeak Inc.	Santa Barbara	CA
Crownpeak Technology	Los Angeles	CA
PLMA	Vallejo	CA
Regency Lighting	Chatsworth	CA
E Source Companies LLC	Boulder	CO
FridgeTek Inc.	Carbondale	CO
Skumatz Economic Research Associates	Superior	CO
All-phase Electric Supply/Consolidated Electrical Distributors	Windsor	CT
AMS Greensolutions LLC	Willington	CT
Efficient Lighting Consultants	Newtown	CT
JK Muir LLC	Durham	CT
Richard Electric	Putnam	CT
Upland Construction Group	North Stonington	CT
Vandale Rd Electric Co Inc.	North Stonington	CT
Wattsaver Lighting Products Inc.	East Hartford	CT
American Council for an Energy-Efficient Economy	Washington	DC
Energy Solutions Center	Washington	DC
Smartpower	Washington	DC
A Led Lights LLC	Jacksonville	FL
Apollo Lighting	Fort Lauderdale	FL
Express Lighting, Corp.	Melbourne	FL
Pro. Unlimited Inc.	Boca Raton	FL
Hill Phoenix Inc.	Conyers	GA
LIGHTFAIR International	Atlanta	GA
National Energy Educational Development Need	Manassas	GA



Innerworkings Inc.	Chicago	IL
3-D Lighting	Franklin	MA
A & M Electrical Mechanical, Inc.	Fall River	MA
ACA NE	North Attleboro	MA
Action Inc.	Fall River	MA
Ahaesy Electric	Fall River	MA
Alternative Weatherization, Inc.	Fall River	MA
Andelman and Lelek Engineering Inc.	Norwood	MA
Appel Electric Co Inc.	Norwood	MA
Automated Building Systems, Inc.	Southborough	MA
B2Q Associates Inc.	Andover	MA
Baraby Electric	Fall River	MA
Baystate Energy Reduction	Sutton	MA
Beaupre Electric	Assonet	MA
Boston E Lab Inc.	Winchester	MA
Boston Light Supply, Inc.	Lynn	MA
Boston Scientific Corporation	Quincy	MA
Bristow Electric	Attleboro	MA
Bruin Corp	North Attleboro	MA
Bulbs.Com	Worcester	MA
Carlos A Magina Electrical Inc.	Seekonk	MA
Charles H Furman Electrician	North Attleboro	MA
Commonwealth Electrical	Worcester	MA
Compressed Air Technologies Inc.	Shutesbury	MA
Conservation Services Group Inc.	Westborough	MA
Consolidated Marketing Services	Burlington	MA
Consortium For Energy Efficiency	Boston	MA
Conventures Inc.	Boston	MA
CoolGreenPower LLC	Concord	MA
Da Melo Electric And Controls	North Dartmouth	MA
David J. Black Electric, LLC	Bellingham	MA
David Rossman	Westwood	MA
DMI	Wellesley	MA
Dorrance Electric, Inc.	Rehoboth	MA
Drolet Electric	North Attleboro	MA
Ecast Video LLC	Boston	MA
Ecova Inc.	Boston	MA
Efficient Buildings LLC	Bridgewater	MA
Electric Supply Center	Mansfield	MA
ENE Systems Inc.	Canton	MA
Energy & Resource Solutions Inc.	North Andover	MA
Energy Federation Inc.	Westborough	MA



Energy Machinery Inc.	Rockland	MA
EnergySavvy Inc.	Cambridge	MA
EnerNOC Inc.	Boston	MA
Fort Hill Companies	Boston	MA
G Feigo Electric Co	Westport	MA
GH Electrical Service	Attleboro	MA
Glynn Electric	Plymouth	MA
Graybar	Boston	MA
Greenleaf Associates Inc.	Weston	MA
Hannon Electric Inc	South Easton	MA
I.N.O Electric Service	Walpole	MA
IBM Corp.	Cambridge	MA
ICS Corp.	Tyngsborough	MA
Independent Electric Supply	Somerville	MA
Insulate 2 Save	Fall River	MA
J Lafretta Electric	North Attleboro	MA
James Cordeiro Jr Electrical Services	Fall River	MA
Jason Roia Electrical	Fall River	MA
John Landry Electrician	Somerset	MA
Jones Lang LaSalle Construction	Boston	MA
KEMA	Burlington	MA
Litemor	Norwood	MA
Lockheed Martin	Burlington	MA
Main Stream Mechanical	Amesbury	MA
Mike Bell Electrician	Seekonk	MA
Motus LLC	Boston	MA
National LED Distributors	Milton	MA
National Resource Management	Canton	MA
Navigant Consulting, Inc.	Boston	MA
NESCO (Needham Electric Supply)	Canton	MA
New England Energy Management Inc.	Leominster	MA
Nexant Inc.	Burlington	MA
NMR Group Inc.	Somerville	MA
Noble Electric, Inc.	Holliston	MA
Northeast Efficiency Supply (NES)	Sutton	MA
Northeast Energy Efficiency Partnerships	Lexington	MA
O'Brien & Neville Inc.	Holliston	MA
Opinion Dynamics Corporation	Waltham	MA
Opterra Energy Services	Norwell	MA
Oracle America	Cambridge	MA
Peregrine Energy Group	Boston	MA
Ralco Electric Inc.	Westport	MA



Raymond D. Melanson Electric	Swansea	MA
Raymond Melanson Electric	Swansea	MA
Raytheon Company	Waltham	MA
Reis Electric	Westport	MA
Rethinking Power Management	Boston	MA
Retrofit Insulation	Fall River	MA
River Energy Consultants	Fall River	MA
Robshaw Electric	Holliston	MA
Ryan Suart Electric	Fall River	MA
Sacks Exhibits	Wilmington	MA
Savio Lighting	Needham	MA
Standard Electric	Wilmington	MA
Steam Trap Systems	Amesbury	MA
Superior Energy Solutions	Swansea	MA
Swanson Construction	Attleboro	MA
Tabors Caramanis Rudkevich	Boston	MA
The Cadmus Group Inc.	Waltham	MA
The Symphony Of Light	Dedham	MA
TNZ Energy Consulting Inc.	Stoughton	MA
Veolia ES Technical Solutions LLC	Boston	MA
W R Plamondon Electrical Co	Westport	MA
Wiedenbach-Brown	Norwood	MA
WIPRO LTD.	Quincy	MA
ANTARES Group Inc.	Lanham	MD
APTEC LLC	Bethesda	MD
Earth Networks Inc.	Germantown	MD
Boyko Engineering Inc.	Gorham	ME
Douglas C Baston	Alna	ME
ARCA , Inc.	Hopkins	MN
PlotWatt	Durham	NC
Carter Events Plus LLC	Hampton	NH
Daniels Equipment Co Inc.	Auburn	NH
IMMI (International Marketing Management, Inc.)	Portsmouth	NH
National Energy and Light, Inc.	Nashua	NH
Clear Energy LLC	Bloomfield	NJ
CMC Energy Services Inc.	Cranbury	NJ
Ideas Agency Inc.	Blairstown	NJ
SHI International Corp.	Somerset	NJ
CDH Energy Corp.	Cazenovia	NY
Goldstein & Lee, P.C.	New York	NY
Illuminating Engineering Society	New York	NY
Integrated Marketing Services Inc.	Liverpool	NY



Ram Marketing	Saint James	NY
SPPRO Inc.	Bronx	NY
Questline Inc.	Columbus	OH
Research Into Action, Inc.	Portland	OR
Real Winwin Inc.	Philadelphia	PA
2 Sons Electric LLC	East Providence	RI
A & A Management	Providence	RI
A & C Burner Service HVAC	East Providence	RI
A & I Electric	Pawtucket	RI
A & L Plumbing Mechanical and Consulting	Westerly	RI
A & M Compressed Air Products Inc.	Providence	RI
A E Costa Electrical Contractor LLC	Warwick	RI
A Good Plumber	Hope	RI
A Perry Plumbing and Heating	Coventry	RI
A Plumbing and Heating	East Providence	RI
A.R. Heating and Cooling Inc.	Providence	RI
A1 Electrical Construction LLC	North Providence	RI
Able Electric, Inc.	Warwick	RI
ABM Enterprises Inc.	Exeter	RI
Ace Electric	Providence	RI
Aceto Plumbing LLC	Cranston	RI
Acme Electric Inc.	North Providence	RI
ACR Construction and Management Corporation	JOHNSTON	RI
Adams Plumbing and Heating	West Warwick	RI
Adell Construction LLC	Cranston	RI
ADJ Realty, Co.	Providence	RI
Advance Electrical Corporation	Providence	RI
Advanced Comfort Systems Inc.	North Smithfield	RI
Affordable Building and Weatherization, Inc.	East Greenwich	RI
Affordable Heating and Air Conditioning Services	Providence	RI
AFM Electric, LLC	Pascoag	RI
AIA and Sons Construction	Warwick	RI
Air Metalworks Ltd	North Providence	RI
Air Quality LLC	Warwick	RI
Air Tech Heating and Air Conditioning	Rumford	RI
Air Temp	Riverside	RI
Aire Serv Heating and Air Conditioning	Pawtucket	RI
Airhart Electric Inc.	Coventry	RI
AJS Plumbing and Heating	North Providence	RI
Aladdin Electric Co. Inc.	Johnston	RI
Alan Jerauld	North Providence	RI
Alan Menard Plumbing LLC	Pawtucket	RI



Alan Paul Electric	Warwick	RI
Albert S Koenig Electrician	Pawtucket	RI
All In One Plumbing Heating and Cooling	West Warwick	RI
All Phase Heating Concepts	Woonsocket	RI
All Points Construction	Riverside	RI
All Seasons Heating and Air Inc.	Johnston	RI
All Star Insulation	Providence	RI
Allen Plumbing and Heating	North Providence	RI
Allied Electrical Group	Providence	RI
Allied Fuel	Providence	RI
Alpha Electrical Contractors Inc.	Riverside	RI
Alpha Mechanical	East Providence	RI
AMCO Inc.	Woonsocket	RI
American Development Institute Inc.	Warwick	RI
American Electric Service Inc.	Cranston	RI
AMERITEST	North Providence	RI
Amity Electric	Wyoming	RI
AMS Development	Portsmouth	RI
AMTROL Inc.	West Warwick	RI
Anchor Plumbing and Heating Company Inc.	Providence	RI
Andrew R McMahon Electrician	Lincoln	RI
Angelo DeFeo	Providence	RI
Antaya Technologies	Warwick	RI
Anthony Berard	Cumberland	RI
Anthony Handyman	Woonsocket	RI
Anthony's Quick Plumbing and Heating	Johnston	RI
Antonio J Improta LLC	Cranston	RI
Anytime Plumbing Service	Harrisville	RI
APB Plumbing and Heating	Cumberland	RI
Apple Valley Alarms	North Scituate	RI
APuzzo Plumbing and Heating	North Scituate	RI
AR Heating and Cooling Inc.	Cranston	RI
Arden Engineering Constructors LLC	Pawtucket	RI
Ardente Supply Co., Inc.	Providence	RI
Arkwright Inc.	Fiskeville	RI
Arthur W Adler	Bristol	RI
Aten Energy	Pawtucket	RI
Atlantic Control Systems	Exeter	RI
Atlantis Comfort Systems Corp	Smithfield	RI
Attaboy Electric LLC	Clayville	RI
Auburn Electric Company	Cranston	RI
Autiello Plumbing and Heating LLC	Cranston	RI



Automatic Heating Equipment Inc.	Providence	RI
AZ Corporation	Hopkinton	RI
B & B Consumers Natural Gas Service	Woonsocket	RI
B & K Electric, LLC	Cranston	RI
B & L Mechanical LLC	Woonsocket	RI
B Hughes Builders, Inc.	Barrington	RI
Baptista Electric	Cumberland	RI
Barlow Heating LLC	Warwick	RI
Barrington Plumbing and Heating	Barrington	RI
Bashaw Electric	East Greenwich	RI
Baum Energy	Warren	RI
Baynes Electric	Westerly	RI
Bayside Electric Company	Warwick	RI
Beacon Electric	East Providence	RI
Beauchemin Design	North Smithfield	RI
Berard Heating and Mechanical	Warwick	RI
Bermudez Plumbing and Heating	Pawtucket	RI
Bert Gardiner Plumbing	Charlestown	RI
Best Buy	Warwick	RI
Biello Electric Co	Fall River	RI
Bileau HVAC Inc.	Woonsocket	RI
Bill Gardiner Plumbing and Heating LLC	East Providence	RI
Bill Gornostai Electric	Warwick	RI
Bill The Plumber	North Smithfield	RI
Bills Heating Service Inc.	Warwick	RI
Blackstone Valley Community Action	Pawtucket	RI
Bob Larisas Plumbing and Heating Inc.	Barrington	RI
Bob Martel Plumbing and Heating	Central Falls	RI
Boiler Works	Coventry	RI
Boulevard Plumbing and Heating	Middletown	RI
Brada Manufacturing, Inc.	Warwick	RI
BRH Electric	East Providence	RI
Brian's Fire Alarm System Solutions, LLC	North Smithfield	RI
Brian's Heating Concepts, Inc.	Tiverton	RI
Briteswitch LLC	Warwick	RI
Brittain Electric Inc.	Jamestown	RI
Brookside Electric	Westerly	RI
Bruno & Son Electric Inc.	Providence	RI
Bryant's Lemme	Coventry	RI
BSH Heating and Appliance	Barrington	RI
BT Electric Company, Inc.	Glocester	RI
Buckley Heating and Cooling	Peace Dale	RI



Buono Electric	Johnston	RI
Burbanks Plumbing and Heating, Inc.	North Kingstown	RI
Butler and Sons Plumbing and Heating, Inc.	Providence	RI
BZ Electric, Inc.	West Warwick	RI
C & K Electric Company Inc.	Providence	RI
C & L Energy Corp	Cranston	RI
C Carr Electric LLC	Cumberland	RI
C&A	Block Island	RI
C.S.V. Mechanical Inc.	South Kingstown	RI
Cal Supply Co., Inc.	Cranston	RI
Caldwell & Johnson Inc.	North Kingstown	RI
Calyx Retrofit	Lincoln	RI
Carbone Plumbing Heating and Air	Johnston	RI
Carello Plumbing and Heating	East Providence	RI
Carjon Air Conditioning and Heating Inc.	Smithfield	RI
Carlino Electric Inc.	Coventry	RI
Carnevale Electric	Johnston	RI
Carter Plumbing and Heating Co.	Warren	RI
Cassana HVAC LLC	North Providence	RI
CBRE	Providence	RI
CCF LLC	Warwick	RI
CD Heating Inc.	Cranston	RI
Cecil E Moore Jr Inc.	Coventry	RI
Century Heating	Smithfield	RI
Chabot Associates Inc.	North Kingstown	RI
Chaput & Feeney, LLP	East Providence	RI
Charles Burton	Lincoln	RI
Charlie's Heating LLC	North Kingstown	RI
Chris Smaldone Electrician	Providence	RI
Christian Urban Electric	Pawtucket	RI
Christopher McCaughey	Smithfield	RI
Cimini & Associates	Westerly	RI
CJ Morin Electric	Lincoln	RI
CJS Plumbing and Heating Specialists, Inc.	Smithfield	RI
Clearesult	Providence	RI
Clermont Mechanical Plumbing & Heating Services	Glendale	RI
CMAGS Heating and Air Conditioning	Warwick	RI
Coast Modern Construction	Providence	RI
Coastal Electric Inc.	Newport	RI
Cobra Electric and Compaction Services, Inc.	Providence	RI
Cohen Heating Supply, Inc.	Providence	RI
Colaluca Plumbing and Heating	Johnston	RI



Comfort Systems, Inc.	Coventry	RI
Comfort Zone Inc.	Hopkinton	RI
Commercial and Residential Services	Johnston	RI
Commercial Electric, Inc.	East Providence	RI
Community Action Partnership of Providence	Providence	RI
Comprehensive Community Action	Cranston	RI
Computer Sciences Corporation	Warwick	RI
Construction Maintenance Services, Inc.	Lincoln	RI
Conti Brothers Inc.	Providence	RI
Continental Heating and Cooling Indoor Air Quality	Johnston	RI
Cooley Incorporated	Cranston	RI
Cotoia Electric	Johnston	RI
Cox Electric LLC	Narragansett	RI
Craig R Committo Electrician	Tiverton	RI
Cross Insulation	Cumberland	RI
Crown Supply Company Inc.	Providence	RI
Crystal Plumbing and Heating Inc.	Providence	RI
CSV Mechanical Inc.	Wakefield	RI
Custom Comfort	Woonsocket	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 and Heating Inc.	Cumberland	RI
D & L Service Inc.	Coventry	RI
D & S Construction Company	Lincoln	RI
D C ELECTRIC Co LLC	West Warwick	RI
D. Costa Electric Company LLC	East Providence	RI
D'Ambra Construction Co Inc.	Coventry	RI
Danfoss LLC	Johnston	RI
Danico LLC	North Providence	RI
Daniel Simoes Electric	Exeter	RI
D'antuono Electrician	Chepachet	RI
David Iannucci Electrician	Providence	RI
David J Loren	Warren	RI
David J O'Brian Electrician	North Kingstown	RI
David Seddon Electrician	Rumford	RI
David R Gince Electrician	Woonsocket	RI
Dayco Electric	Warwick	RI
DC Plumbing	Warwick	RI
Deal Electric	East Greenwich	RI
Degnan Plumbing and Heating	North Providence	RI



Delmonico Enterprises -Plumbing and Heating	Cranston	RI
Delta T	Warwick	RI
Desimone Electric	Cranston	RI
Desmarais Plumbing and Heating Inc.	Johnston	RI
Dessaint Electric Co Inc.	Warwick	RI
DiGregorio and Sons, Inc.	North Kingstown	RI
Dimery Electrical	Barrington	RI
Dionne and Sons	Coventry	RI
Dionne's Plumbing Systems	Cumberland	RI
Diorio Plumbing and Heating, Inc.	Barrington	RI
Direct Home Improvement	West Greenwich	RI
DiRocco Plumbing Services LLC	North Providence	RI
Donald Fournier Electrician	Providence	RI
Donald E. Lemay Electrician	Bristol	RI
Donovan and Sons Inc.	Middletown	RI
DPS Plumbing and Heating	Hope	RI
Drivers Plumbing and Mechanical Inc.	Providence	RI
DS Plumbing	Coventry	RI
DSA Mechanical	Barrington	RI
DSC Heating and Air Conditioning	North Kingstown	RI
DSL Properties, LLC	North Kingstown	RI
Dual Voltage Electric LLC	Johnston	RI
Dubes Plumbing	Woonsocket	RI
Dupuis Energy	Pawtucket	RI
Durante Electric	Lincoln	RI
DWI Group Ltd	Johnston	RI
Dynamic Air Systems Inc.	East Providence	RI
EA Marcoux and Son, Inc.	Woonsocket	RI
Eagle Electric	Ashaway	RI
East Coast Electric	Johnston	RI
Eastbay Community Action	Riverside	RI
Eastern Electric	Cranston	RI
Eastern Plumbing Co Inc.	North Kingstown	RI
Echo Electrical	Richmond	RI
Ecologic Spray Foam Insulation Inc.	Jamestown	RI
Econ Electric Contractors	Bristol	RI
Edward C Silva Plumbing and Heating	Middletown	RI
EG Electric Co.	East Greenwich	RI
EJM Electric	Middletown	RI
EKCO Tech Services LLC	Chepachet	RI
ELCO Electric Services Corporation	Cranston	RI
Electrical League of RI	Warwick	RI



Electrical Solutions	Providence	RI
Electrical Technologies	Providence	RI
Electrical Wholesaler Inc.	Cranston	RI
Elwin Palmer Electrician	Providence	RI
Emanuel Freitas	Pawtucket	RI
Emergency Response Plumbing Heating and Air Conditioning	Warwick	RI
Energiwise Inc.	East Providence	RI
Energy 4 Life Building Performance LLC	Smithfield	RI
Energy Conservation Inc.	South Kingstown	RI
Energy Efficient Exteriors, Inc.	Lincoln	RI
Energy Efficient Plumbing Technologies	Cranston	RI
Energy Electric Co, Inc.	Woonsocket	RI
Energy Geeks	North Smithfield	RI
Energy One Southern Mechanical	West Warwick	RI
Energy Source LLC	Providence	RI
Eurotech Climatesystems LLC	Pawtucket	RI
Evans	East Providence	RI
Eveready Electric	Barrington	RI
Evergreen Plumbing and Heating Co., Inc.	Warwick	RI
F & S Electric Inc.	Bristol	RI
Falcon Hydonics	West Kingston	RI
Feula Plumbing and Heating LLC	Johnston	RI
FG Lees and Son Plumbing and Heating	Providence	RI
Fico Electric	Johnston	RI
Figliozzi Plumbing and Heating	Wakefield	RI
Fletcher Heating Burner Repairs	Ashaway	RI
FLOU PHCC First Quality Installations	Saunderstown	RI
Forcier Electrical	Cumberland	RI
Foster Electric, Inc.	Tiverton	RI
Foundry Associates	Providence	RI
Frank Flowers Electric	Cranston	RI
Frank Knight Plumbing and Heating	Warwick	RI
Frank Lombardo and Sons Inc.	Providence	RI
Frontier Mechanical LLC	Providence	RI
Fullport Plumbing and Heating	Rumford	RI
Furtado Lighting & Design LLC	Bristol	RI
G & B Electric	Exeter	RI
G & L Electric Inc.	Woonsocket	RI
G Hill Plumbing and Heating, Inc.	Westerly	RI
G M Perron and Son Plumbing and Heating	North Smithfield	RI
G Marc Electric	Pawtucket	RI
G. Gagnon & Sons Ltd	Cumberland	RI



Gambit Electric Inc.	Johnston	RI
Gary Fernandes Electrician	Woonsocket	RI
Gary Ficca Electrician	North Smithfield	RI
Gas Doctor	Providence	RI
Gas Master Inc.	Little Compton	RI
Gasman NC	Warwick	RI
GASTECH	Cranston	RI
Gem Plumbing and Heating Services Inc.	Lincoln	RI
George Gaulin Electrician	Cranston	RI
Ginos Plumbing	Warwick	RI
Giorno Plumbing and Heating	Cranston	RI
Globex Industries Inc.	Narragansett	RI
GM Control Systems Inc.	North Smithfield	RI
GM Perron and Son Plumbing and Heating	North Smithfield	RI
Grace Construction LLC	Providence	RI
Granite City Electric	Pawtucket	RI
Gravel Electric Inc.	Harrisville	RI
Greenwich Insulation	West Greenwich	RI
Greenwood Plumbing and Heating	Warwick	RI
Gregg Balchette	North Smithfield	RI
Griff Electric LLC	Portsmouth	RI
Grillo Electric	Ashaway	RI
Gronski Plumbing and Heating, Inc.	Cranston	RI
Groom Energy Solutions	Providence	RI
Guy Clermont Plumbing and Heating	Cranston	RI
H & R Electric Contractor Inc.	Greenville	RI
Haley & Aldrich, Inc.	Providence	RI
Hawkes Plumbing and Heating Co Inc.	Chepachet	RI
HD Supply Facilities Maintenance	Warwick	RI
Heat Corporation	Warwick	RI
Heat Tech LLC	Warwick	RI
Henderson Electric	Warwick	RI
HF Robinson and Sons Plumbing and Heating	Cranston	RI
HH Heating	Lincoln	RI
Hill Electrical Services	Cumberland	RI
HK Heating Inc.	Greene	RI
HMC Construction LLC	Bristol	RI
Hodson Heating and Cooling	Harrisville	RI
Holland Electric	Peace Dale	RI
Horizon Solutions LLC	Smithfield	RI
Houle Plumbing and Heating	Greene	RI
Howard Saucier	Pawtucket	RI



HR Electrical Contractor Inc.	Providence	RI
Hughes Incorporated	North Kingstown	RI
Hutchins Electric	Greenwich	RI
Hynson Electrical Construction Inc.	Bristol	RI
Iasimone Plumbing-Heating & Drain Cleaning Inc.	North Providence	RI
Industrial Burner Service Inc.	Providence	RI
Innovative Plumbing and Heating Inc.	North Providence	RI
Interstate Electrical Services	Warwick	RI
Invensys Ene Inc.	Rumford	RI
Iron Mountain	Chepachet	RI
Iroquoian Plumbing and Heating	Providence	RI
Island Plumbing and Heating	Jamestown	RI
Izzo & Sons Electric	Providence	RI
J & A Electric	Providence	RI
J & J Electric	Warwick	RI
J & M Plumbing LLC	Coventry	RI
J Argenti & Sons Electric LLC	Johnston	RI
J D Electric	Cranston	RI
J Dasilva Plumbing and Drain Cleaning	Pawtucket	RI
J Fernandes HVAC	Cumberland	RI
J Joyce Plumbing and Heating Inc.	Warwick	RI
J Mac Plumbing and Heating	Warwick	RI
Jacks Electric Inc.	Jamestown	RI
Jacob Messier	Warwick	RI
Jacobson Energy Research LLC	Providence	RI
Jaedyn Construction and Restoration	Warwick	RI
James Rattray	Westerly	RI
Janton Electric Contractors	West Warwick	RI
Jatwire Electric LLC	Tiverton	RI
Jay Almeida Electrician	Johnston	RI
JC Electric Inc.	Wakefield	RI
JD Mechanical Inc.	Greenville	RI
JDV Electric	Cranston	RI
Jeff Berard Plumbing and HVAC	Warwick	RI
Jeffrey Reynolds	Westport	RI
JEM Construction Group, LLC	North Scituate	RI
Jenkins Heating	Smithfield	RI
Jeremy J Laury	Johnston	RI
Jerold M Weisman & Company	Warwick	RI
Jim Kelley Electrician	Warwick	RI
Jim Silvia Electrician	Tiverton	RI
JJ McNamara Electric	Providence	RI



JKL Engineering Company Inc.	Providence	RI
JMAC Plumbing and Heating Inc.	Warwick	RI
JN Jordan Plumbing LLC	Shannock	RI
JO Plumbing Septic and Drain Cleaning	Warwick	RI
Joe Chaves Heating and Plumbing	Middletown	RI
Joe Diorio Electric	Pawtucket	RI
Joe Lemay Electrician	Lincoln	RI
Joe the Plumber	Warwick	RI
Joe Vigneault Electrician	Riverside	RI
John Jackson	Cumberland	RI
John R Bileau HVAC	Woonsocket	RI
John Simard Electric Contractor	North Smithfield	RI
Johnny Home Solutions LLC	Central Falls	RI
Johnny Mack Electric	Narragansett	RI
Johnny's Oil and Heating Inc.	Providence	RI
Johnson and Johnson Plumbing and Heating Inc.	Saunderstown	RI
Johnston Electric Inc.	North Scituate	RI
Joseph Benoit	North Providence	RI
Joseph Botelho Electrician	Cranston	RI
Joseph Britto Jr.	Warwick	RI
Joseph C. Lopes II	Portsmouth	RI
Joseph Giorno Plumbing and Heating	Cranston	RI
Joseph Palomino Heating and Cooling	Richmond	RI
Joseph Piasczyk	Coventry	RI
Joseph Soave	North Providence	RI
Joseph Truppi Electric	Cranston	RI
Joseph RJ Lussier Electric	North Kingstown	RI
Joshua B Tait Electric	Riverside	RI
Jouberts Heating and Air Conditioning	Warwick	RI
Joun Strafach & Sons	Westerly	RI
JP Island General Services	Middletown	RI
Just Heat	Portsmouth	RI
Kafin Oil Company Inc.	Woonsocket	RI
KBA Contracting	Pawtucket	RI
KCCNE	Providence	RI
Kelly Electric	Cumberland	RI
Kens Heating	Providence	RI
Kent Country Electrical Services	Warwick	RI
Kevin Messier Electrical	Cumberland	RI
Kirkbrae Electric	Lincoln	RI
KME Electric, Inc.	Woonsocket	RI
Kwik Plumbing and Heating, Inc.	Johnston	RI



L & B Remodeling	North Providence	RI
L & F Plumbing Inc.	Cranston	RI
L & M Construction & Realty, LLC	Cranston	RI
LAD Electric LLC	Providence	RI
Lain Electric Co	Providence	RI
Lakeside Electric	Chepachet	RI
Lamplighter, Inc.	Little Compton	RI
Lance Plumbing and Heating	Scituate	RI
Landry and Martin Oil Co Inc.	Pawtucket	RI
Langan Plumbing and Heating	Woonsocket	RI
Larry Giorgi Plumbing and Heating Inc.	North Providence	RI
Lawrence Air Systems Inc.	Barrington	RI
Ledoux Electric	North Kingstown	RI
Lees Plumbing and Heating	Providence	RI
Leidos Engineering	Newport	RI
Leveille Electric	Smithfield	RI
Lighthouse Contracting Services	Johnston	RI
Lightning Electric	Riverside	RI
LJ Giorgi Plumbing and Heating, Inc.	North Providence	RI
Lombardo Electric Company	Warren	RI
Loom Studios	East Providence	RI
Luis Anastacio Electrician	East Providence	RI
Luke Beaudreault Plumbing and Heating	North Smithfield	RI
Luso Plumbing and Heating Inc.	Cumberland	RI
M & G Correias Plumbing and Heating Supplies	East Providence	RI
M & M Electric	Richmond	RI
M.J. Bouchard Heating and Air Conditioning	Greenville	RI
Madden Electric	Little Compton	RI
Maggiacomo Plumbing, Inc.	Cranston	RI
Magnetic Electric Inc.	Warwick	RI
Malone Plumbing and Heating Inc.	Cranston	RI
Manfredo Electric	Warwick	RI
Mansfield Heating, Inc.	East Greenwich	RI
Map Electric	Woonsocket	RI
Marciano Electrical Contractors	West Warwick	RI
Marinelli & Sons Electric	West Kingston	RI
Marisa Desautel	Providence	RI
Mark D'Andrea Electric, LLC	Portsmouth	RI
Mark Southwork Maintenance	Johnston	RI
Marsh Builders Inc.	Cumberland	RI
Martel Plumbing and Heating	Lincoln	RI
Martone Service Company	Narragansett	RI



Massed Electric Company	Warren	RI
Mastro Electric Supply Co Inc.	Providence	RI
Mastrocinque and Sons Plumbing and Heating LLC	Portsmouth	RI
Matt Electric	Greene	RI
Matthew A Marchetti	Cranston	RI
Matts Mechanical	Greenville	RI
Max & Jason Enterprises	Providence	RI
McCormick Electrical	North Kingstown	RI
McDonough Electric LLC	West Warwick	RI
MDR Enterprises LLC	Middletown	RI
Menard Electric	Manville	RI
Metro Electric	Woonsocket	RI
MH Electric	Cranston	RI
Michael - Rae Design LLC	Wyoming	RI
Michael Bowry	Cranston	RI
Michael Chace Electrician	Johnston	RI
Michael Freitas Plumbing and Mechanical	Pascoag	RI
Michael Moura	Riverside	RI
Michael R Lafleur	Smithfield	RI
Miller Mechanical Inc.	Rumford	RI
MJ Electric and Refrigeration	Pawtucket	RI
MJF Plumbing and Heating	Bristol	RI
MO Refrigeration	Warwick	RI
MoonWorks	Woonsocket	RI
Morgan Electric	Warwick	RI
Morra Electric Inc.	Johnston	RI
MP Samsky Corp.	North Smithfield	RI
Mr. Plumber LLC	East Providence	RI
Mr. Rooter Plumbing	Warwick	RI
MRC Electric	Woonsocket	RI
Multi State Electric Co.	North Providence	RI
Mutual Engineering Service Company	Warwick	RI
NAPPI Bros.	Bristol	RI
Nasons Heating Cooling Sheet Metal	Middletown	RI
Nathan Cordeiro Electrician	Cranston	RI
National Refrigeration Inc.	Warwick	RI
New England Boilder Works	Coventry	RI
New England Insulation	Woonsocket	RI
New England Plumbing Heating and Air LLC	Greenville	RI
Newport Electric	Portsmouth	RI
Newport Plumbing and Heating Gas Company	Portsmouth	RI
NGB Electric	Smithfield	RI



Nicholas Electric	Cranston	RI
Nightingale Heating	Providence	RI
Nolin Electric Incorporated	Providence	RI
Nordic Company Inc.	Riverside	RI
North Scituate Electric, Inc.	North Scituate	RI
Northeast Building Solutions	Cumberland	RI
Northeast Electrical Distributors	Cumberland	RI
Northern Electric	Harrisville	RI
Northern Energy Services Inc.	Providence	RI
Northern Power Electrical Services	North Scituate	RI
Ocean State Air Solutions	Portsmouth	RI
Ocean State Electric	Johnston	RI
Ocean State Mechanical, Inc.	Fiskeville	RI
O'Dowd Electric	Warwick	RI
Old Tyme Electric, Inc.	Pawtucket	RI
Omni Electric	Wakefield	RI
On Point Restoration LLC	Richmond	RI
O'Neil Electric Company	Warwick	RI
Optimal Energy	Providence	RI
P & S Electric Inc.	East Greenwich	RI
Pajan Services Inc.	North Providence	RI
Pariseault Builders Inc.	Warwick	RI
Parrella Electric	Providence	RI
Patrick Corrigan	Warwick	RI
Patrick Cunningham Electrician	Smithfield	RI
Patriot Plumbing and Heating	Coventry	RI
Paul Buono	Johnston	RI
Paul Manfredo Electric	Warwick	RI
Paul Musco	Cranston	RI
Paul Scotto Electrical	Portsmouth	RI
Paul G. Amaral Electrician	Tiverton	RI
PECI	Portsmouth	RI
Pellegrino Plumbing and Heating	Westerly	RI
Pemlico Plumbing	Warwick	RI
Percivalle Electric Inc.	Warwick	RI
Perrino Electric	Cranston	RI
Peter Bibby	Providence	RI
Peter Chilabato Sure Power Electrical	Portsmouth	RI
Peter Rodriques Electrician	Pawtucket	RI
Petes Electric Company Inc. .	Westerly	RI
Petro Home Services	Warwick	RI
Petronelli Plumbing and Heating	Cranston	RI



Pettee Electrical Contractor	Chepachet	RI
Petterson Electric	Warwick	RI
Phalanx Engineering, Inc.	Warwick	RI
Philips Precision Plumbing LLC	Greene	RI
Phillip J Bolster Plumbing and Heating	Wakefield	RI
Phillips Plumbing and Mechanical Inc.	Cranston	RI
Phil's Heating and Air Conditioning	Westerly	RI
Phoenix Property Management	Pawtucket	RI
Piazza Enterprises LLC	West Warwick	RI
Pickles Plumbing and Heating LLC	Mapleville	RI
Pinnacle Plumbing and Heating	Greenville	RI
Plumb Perfection	Johnston	RI
Plumbing and Heating by Joe Gruttadauria	Johnston	RI
Plumbing and Heating Solutions LLC	East Greenwich	RI
Potvin Enterprises Inc.	Warwick	RI
Power By Design Electrical Contracting LLC	Richmond	RI
Power Trip Electric Inc.	Hope	RI
Powercomm Systems	Warwick	RI
Pratt Plumbing and Heating LLC	Harrisville	RI
Precision Power	Wyoming	RI
Premair HVAC	Warwick	RI
Preventive Maintenance Solutions	Warwick	RI
Priority Plumbing and Heating Inc.	Providence	RI
Protect All Security Systems	Warwick	RI
Providence Mechanical Services LLC	Smithfield	RI
Quinn Electric, Inc.	Coventry	RI
R & G GENERAL CONTRACTING	CENTRAL FALLS	RI
R & J Manufacturing Company	Johnston	RI
R & M Electric Inc.	Coventry	RI
R.E. Coogan Heating Inc.	Warwick	RI
Ralph E Geiselman Plumbing and Heating	Pawtucket	RI
Ralph Ferra Plumbing	North Smithfield	RI
Rama Electric	Wakefield	RI
Ramos Electric	Providence	RI
Randall B Ayers	Warwick	RI
Ray Gagnon Electric, Inc.	Lincoln	RI
Ray lasimone Plumbing	Johnston	RI
Raymond J Reinsant Plumbing and Heating	Lincoln	RI
RB Queern Co.	Portsmouth	RI
RC Plumbing and Heating	North Providence	RI
RCS Energy Services	Providence	RI
RD Construction	Cranston	RI



Reddy Piping Concepts Inc.	Cranston	RI
Regan Heating & Air Conditioning Inc.	Providence	RI
Regent Electric CO Inc.	Coventry	RI
Reliable Electric Corp.	Coventry	RI
Reliant Electric	Cranston	RI
Renaissance Sheet Metal LLC	Cranston	RI
Renewable Energy Solutions LLC	Warwick	RI
Resendes Heating Service LLC	Coventry	RI
Restivos Heating and Air Conditioning	Johnston	RI
Rexel Energy Solutions (Munro Distributing)	Cranston	RI
Rhode Island Builders Association	East Providence	RI
Rhode Island Insulation	Hope	RI
Rhode Island Sheet Metal LLC	Pawtucket	RI
Rhodes Technologies Inc.	Coventry	RI
Rhody Electric	Warwick	RI
RI Property MGT	Providence	RI
RI Rooter and Plumbing, Inc.	Johnston	RI
Ricci Electric	Cranston	RI
Richard Brochu	Manville	RI
Richard Gayer Electric	Bristol	RI
Richard Havey	Warren	RI
Richard J. Martino Jr	Smithfield	RI
Right View Electric. Inc.	East Providence	RI
Rightway Electric, Inc.	Providence	RI
Rise Engineering	Cranston	RI
Ritacco Electric LLC	Westerly	RI
RMS Ruggieri and Sons Mechanical LLC	Richmond	RI
RN Electric	North Providence	RI
Robert Davignon	Warwick	RI
Robert Dionne Electrical Contractor	Providence	RI
Robert E Bang Plumbing and Heating	Lincoln	RI
Robert F Audet Inc.	East Greenwich	RI
Robert Perrino Electric	Cranston	RI
Robert Rachiele Electrician	Coventry	RI
Robert Squizzero Plumbing and Heating	Cranston	RI
Robert Sweet HVAC	Warwick	RI
Roberts Electric	Pawtucket	RI
Robinson Plumbing Supply	Pawtucket	RI
Roland M Belanger Plumbing and Heating	Pascoag	RI
Roland Richard	Slatersville	RI
Ronald Vento Electrician	Johnston	RI
Ross Landy Electrician	Portsmouth	RI



Rossi Electric Company	Cranston	RI
Roy Lacroix	West Warwick	RI
RR Donnelley & Sons	North Kingstown	RI
Rumford Mechanical Systems LLC	Rumford	RI
Russ Lembo Electrician	Johnston	RI
Ryan Electric Construction	Warwick	RI
S & K Electric Inc.	Charlestown	RI
S & S Electric	Chepachet	RI
S. Desmarisais Plumbing and Heating	Johnston	RI
S.B. Carbone Plumbing and Heating Company Inc.	Cranston	RI
Sakonnet Plumbing and Heating Inc.	Little Compton	RI
Sal Manzi and Son Plumbing and Heating Inc.	Cranston	RI
Sam Bliven Jr Plumbing & Heating Inc.	Westerly	RI
Sanford Electric	Bristol	RI
Santoro Oil Company Inc.	Providence	RI
Santurri Electric	East Greenwich	RI
Sasa Mechanical Contractors Inc.	Johnston	RI
Savard Oil Company Inc.	East Providence	RI
Schneider-Electric	Kingston	RI
Schwegler and Sons Plumbing and Heating Inc.	North Smithfield	RI
Scott D Horne Electric	Burrillville	RI
Scott Gatta Electric	Johnston	RI
Seekonk Supply Inc.	Providence	RI
Sensible Air	Riverside	RI
Sensible Heating and Air Conditioning LLC	Hope Valley	RI
Shamrock Electric	Middletown	RI
Shamrocks Plumbing	Pawtucket	RI
Sharpe Building Associates, LLC	Providence	RI
Sheridan Electric Inc.	Warwick	RI
Siemens Industry	Cranston	RI
Simon Olean	Portsmouth	RI
Simon's Supply	Pawtucket	RI
Sine Plumbing and Heating Co Inc.	East Providence	RI
Social Enterprise Inc.	Providence	RI
Sosa & Son Heating Air Conditioning & Refrigeration	Woonsocket	RI
South County Community Action	North Kingstown	RI
South County Gas Service	Narragansett	RI
Speeby Plumber	Johnston	RI
Spencer's Plumbing	North Kingstown	RI
Stable HVAC Service and Installation	Pawtucket	RI
Standish Heating and Air Conditioning	Coventry	RI
Stanton Electric, Inc.	Cumberland	RI



Stateside Precision Group, LLC	Newport	RI
Statewide Construction Corp	Providence	RI
Statewide Insulation	North Smithfield	RI
Statewide Plumbing and Heating Co Inc.	Cranston	RI
Stedman & Kazounis Plumbing and Heating	Charlestown	RI
Stem Electrical	Warwick	RI
Stephen Andrea Fire & Electric, LLC	Coventry	RI
Stephen Larochelle	Cumberland	RI
Stephen Mellen	Wakefield	RI
Steven Cacia Electrician	Providence	RI
Steven Maymon	Warwick	RI
Steven P Marandola	West Warwick	RI
Suburban Electrical	Providence	RI
Sullivan & McLaughlin	Greenville	RI
Summit Electrical Contractors Inc.	Lincoln	RI
Sunshine Fuels and Energy Services, Inc.	Bristol	RI
Superior Comfort Inc.	Bristol	RI
Superior Electric	Providence	RI
Superior Fire & Electrical Services	North Providence	RI
Superior Insulation	Narragansett	RI
Superior LED Light Solutions	Warwick	RI
Superior Plumbing and Heating	Cranston	RI
Supply New England	Pawtucket	RI
SW & Sons Plumbing & Heating	Johnston	RI
Swajian and Son	Cranston	RI
Sylvander Heat and AC	East Greenwich	RI
Sylvania Lighting Services	Johnston	RI
Symmes Maini & McKee Asso	Providence	RI
T & T Construction	Providence	RI
T & T Plumbing and Heating Inc.	Hope Valley	RI
T Gomes Heating and Cooling	Warwick	RI
T. Murphy Electric	Cranston	RI
T.A. Gardiner Plumbing & Heating Inc.	Bristol	RI
Taco Comfort Solutions	Cranston	RI
TD Plumbing Co.	East Providence	RI
Tebano Electric	Bristol	RI
Tebo Electric Inc.	Woonsocket	RI
The Moore Company	Westerly	RI
The Plumber Company LP	Cranston	RI
Thermal Home Energy Solutions	Cranston	RI
Therrien Mechanical Systems	Lincoln	RI
Thielsch Engineering	Cranston	RI



Thomas P McGee Plumbing and Heating	North Smithfield	RI
TIM Inc.	Rumford	RI
Tom Whitaker	Newport	RI
Toms Plumbing LLC	Manville	RI
Toner Electric Company	Middletown	RI
Tops Lighting (Electric Supply Company)	Providence	RI
Total Comfort Heating and Cooling Inc.	Lincoln	RI
Total Construction Services Inc.	Providence	RI
TPF Electrical Services	Pawtucket	RI
TR Electric Inc.	Ashaway	RI
TRC Companies, Inc.	Providence	RI
Tri-Town Community Action	North Providence	RI
Tuma Insulations	Warwick	RI
UG Nasons Inc.	Middletown	RI
Universal Electric CO Inc.	Warwick	RI
US Electrical Services	Cranston	RI
Valcourt Heating Inc.	Tiverton	RI
Valley Heating and Cooling Inc.	Hope Valley	RI
Valley Plumbing and Heating	Kingston	RI
Valmer D Montoya Air Heating and Cooling Inc.	Central Falls	RI
Van's Electric Inc.	Bristol	RI
Vaughn Oil Company Inc.	Smithfield	RI
Venco Electric LLC	Cranston	RI
Ventura Construction	Middletown	RI
Vicmir & Sons Heating and Air Conditioning Controls	Riverside	RI
Viking Electric Inc.	Providence	RI
Vintage Plumbing	Riverside	RI
Vivona Plumbing and Heating Inc.	Portsmouth	RI
VSP Plumbing and Heating Inc.	West Greenwich	RI
W Francis Plumbing and HVAC	Bristol	RI
W.W. Grainger, Inc.	Warwick	RI
Wakefield Heating Service	Wakefield	RI
Waldo Plumbing and Heating LLC	Lincoln	RI
Wayne Electric Inc.	Bristol	RI
Wayne Fernandez Electrician	Providence	RI
WESCO Distribution Inc.	Smithfield	RI
Westbay Community Action	Warwick	RI
Wickford Appliance and Lighting Inc.	Pawtucket	RI
William Calia Electrician	Johnston	RI
William Francis	Bristol	RI
William J Riley Plumbing and Heating	Warwick	RI
Woods Heating Service	East Providence	RI



Wordell Heating & Cooling LLC	Little Compton	RI
WR Construction Inc.	Providence	RI
WSCHB LLC	Warwick	RI
Zawadzki Plumbing and Heating Inc.	Warwick	RI
Zompa Plumbing and Heating	Warren	RI
Calco Electrical Services	Greenville	RI
Calson Corporation	Johnston	RI
David McMullen DBA Mister Sparky	Portsmouth	RI
Blackhawk Engagement Solutions	Lewisville	TX
Compressed Air Challenge	Alexandria	VA
Opower Inc.	Arlington	VA
Kelliher Samets Volk	Burlington	VT
Vermont Energy Investment Corporation	Burlington	VT
New Buildings Institute Inc.	White Salmon	WA



NERI 1-4

Request:

Subject: Book 1—Horan

Reference p. 16, l. 19 to p. 17, l. 4. What is the cumulative rate cost to customers of the investments described?

Response:

The cumulative revenue requirement on actual electric and gas distribution investments made in Fiscal Year 2013 through Fiscal Year 2017, plus estimated electric and gas distribution investments to be made in Fiscal Year 2018, totals \$31.2 million and \$72.6 million, respectively. The Company collected this cumulative revenue requirement from customers through the respective Infrastructure, Safety, and Reliability (ISR) capital factors. Non-ISR growth investment has not been factored into the cumulative Narragansett Gas revenue requirement quoted above, as growth projects are assumed to be supported by the additional revenues associated with new customers.

The Narragansett Electric Company  
d/b/a National Grid  
RIPUC Docket No. 4770  
Responses to NERI's First Set of Data Requests  
Issued March 2, 2018

NERI 1-5

Request:

Subject: Book 1—Horan

Reference p. 18, Figure 1. Why have SAIDI and SAIFI performance worsened since 2013/2014? Why did performance improve in prior years?

Response:

As shown on the chart below, the Company's SAIFI and SAIDI performance improvement over the past several years prior to 2015 was due to the decrease in outages caused by lightning and deteriorated equipment. The Company's increase in SAIFI and SAIDI performance during 2015 and 2016 as compared to 2014 was due to an increase in outages caused by vehicles and trees.

RI Yearly SAIDI by different cause code						
Cause	2011	2012	2013	2014	2015	2016
Animal	3.23	1.42	2.28	4.09	4.54	4.98
Construction by Company	0.41	0.00	0.38	0.11	0.13	1.37
Construction by Company Contractor	0.00	0.00	0.33	0.03	0.00	0.00
Control Trouble	0.13	0.37	0.19	1.22	0.21	0.09
Contamination	0.00	0.00	0.00	0.00	0.00	0.00
Deterioration	7.24	4.99	3.16	3.10	2.87	2.14
Device Failed	5.09	6.46	6.29	8.89	5.54	7.72
Distribution transformer overload	0.04	0.02	0.11	0.02	0.01	0.02
Feeder Overload	0.31	0.00	0.29	1.21	0.00	0.00
Feeder Unbalance	0.00	0.00	0.00	0.00	0.75	0.00
Fire on Company Equipment	0.00	0.00	0.00	0.85	0.00	0.00
Flying Debris	0.39	0.31	0.53	0.36	1.36	1.05
Human contact	0.00	0.01	0.00	0.00	0.00	0.00
Improper application	0.00	1.84	0.05	0.00	1.76	0.06
Improper installation	0.03	0.02	0.05	0.00	0.00	0.00
Insulation failure - cable	3.95	3.16	2.60	4.82	6.16	4.76
Insulation failure - other	3.15	1.73	1.07	3.62	3.00	2.76
Lightning	1.79	6.61	10.10	0.77	4.79	4.89
Moisture	0.18	0.31	0.00	0.00	0.00	0.00
Non-Company Activities	1.38	0.65	0.76	0.60	0.38	0.08
Operating / testing error	0.03	0.00	0.28	0.00	0.10	0.00
Other Company Activities	1.50	1.52	0.80	0.72	0.90	1.44
Tree - Broken Limb	8.28	10.57	5.81	5.42	6.25	11.16
Tree - Vines	0.43	0.08	0.39	0.09	0.51	0.01
Tree Fell	6.52	10.28	8.36	7.02	12.04	10.09
Tree Growth	0.36	0.37	0.19	0.14	0.39	0.06
Unknown	8.19	6.35	4.61	3.16	5.53	6.37
Vandalism	0.00	0.00	0.01	0.01	0.00	0.00
Vehicle	6.88	8.09	7.67	5.38	6.13	8.82
Maintenance and other intentional events	1.01	0.79	0.96	2.36	0.94	1.25
<b>Grand Total</b>	<b>60.58</b>	<b>65.96</b>	<b>57.26</b>	<b>54.00</b>	<b>64.29</b>	<b>69.13</b>

NERI 1-6

Request:

Reference p. 18 - community investments. Please:

- a. Detail charitable contributions during each year since the Company's last rate case.
- b. List all recipients of the Company's charitable contributions and community investments.
- c. Describe the method used to determine recipients.

Response:

- a. Please see Attachment NERI 1-6-1 for an itemized list of charitable contributions and recipient organizations during calendar year 2013 and Attachment NERI 1-6-2 for calendar year 2017. Please also refer to the Company's previously filed response to PUC 6-6 for the itemized list of charitable contributions and recipient organizations during calendar years 2014 through 2016.
- b. The Company's community investments, including most of the organizations referenced in Mr. Horan's Pre-Filed Direct Testimony (United Way, the Good Neighbor Energy Fund, McAuley House, Big Brothers Big Sisters of Rhode Island, City Year) are generally made through its charitable giving program. Please see the response in part a. above for the recipients of the Company's charitable contributions. Other community investments, such as the Boston Celtics Foundation and Boston Red Sox Foundation projects noted in Mr. Horan's testimony, are supported through marketing partnerships that include community relations activities in the sponsorship agreements. Finally, employee volunteering opportunities are identified, prioritized, and executed by the Company's Rhode Island leadership to maximize the local community impact of those investments.
- c. Please see Attachment NERI 1-6-3 for National Grid's Charitable Contributions Accounting Policy, which is applicable to all US companies.

**THE NARRAGANSETT ELECTRIC COMPANY**  
**Donations for Calendar Years 2013**

Vendor	TOTAL (Gas & Electric)
AMOS HOUSE	7,500
AMYOTROPHIC LATERAL SCLEROSIS ASSN.	830
BACK TO SCHOOL CELEBRATION OF RI	1,500
BLACKSTONE VALLEY TOURISM	500
BOYS TOWN NEW ENGLAND INC.	5,000
BRISTOL-WARREN EDUCATION FOUNDATION	1,500
BRYANT UNIV.	5,000
CHAMBER EDUCATION FOUNDATION	500
CHARTERCARE HEALTH PARTNERS	500
CITY YEAR	100,000
CITY YEAR INC	1,500
COMMUNITY COLLEGE OF RHODE ISLAND	30,025
COMPREHENSIVE COMMUNITY ACTION	1,500
CROSSROADS RHODE ISLAND	7,500
DAY ONE	2,500
EDUCATION IN ACTION	32,000
EPISCOPAL CHARITIES FUND OF RI	2,000
F.I.R.S.T.	5,000
FAMILY SERVICE OF RI INC.	5,000
FIRST WORKS	10,100
FRIENDS OF BALLARD PARK	3,000
GRANTMAKERS COUNCIL OF RI INC	1,770
GROUNDWORK PROVIDENCE, INC.	8,335
HASBRO CHILDRENS HOSPITAL	3,500
LEADERSHIP RHODE ISLAND	5,000
LITTLE COMPTON COMMUNITY CENTER COR	1,500
MARCH OF DIMES	3,000
MEADOWBROOK FARMS AND HANAFORD	250
MOSIACO DEVELOPMENT CORP	3,000
NEW ENGLAND BOARD OF HIGHER EDUCATI	1,200
NEWPORT COUNTY CHAMBER OF COMMERCE	7,300
NEWPORT PUBLIC LIBRARY	700
NORTH SMITHFIELD HERITAGE ASSOCIATI	1,000
OCEAN STATE THEATRE CO	12,500
PHOENIX HOUSES OF NEW ENGLAND	1,500
PROVIDENCE CHILDREN'S MUSEUM	12,500
PROVIDENCE PERFORMING ARTS CENTER	16,500
REBUILDING TOGETHER PROVIDENCE	2,500

**THE NARRAGANSETT ELECTRIC COMPANY**  
**Donations for Calendar Years 2013**

Vendor	TOTAL (Gas & Electric)
RHODE ISLAND KIDS COUNT	2,500
RHODE ISLAND LISC	20,000
RHODE ISLAND SCHOOL OF THE FUTURE	10,000
RHODE ISLAND SOUTHERN FIREMAN'S LEA	1,000
RHODE ISLAND ZOOLOGICAL SOCIETY	2,500
RHODES ISLAND INSTITUTE FOR LABOR	1,900
RIVERZ EDGE ARTS PROJECT	10,000
SALVE REGINA UNIVERSITY	10,000
SAVE THE BAY	3,000
SOUTHSIDE COMMUNITY LAND TRUST	5,000
ST MICHAELS PROVIDENCE RHODE ISLAND	1,000
THE FUND FOR COMMUNITY PROGRESS	1,000
THE JONNYCAKE CENTER INC	15,000
THE PATROLMAN GREGORY W BOLDEN	2,000
THE PAWTUCKET FOUNDATION	1,500
THE PROVIDENCE FOUNDATION	5,410
THE SALVATION ARMY	360,000
TRINITY REPERTORY COMPANY	10,000
UNITED WAY OF RHODE ISLAND	100,000
UNIV. OF RI FOUNDATION	700
WATCH HILL CONSERVANCY	2,500
WOMEN & INFANTS HOSPITAL OF RI	2,200
AMERICAN RED CROSS RHODE ISLAND CHA	1,020
HABITAT FOR HUMANITY OF RI SOUTH CO	15,000
JUNIOR ACHIEVEMENT OF RI INC	6,400
MICHAEL'S FUND	1,000
MINISTERS ALLIANCE OF RHODE ISLAND	3,500
PHOENIX SOCIETY, INC.	5,000
PROVIDENCE FIRE DEPT SAFETY &	1,500
RHODE ISLAND COMMUNITY FOOD BANK	2,500
RHODE ISLAND POLICE CHIEFS ASSOCIAT	5,000
RHODE ISLAND STATE POLICE MUSEUM	1,000
RI ASSOCIATION OF FIRE CHIEFS, INC	5,000
Various - Employee "Matching Gift" donations	155,546
<b>TOTAL</b>	<b>1,074,686</b>

**THE NARRAGANSETT ELECTRIC COMPANY**  
**Donations for Calendar Years 2017**

Vendor	TOTAL (Gas & Electric)
ALLIANCE TO SAVE ENERGY	4,842
AMERICAN RED CROSS NATIONAL HQ	16,154
AMERICAN RED CROSS RHODE ISLAND CHA	43,189
BACK TO SCHOOL CELEBRATION OF RI	1,500
BLACKSTONE VALLEY TOURISM	2,000
BOYS & GIRLS CLUBS OF WARWICK	10,000
BOYS TOWN NEW ENGLAND INC.	5,000
BRISTOL-WARREN EDUCATION FOUNDATION	2,000
CATHOLIC SOCIAL SERVICES OF RI	1,050
CHAMBER EDUCATION FOUNDATION	1,000
CHILDREN'S FRIEND AND SERVICE	1,500
CITY OF PAWTUCKET	1,000
CITY YEAR	100,000
CONNECTING FOR CHILDREN AND FAMILIE	10,103
DAY ONE	1,060
EPILEPSY FOUNDATION OF NEW ENGLAND	1,350
FAMILY SERVICE OF RI INC.	6,262
FIRST BOOK	40,000
FIRST WORKS	5,000
FOSTER-GLOCESTER REGIONAL SCHOOL	2,886
FRIENDS OF BALLARD PARK	2,000
FRIENDS OF THE FAMILY LITERACY CENT	5,000
GREATER PROVIDENCE YOUNG MENS	2,594
HASBRO CHILDRENS HOSPITAL	1,083
HOME & HOSPICE CARE OF RHODE ISLAND	1,059
JEFFERSON AWARDS FOR PUBLIC SERVICE	2,690
JOHNSON AND WALES UNIVERSITY	1,000
LEADERSHIP RHODE ISLAND	8,500
LITTLE COMPTON COMMUNITY CENTER COR	1,640
MCAULEY CORPORATION	10,000
MINISTERS ALLIANCE OF RHODE ISLAND	1,000
NEWPORT TREE SOCIETY	2,500
NORTH KINGSTOWN SCHOOL DEPARTMENT	6,000
Not assigned	(141,367)
PROVIDENCE CHILDREN'S MUSEUM	20,000
PROVIDENCE PERFORMING ARTS CENTER	10,000
REFUGEE DEVELOPMENT CENTER	2,500

**THE NARRAGANSETT ELECTRIC COMPANY**  
**Donations for Calendar Years 2017**

Vendor	TOTAL (Gas & Electric)
RHODE ISLAND COALITION FOR THE HOME	300
RHODE ISLAND COMMUNITIES FOR ADDICT	950
RHODE ISLAND PBS FOUNDATION	1,000
RHODE ISLAND SCHOOL OF THE FUTURE	20,000
RHODE ISLAND TREE COUNCIL	10,000
RHODE ISLAND ZOOLOGICAL SOCIETY	20,000
RHODES ISLAND INSTITUTE FOR LABOR	1,000
RI PUBLIC EXPENDITURE COUNCIL	5,689
RONALD MCDONALD HOUSE OF PROVIDENCE	10,143
SARGENT REHABILITATION CENTER	3,889
SAVE THE BAY	10,017
SISTERS OF MERCY OF THE AMERICAS	5,000
SPECIAL OLYMPICS RHODE ISLAND INC.	5,019
ST MICHAELS PROVIDENCE RHODE ISLAND	1,000
ST. MARY'S HOME FOR CHILDREN	1,037
THE PAWTUCKET FOUNDATION	1,000
THE TOMORROW FUND	2,049
UNITED WAY OF RHODE ISLAND	190,000
WESTERLY AREA REST MEALS WARM INC	1,000
YMCA LINCOLN	1,692
Various - Employee "Matching Gift" donations	52,924
<b>TOTAL</b>	<b>535,804</b>

		<h1>US ACCOUNTING POLICY</h1>
Charitable Contributions		<b>US AP</b> 510.03.1
<b>Prior US APR Updated:</b>	Not applicable	<b>Effective Date:</b> April 29, 2013
<b>Current US APR Update:</b>	April 29, 2013	
<b>Applicability:</b>	US National Grid – All Companies	
<i>Departure from this Policy requires the Approval of the US NG VP and Controller of Accounting Services</i>		

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### **Section I: Purpose & Scope**

Every year, National Grid contributes significant amounts to deserving charitable organizations and programs. These donations help position the Company as a good corporate citizen in the communities we serve, and they support a framework that emphasizes education, environmental stewardship and other community investments that align with corporate priorities and strategic objectives. This policy establishes the guidelines to ensure that an effective and consistent process is applied in the approval and recording of Charitable Contributions.

The policy applies to all US National Grid companies (“the Company” or “the Companies”). For assistance with any aspect of this policy, please contact the Economic Development and Corporate Citizenship Department.

		<h1>US ACCOUNTING POLICY</h1>	
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<b>Prior US APR Updated:</b>	Not applicable	<b>Effective Date:</b> April 29, 2013	
<b>Current US APR Update:</b>	April 29, 2013		
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## Section II: Procedure Description

### A. Definitions

- Charitable Contributions: Also referred to as “Donations” or “Charitable Donations”. In the context of the policy, includes contributions, donations, and/or expenses for charitable, social and community welfare purposes.
- Community Representatives: Generic term for National Grid employees owning the requests for funding originating from charitable organizations. These employees include Corporate Citizenship Representatives, Community & Customer Coordinators, and others who may be responsible for recommending and processing donation requests.

### B. Policy

#### B.1 Policy statement

National Grid has a corporate giving framework that focuses on:

- Education and Skills: Particularly Science, Technology, Engineering and Math (STEM) programs, with an emphasis on encouraging K-12 students to explore careers in technical fields that align with National Grid’s future workforce needs.
- Energy and Environment: Particularly projects that focus on global climate change, sustainability, natural resource/energy conservation, and local community environmental support around National Grid operational sites.
- Community Investment: Support for charitable programs, organizations and community events that align with corporate and jurisdiction priorities while encouraging employee engagement and raising brand awareness.

As a general rule, funding is not provided for:

- Organizations not eligible for tax-deductible support under Section 501(c) (3) of the IRS Code
- Organizations that discriminate on the basis of race, color, religion, gender, national origin, disability, age, marital status, or veteran status
- Fraternal and veterans organizations or private clubs
- Organizations outside of National Grid's service territory, except to fund a specific project or program that is delivered directly within our communities
- Political or lobbying organizations
- Churches or other Religious organizations
- Organizations that spend more than 25% of their budget on overhead and fundraising
- Travel and conferences
- Capital campaigns.

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Charitable Contributions may only be made to not-for-profit organizations for a specified charitable cause. Donations may not be made if the purpose of the donation is to encourage a customer to buy or recommend buying the Company’s products, or to encourage favorable treatment from a supplier, regulator or public official.

Charitable Contributions by individual employees (e.g., school alumni association dues, personal Contributions to charitable organizations) are considered personal expenses and are not reimbursable.

**B.2 Requests for contributions**

Corporate giving funds are budgeted into three major categories which are Corporate Citizenship, Centralized Community Support, and Jurisdiction:

- **Corporate Citizenship:** These donations typically involve larger gifts to strategic programs and organizations in the areas of education and environmental stewardship. The grants often fund multi-year charitable partnerships that cross multiple regions/communities across the service territory. This category also includes corporate donations to the United Way, the Matching Gifts program, disaster relief donations, and National Grid’s contributions to several low-income customer heating assistance funds.
- **Centralized Community Support:** Typically smaller, regional focused donations and sponsorships that support Jurisdiction priorities and enhance relationships with key community organizations and stakeholders. These charitable donations are reviewed and approved centrally and should align with our education and environment priorities wherever possible.
- **Jurisdiction:** These are generally smaller donations and sponsorships that support community organizations and events with significant local impact. Equal budgets are provided across the US Jurisdictions.

The Cybergrants system is the mechanism that is used to enter the request for each of these three budget categories. Applications for funding can be made by employees (e.g. for the Matching Gifts program) or by the not-for-profit organizations themselves:

- For organizations, a vendor record shall be set up in Cybergrants which has the capability to check for 501.c.3 status by requesting the organization to provide its W-9 and Taxpayer ID, thereby ensuring the organization is an eligible not-for-profit charitable organization.

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- Employee giving program requests (e.g. Matching Gifts) require SAP employee ID numbers are in order to access Cybergrants and initiate a contribution. The amount of the matching gift contribution shall be between \$20 and \$500, and donations are limited to a maximum of \$500 per employee per year.

### B.3 Review process

#### B.3.1 Funding originated from Organizations

Requests for funding originating from Organizations are owned and recommended by Community Representatives.

The Community Representatives process the requests using information provided by the organizations in Cybergrants. Details provided in the request shall include the organization name, amount requested, project description, community(ies) impacted, budget category, and the date for requested payment.

The requests shall be reviewed by the Corporate Citizenship Program Analyst to determine whether the organizations are valid and eligible not-for-profit organizations consistent with the Company’s corporate giving policies. The Program Analyst then prepares a summary that shall be reviewed and validated for reasonableness by the Director of Economic Development and Corporate Citizenship, in conjunction with the review tools available in Cybergrants. After this review, the Director of Economic Development and Corporate Citizenship shall provide preliminary approval recommendations for each donation.

Charitable Contributions shall also be subject to management review and approval as necessary per the following Delegation of Authority (DoA) limits:

- Up to \$20,000: Vice President of Customer & Business Strategy
- Up to \$40,000: Senior Vice President and Chief Customer Officer
- Up to \$176,000: Chief Executive Officer

The Director of Economic Development and Corporate Citizenship shall collect comments from management review and provide a revised approval recommendation as necessary. Once approved by management, the Director of Economic Development and Corporate Citizenship shall provide final approval for each contribution in Cybergrants.

Accounts Payable is then automatically notified through Cybergrants, and the data is interfaced into SAP. The related checks for each contribution payment shall be provided to the Economic Development and Corporate Citizenship Department for reconciliation with the authorized amount before being sent to the not-for-profit organization.

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Additionally, the Economic Development and Corporate Citizenship department shall obtain from the Finance Department the related SAP accounts payable journal to ensure that payable amounts are consistent with the dollar amounts of contributions authorized.

**B.3.2 Matching Gift program review process**

The review and approval shall be performed quarterly via group batch by the Director of Economic Development and Corporate Citizenship.

**B.3.3 Annual Review Process**

On an annual basis, the Economic Development and Corporate Citizenship Department shall perform a review of contributions made to organizations during the previous fiscal year, to ensure that they are only related to approved organizations and amounts. The Corporate Citizenship Program Analyst shall obtain, from the Finance Department, a report from SAP of all accounts payable activity for the year by not-for-profit organization. The Corporate Citizenship Program Analyst shall reconcile the accounts payable report to Economic Development and Corporate Citizenship’s records from Cybergrants for (a) not-for-profit organizations included to those approved per Cybergrants; and (b) dollar amounts paid to those authorized for each organization.

The Director of Economic Development and Corporate Citizenship shall review the annual reconciliation performed by the Corporate Citizenship lead analyst.

That reconciliation shall also be provided to the Accounting Department to ensure that Charitable Contribution payments have been appropriately recorded in FERC Account 426.1. In particular, the Accounting Department shall identify and trace all amounts contributed to major not-for-profit organizations (e.g., Red Cross, United Ways) from the reconciliation to a detail of amounts recorded in account 426.1 per SAP.

**Section III: Chart of Account Reference**

**As per guidance from FERC Uniform System of Accounts:**

Expenses related to charitable, social and community welfare shall be reported in Account 426.1 as prescribed by the Uniform System of Accounts at the Electronic Code of Federal Regulations website.

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#### Section IV: Supplemental Information

The detailed procedure for the Matching Gift program is available on the National Grid Infonet.

#### Section V: Key Policy Reference

Accounting Standards Codification (ASC)			
Topic	Subtopic	Description	
		Not applicable	
Other Key Accounting Literature <i>(e.g. Regulatory Accounting Requirements, International Financial Reporting Standards)</i>			
Part	Subchapter	Chapter	Title
101	C: Accounts, Federal Power Act	1: Federal Energy Regulatory Commission, Department of Energy	18: Conservation of Power and Resources

#### Section VI: Transition Information

Not applicable

#### Section VII: Exhibits

Not applicable

#### Section VIII: Frequently Asked Questions

Not applicable