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STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES
Commissioner Marion S. Gold, Ph.D.

Rhode Island – Residential Property Assessed Clean Energy Program Frequently Asked Questions

1. What is the Property Assessed Clean Energy program?

Property Assessed Clean Energy, commonly referred to as **PACE**, is a financing program designed to help qualifying homeowners invest in eligible energy efficiency and renewable energy improvements to their property. The Rhode Island General Assembly passed and Governor Lincoln D. Chafee signed the Property Assessed Clean Energy legislation into law on July 15, 2013.

Both the House and Senate PACE legislation can be found at the Office of Energy Resources website under the "Renewable Energy" link: http://www.energy.ri.gov/renewable/index.php

2. How is this different from a loan?

PACE is a special assessment, commonly referred to as a PACE Assessment, for a benefit, tied to the property. Unlike a loan, when a transfer of ownership of the property takes place, the PACE assessment obligation stays with the property, not the property owner.

3. What are the benefits of PACE for a homeowner?

Financing is frequently cited as a barrier to investing in energy efficiency and renewable energy. PACE financing can be for up to twenty years, so homeowners can realize energy savings greater than the cost of the PACE assessment right away. In addition, if the homeowner sells the property before the PACE assessment is paid off, the obligation for payment transfers to the buyer of the property along with the energy savings, or it can be paid off at the time of sale.

4. What are the benefits of PACE for the municipality?

In addition to improving the energy fitness of homes in their community, reducing energy costs, PACE creates local jobs (i.e.: contractors, installers, vendors and suppliers) to perform the PACE eligible improvements.

5. Is PACE a voluntary program for municipalities?

Yes, each municipality will have the option of participating in the PACE program. There is no mandate that a municipality has to participate in the program. In addition, only property owners who decide to make a PACE eligible improvement will be subject to the PACE assessment.

6. What other New England states have adopted PACE programs?

Residential PACE programs have been adopted in Maine and Vermont. Rhode Island's program most closely resembles Vermont's PACE initiative. As of September 2013, forty-four Vermont towns have voluntarily designated themselves as PACE communities, therefore allowing their homeowners to

participate in the program. It is anticipated that the number of towns participating in the Vermont residential PACE program will grow to over sixty by April 2014.

7. Do cities/towns need to have a bond referendum for the PACE loans or does the money come from financial institutions?

No, the cities/towns do not have to have a bond and they do not have to pledge their full faith and credit. PACE financing will be available from participating financial institutions backed by a loan loss reserve fund.

8. What is a loan loss reserve fund?

The Office of Energy Resources will contract with an approved institution to manage a loan loss reserve fund. The Office will deposit into the fund a minimum of One Million Dollars ($1,000,000.00) of American Recovery and Reinvestment Act, Department of Energy State Energy Program funds. The fund will be administered by the approved institution with direct oversight by the Office.

The fund is provided on a "non-recourse" basis, meaning that in the event any losses occur due to defaults on participating properties, the loan loss reserve would represent the only source of funds to make the financing source whole.

9. If a bank forecloses on a home, what happens to the PACE assessment?

If there is a PACE assessment in arrears and insufficient funds available to pay them, the Office of Energy Resources will authorize that funds from the loan loss reserve fund be disbursed in an amount equal to the deficiency to the credit facility holding the assessment.

10. Is the municipality liable for the performance of the project?

No, municipalities are explicitly excluded from any liability in the event of a project is not performing.

11. Who will provide implementation support to the municipality considering the PACE program?

The Office of Energy Resources will provide support to all municipalities. This support will include but not be limited to: providing a template Resolution for council votes in approving their town or city to adopt the PACE program and attending town or city council meetings to explain the PACE program. The PACE Rules and Regulations are currently being developed by the Office.

12. What types of renewable energy will be eligible in the PACE program?

Renewable energy measures eligible for PACE financing, alone or in combination with eligible energy efficiency measures, will include:

- Solar domestic hot water system (appropriately sized for residence);
- Solar electric (photovoltaic) system (appropriately sized system or unit on existing rooftops and parking shade structures; or a 20kW system or smaller unit installed on the ground within the boundaries of the existing residence);
- Geothermal (5.5 tons of capacity or smaller, horizontal/vertical, ground, closed loop system);

- Small wind system (20kW or smaller); and
- Wood pellet stoves.

Health and safety measures necessary to safely complete the proposed renewable measures (e.g. roof improvements, larger circuit board, etc.) may be included in PACE financing but shall not exceed more than fifty percent (50%) of the total renewable project cost.

Homeowners should explore grant opportunities offered through the RI Economic Development Corporation and tax credits offered by the Federal Government before entering into PACE financing.

Other renewable energy measures as defined in R.I. Gen. Law § 39-26-5 are eligible for PACE, but will be reviewed by the Office on an as needed basis.

13. What types of energy efficiency measures will be eligible in the PACE program?

Energy Efficiency measures eligible for PACE financing, alone or in combination with eligible renewable energy measures, will include:

- Energy star doors, windows and skylights;
- HVAC equipment;
- Weatherization;
- Seal and insulate heating and cooling distribution systems (e.g., ductwork, piping);

Homeowners should explore all available rebates through the residential energy efficiency programs offered by National Grid prior to entering into PACE financing.

Health and safety measures necessary to safely complete the proposed energy efficiency measures (e.g., ventilation, venting, moisture remediation, vermiculite remediation, removal of knob and tube wiring, etc.) may be included in PACE financing but shall not exceed more than 50% of the total efficiency project cost.

14. Will there be an opportunity for the public or municipal officials to comment on the PACE program rules and regulations?

Yes, the rules and regulations will be made available for public comment in accordance with the State of Rhode Island Administrative Procedures Act.

15. Is the PACE program available for commercial or municipal properties?

No, the PACE program is only available for residential properties.

16. What is the timeline for the launch of the PACE program for municipalities to potentially allow their residents to participate?

The OER anticipates having the PACE program rules and regulations in place by early summer 2014. After the program is established each city or town must pass a resolution designating their municipality as a PACE municipality. That designation will allow municipalities to enter into a written agreement with homeowners allowing them to participate in the program.

For more information please contact:

Rhode Island Office of Energy Resources

Proposed 2013 RGGI Allocation Plan (for 2012 Auction Proceeds)

The RGGI auctions conducted on March 14, 2012; June 6, 2012; September 5, 2012; and December 5, 2012 yielded a net of $2,524,880.61. The allocation proposed is 60% to Efficiency ($1,514,928) and 40% ($1,009,952) to Integration of Renewables, Grid Modernization and Innovation. Along with the broad principles outlined in the "Strategic Use of RGGI Funds," additional guidelines include:

- For the efficiency category, the projects funded in the 2012 Allocation Plan should provide some results by July 2014 in order to inform three year plan. In future years, efficiency projects should be selected in time to inform the upcoming year's efficiency plan.
- For all funding categories the projects should be implementable, with clear deliverables and deadlines.
- Fund allocation should provide benefits across sectors over the long run.
- The funding should be used to support the goals and strategies identified in State Energy Plan.

For the 2013 RGGI Allocation Plan we propose the following projects in the two categories.

Energy Efficiency (60% / $1,514,928)

Project 1: Provide funds to National Grid to continue efficiency programs for residential and commercial delivered fuels customers and establish a working group to formulate a plan to fund efficiency services in this sector in the future. The rate-payer funded 2014 Energy Efficiency Program Plan proposes to achieve historic levels of electric savings, due in large part to a significant CHP project. The unique challenge of the Plan is accommodating this large project while also maintaining a strong base of savings from the core portfolio. While the 2014 Plan balances this well, there are some elements that were necessarily de-emphasized or removed to achieve that balance. In particular, funding for efficiency rebates for oil/propane heated units was removed from the 2014 plan. The delivered fuel rebates had been covered with ARRA funding through 2012 and were continued in 2013 through the rate payer funded efficiency program.

Energy stakeholders, including TEC-RI, the Division of Public Utilities and Carriers and Peoples Power & Light have expressed strong support for use of RGGI dollars to allow continuation of efficiency services to delivered fuel customers. Use of the fund for efficiency services to this sector: 1) captures electricity savings; 2) achieves reductions in carbon emissions associated with more efficient use of delivered fuels; 3) prevents market disruptions for the installation contractors to insure that a strong contractor community is available in 2014 so that RI can remain on the upward trajectory that LCP will require.

The proposal is to provide 53% of the funds in this category (32% of total) or $800,000, to the utility to continue offering 25% incentives for oil heated homes. An additional 13% of the funds in this category or $200,000 (8% of total) will be allocated to provide incentives to oil-heated buildings in the

commercial sector – particularly the agricultural sector which represents a largely untouched market for efficiency.

Concurrently, 3% of the funds from the efficiency category or $41,427 (2.7% of total) will be allocated to fund technical support to a working group dedicated to developing a cleaner and more efficient energy system for the homes and businesses using delivered fuels. The working group will explore approaches used in other states to funding delivered fuel efficiency programs as well as lowering costs, carbon emissions and energy use in this sector. A final report will provide specific goals, a timeline and funding opportunities for the long term goal of a cleaner, more efficient delivered fuels sector.

The working group will include oil dealers, propane dealers, representatives from the oil heat institute, a member of the Office of Energy Resources, a member representing residential customers, a member representing low-income customers, a member representing commercial and industrial customers, and a member representing environmental concerns.

The proposal is consistent with the State Energy Plan. Modeling for the plan done by Navigant requires that demand for distillate fuel oil, natural gas, propane, and residual fuel oil is reduced over time from 2013 to 2035 in order to meet greenhouse gas emission reduction goals.

Project 2: Augment Funding for Energy Efficiency for Community Non-Profits. The RGGI 2012 Allocation Plan provides $372,287 to implement electric energy efficiency projects in community buildings through supplemental enhanced incentives. The program involves a partnership between NGRID, the OER and the managers of community nonprofits. It has taken some time to develop the funding guidelines but the program is now poised for implementation. NGRID has indicated that there are 60 buildings already identified that could benefit from these funds and more are likely to be found.

The project would maximize electric efficiency and take advantage of an existing mechanism for delivering funds, especially important for this 'hard to reach' audience***. Proposal is to allocate 28% of the funds in this category or $427,713 (1% of total) bringing total funds available for community non-profits to $800,000.***

Project 3: Provide seed money for Home Energy Assistance Loan (HEAL) program. This project would lay the groundwork for implementing an innovative residential efficiency financing program which provides incentives for efficiency through employee Human Resources benefits. The program has been pioneered in Arkansas and is now being implemented in 10 communities across the country with the help of the Clinton Foundation. RGGI funds would be used for administration of a one-year HEAL pilot. Tasks will include in-depth training of administrative staff, two in-person visits by two Clinton Foundation HEAL staff to help launch the program in RI, the HEAL business model, a process manual with procedural checklists and answers to frequently asked questions, and templates including sample forms, payroll check inserts, email blasts, flyers, employee presentations, etc. ***Proposal is to allocate 3% of the funds in this category or $45,788 (2% of total) to this innovative financing program.***

Integration of Efficiency and Renewable Energy, Grid Modernization and Innovation (40%/$1,009,952)

The projects proposed for funding in this category include a project which builds on the 2012 RGGI Allocation Plan and two projects which emerge from the State Energy Plan.

Project 1: Augment Funding for Energy Efficiency and Renewable Energy Projects in Schools. The RGGI 2012 Allocation Plan provides $740,000 for energy projects in schools. Feedback from schools indicates that requests for funds will exceed available dollars. Providing additional funding for this project will promote electric efficiency in a high energy use sector. From a practical standpoint, this allocation will take advantage of an existing mechanism for distributing funds (the funds would be added to the continuous recruitment RFP and build on work underway in the state through NGRID, RI OER, RI Department of Education, and RI cities and towns). Priority will be given to energy efficiency projects or for RE projects where energy efficiency has been maximized. Schools also must implement an energy education program as a condition of receive this funding. ***Proposal is to allocate 40% of the funds in this category or $$408,957 (16% % of total 2012 allocation). This brings total funds available for school energy projects to $ $1,148,957.***

Project 2: Grid Modernization Working Group. **Establish a working group to develop recommendations for grid, rate, and regulatory modernization for the electric sector in Rhode Island.** Grid hardening, non-wires alternatives, smart grid and advanced metering infrastructure (AMI) technologies, time of use (TOW) pricing, and expanded capacity for distributed generation offer the potential to cheaply and sustainably manage demand and reduce the number and severity of power outages. Determining which cost-effective methods of grid modernization in Rhode Island might be implemented to improve system reliability is an important part of securing and reducing carbon emissions from the electric sector.

A Grid Modernization Plan is in alignment with the State Energy Plan goals and Navigant Modeling with respect to achieving a cost-effective, secure and low carbon electricity sector. Developing a plan to show how grid, regulatory, and rate modernization could meet electric security and carbon reduction goals in a cost-effective manner is consistent with these models and goals.

The RI Grid Modernization work would build on experience in other states. Massachusetts released an Electric Grid Modernization Report in July of 2013.[1] New York established a public-private partnership state Smart Grid consortium in 2008[2] that continues to focus on grid modernization activities.[3] Other northeast states such as Pennsylvania, Vermont and Maine are ranked in the top 15 of GridWise's grid

[1] http://www.mass.gov/eea/docs/dpu/electric/grid-mod/ma-grid-mod-working-group-report-07-02-2013.pdf
[2] http://www.nyserda.ny.gov/Statewide-Initiatives/NYS-Smart-Grid-Consortium.aspx
[3] http://nyssmartgrid.com/innovation-highlights/new-york-state-grid-modernization-activities/

modernization index.[4] Rhode Island does not rank in the top 15 for any of the metric categories. ***Proposal is to allocate 10% of the funds in this category or $100,995 (4% of total).***

Project 3: Design and Implement a Renewable Thermal Pilot Program

Scenario modeling analysis performed as part of the State Energy Plan update demonstrates that thermal sector greenhouse gas reduction goals cannot be achieved solely with demand-side reduction. The market share of supply-side renewable thermal technologies must expand in order to meet the greenhouse gas reduction, cost and energy security targets outlined in the Plan.

RGGI funds will be used to research and design a pilot program(s) to evaluate opportunities and barriers for renewable thermal technologies in Rhode Island with an initial focus to include customers using electric heating. Technologies considered will include very efficient pumps (ground, air and water source heat pumps), solar hot water, and clean burning biomass boilers, chips and pellets. The program design will include selection of target participant groups, evaluation, measurement, and verification to help ground-truth and compare field performance of technologies, understand patterns of customer satisfaction, and track electric and other energy and cost savings.

The pilot will draw on best practices from other neighboring states' thermal demonstration projects, programs, and initiatives. The pilot will help complement elements of National Grid's 2014 Energy Efficiency Program Plan focusing on the evaluation of the viability, suitability, and deployment of advanced heat pump technologies in Rhode Island. Program design and implementation will be carried out in coordination with National Grid, the Renewable Energy Fund, and the EERMC.

The ***proposal is to allocate 50% % of the funds in this category or $500,000 (16% of total).***

[4] http://www.gridwise.org/uploads/reports/GWA_13_GMIReport_FINAL.pdf

Strategic Use of RGGI Funds in Rhode Island

I. Background

This document outlines the principles that will guide allocation of RGGI funds from auctions conducted in 2012 through future years. Although the amount from future auctions is uncertain, there is prospect that the total funds will increase significantly for one or more years. As state entities and energy stakeholder groups[1] continue to plan for and implement Rhode Island's Least Cost Procurement, RGGI and other energy laws, this document is intended to provide information about the purposes and the strategic priorities that Rhode Island will seek to advance through the distribution of these funds. The guidelines for fund allocation are based on state energy legislation, recommendations emerging from the Rhode Island State Energy Plan and conversations with energy stakeholders.

Rhode Island is in a unique situation among the RGGI states in that one utility manages almost the entire electricity and gas distribution system and administers all of the regulated state energy efficiency programs (both electric and natural gas). The fact that Rhode Island has a single energy utility offers several advantages:

- There is an excellent opportunity to provide integrated energy services to customers through a single provider. (Although this is not as true for the nearly 50% of the state customers who heat their homes with delivered fossil fuels.)
- There is only one provider entity to deal with as energy efficiency partnerships are developed with contractors, vendors, and the design community
- There is only one entity to deal with when focusing on market segments that need improved service (e.g. low income multifamily housing, grocery stores, agriculture, etc.) or state entities that can become partners in promoting and implementing efficiency strategies (e.g. state government or municipal facilities.)
- There is a great opportunity for innovative pilot programs to reduce electricity use through integration of distributed generation, energy efficiency and demand response.
- Small investments in innovative, comprehensive all-fuels and all-resource strategies can have a direct and immediate impact on the course of utility investment.

On the other hand, the presence of the single regulated utility as the dominant institutional structure for delivering efficiency services can create a programmatic bias (albeit understandable) toward "traditional" utility energy efficiency programs that are focused on meeting regulatory-determined savings targets. OER believes there is a significant opportunity to use RGGI (and other funds) to reach new market segments, identify new opportunities, and find new efficiency, generation and energy management opportunities across all forms of energy production and uses that will advance a broad definition of "least cost procurement."

1. The annual RGGI allocation plan is developed by the Office of Energy Resources with the approval of the Energy Efficiency & Resource Management Council and in consultation with the Renewable Energy Coordinating Board (RECB) and the Department of Environmental Management (DEM).

In Rhode Island, strategic use of RGGI funds must go beyond simply transferring the funds to the utility to use for 'cost-effective energy efficiency'. Rather, the RGGI funds should be deployed in ways that promote collaboration among the utility, state regulators, policy makers and energy stakeholders. These parties must work together to review and reform the utility business model and identify practices that minimize investment risks on behalf of consumers and the utility while building a comprehensive clean, reliable and affordable energy system for the future.

II. Legislative Purpose of RGGI

The legislative purpose of RGGI is stated In RIGL 23-82-2 (4): *Rhode Island's implementation of the Regional Greenhouse Gas Initiative, (hereinafter referred to as "RGGI"), should be managed to maximize the state's contribution to lowering carbon emissions while minimizing impacts on electric system reliability and costs to Rhode Island power consumers over the long term. Adoption and use of cost-effective energy-efficient products and programs and the strategic use of low and zero carbon generation are the best means to achieve these goals.* Specific guidance in the statute is as follows:

§ 23-82-6 Use of auction or sale proceeds. – (a) The proceeds from the auction or sale of the allowances shall be used for the benefit of energy consumers through investment in the most cost-effective available projects that can reduce long-term consumer energy demands and costs. Such proceeds may be used only for the following purposes, in a proportion to be determined annually by the office in consultation with the council and the board:

(1) Promotion of cost-effective energy efficiency and conservation in order to achieve the purposes of § 39-1-27.7 entitled "System Reliability and Least Cost Procurement";

(2) Promotion of cost-effective renewable non-carbon emitting energy technologies in Rhode Island as defined in § 39-26-5 and to achieve the purposes of chapter 39-26 entitled "Renewable Energy Standard";

(3) Cost-effective direct rate relief for consumers;

(4) Direct rate relief for low-income consumers;

III. Priorities for Funding for 2012 - 2014

Consistent with legislative guidance and with priorities emerging from the update of the Rhode Island State Energy Plan, RGGI funds will be used to support the development, enhancement and/or acceleration of efforts that achieve cost-effective, cost-efficient and sustainable energy efficiency, renewable energy and carbon-reduction products and services. Specifically, funds from auctions conducted in 2012, 2013 and 2014 will be allocated in two categories as outlined below.

Energy Efficiency – 60%

Approximately 60% of RGGI funds will be used to support the implementation of annual energy efficiency programs by National Grid, subject to oversight by the state (the OER, EERMC, RECB, DEM)

and in consultation with other stakeholders. Priority will be given to efficiency programs that drive deeper, broader and more long-term savings such as projects that:

a) Build infrastructure and capacity in Rhode Island's economy for Least Cost Procurement (LCP) as specified in RI law – the funds shall be used to help develop capabilities that can enhance and expand on existing offerings and drive deeper, long-term savings;

b) Promote innovation and development of cutting edge technologies and strategies that achieve deeper savings.

c) Facilitate efficiency savings in hard-to-reach audiences.

d) Improve financing tools and capabilities.

Examples of projects that could be funded in this category include:

(1) Exploring the costs and benefits of new technologies such as heat pumps;

(2) Providing temporary support for delivered fuel energy efficiency programs while exploring new business opportunities that will lead to cleaner and more efficient energy use for the 40% of Rhode Islanders who rely on delivered fuels;

(3) Provision of additional working capital for revolving loan fund for commercial or large commercial/industrial customers;

(4) Innovative programs to leverage energy efficiency funds with other funding sources (asthma prevention, lead abatement, home health care) to drive electricity efficiency in hard-to-reach populations;

(5) Net zero energy pilot buildings that can be replicated cost-effectively.

Integration of Efficiency with Renewable Energy, Grid Modernization & Innovation – 40%

Approximately 40% of the RGGI funds will be used to support work to diversify RI's energy resource portfolio, with emphasis on integration of energy efficiency and renewable energy resources, and on the rapidly evolving smart grid technologies. The funds will be used to implement innovative projects to reduce carbon emissions from electricity generation. Specific projects funded each year will vary but potential projects may include:

a) Deployment of renewable energy in innovative ways including integration with System Reliability Planning (SRP), energy efficiency and demand response programs as specified in RI law;

b) Analysis and deployment of thermal renewable projects to reduce greenhouse gas emissions;

c) Grid modernization – projects to incentivize the electric distribution company to adopt grid modernization technologies and practices in order to enhance the reliability of electricity service, reduce electricity costs, increase efficiency and otherwise reduce greenhouse gas emissions related to electricity generation.

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IV. Timeframe for Annual Allocation Plan

In order to insure timely distribution of RGGI funds, the following schedule will guide the development of the Annual Allocation Plan:

a) March 1 - Distribution of draft allocation plan to consulting parties including the EERMC and DEM

b) May 15 – Posting of annual allocation plan for 30 days

c) June 15 – Public Hearing

d) July 15 – Incorporation of comments from Public Hearing

e) August 1 – Allocation Plan finalized

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Proposed 2013 RGGI Allocation Plan (for 2012 auction proceeds) Nov 13 2013

Overview		
Category	**Allocation**	**% of Total**
Efficiency	$ 1,514,928	60%
Integration of Renewables with Efficiency, Grid Modernization and Innovation	$ 1,009,952	40%
Total Funds	**$ 2,524,880**	**100%**

Category: Efficiency Projects				
Project		**Allocation**	**% of Category**	**% of Total**
Project 1: Delivered Fuels EE		$ 1,041,427	69%	41%
	Residential	$ 800,000	53%	32%
	Commercial	$ 200,000	13%	8%
	Task Force	$ 41,427	3%	2%
Project 2: Community Nonprofits EE (Supplemental Incentives)		$ 427,713	28%	17%
Project 3: HEAL (Home Energy Assistance Loan) Program		$ 45,788	3%	2%
Total		**$ 1,514,928**	**100%**	**60%**

Category: Integration of Renewables with Efficiency, Grid Modernization and Innovation Projects			
Project	**Allocation**	**% of Category**	**% of Total**
Project 1: EE & RE Schools	$ 408,957	40%	16%
Project 2: Grid Modernization	$ 100,995	10%	4%
Project 3: RE Thermal Pilot	$ 500,000	50%	20%
Total	**$ 1,009,952**	**100%**	**40%**

The Cost-Effectiveness of National Grid's 2014 Energy Efficiency Procurement Plan & System Reliability Procurement Report:

An Assessment and Report by
The VEIC/Optimal Energy Consultant Team

Vermont Energy Investment Corporation || Optimal Energy Integrated Energy Resources

EERMC CONSULTANT TEAM

Working on Behalf of the

State of Rhode Island
RI Energy Efficiency & Resource Management Council

Submitted to the Rhode Island Public Utilities Commission
On November xx, 2013

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EERMC Consultant Team Findings

This finding and this Cost Effectiveness Report were presented to the Energy Efficiency and Resource Management Council (EERMC or Council) by the EERMC Consultant Team at its November 14, 2013 Meeting, and were approved and adopted by a vote of the EERMC.

The EERMC Consultant Team finds that both the individual programs and, in combination, the portfolio of programs presented in the 2014 Annual Energy Efficiency Program Plan (EEPP), and the System Reliability Procurement Report (SRP), filings by National Grid are cost-effective according to the Total Resource Cost test (TRC). We also find that the core programs and portfolio proposed represent a reasonable and credible continuing ramp-up of National Grid's energy efficiency implementation efforts. We note that the 2014 EEPP includes an unprecedented (but probably not precedent-setting) inclusion of a very large Combined Heat & Power project that has a significant impact on the total electric savings and costs for this year's portfolio. Overall, we conclude that the programs and portfolio meet the cost-effectiveness requirements of Rhode Island General Laws § 39-1-27.7 (c)(5) and therefore a fully reconciling funding mechanism sufficient to fund the proposed budget should be approved by the Commission within 60 days as required by that section.

The EERMC Consultant Team reports that the proposed EEPP for 2014 includes a significantly higher level of electric savings than originally planned; achieves the targeted level of natural gas savings, and improves cost-effectiveness for both electric and natural gas relative to the projections for 2014 contained in the 2012-2014 Energy Efficiency and System Reliability Procurement Plan (2012-2014 Plan) filed with the Commission by National Grid on September 7, 2011.

I: Introduction

In 2010, R.I.G.L. § 39-1-27.7 (c)(5) was amended to state:

> *The Commission shall issue an order approving all energy efficiency measures that are cost effective and lower cost than acquisition of additional supply, with regard to the plan from the electrical and natural gas distribution company, and reviewed and approved by the energy efficiency and resources management council, and any related annual plans, and shall approve a fully reconciling funding mechanism to fund*

investments in all efficiency measures that are cost effective and lower cost than acquisition of additional supply, not greater than sixty (60) days after it is filed with the commission.

It is the purpose of this document to provide the required review and finding of whether National Grid's 2014 EEPP is cost-effective and submit that review and finding as evidence to the Rhode Island Public Utilities Commission ("Commission" or "PUC") necessary for the Commission's approval of a fully reconciling funding mechanism to fund the 2014 EEPP filed by National Grid.

The original legislative definition of least cost procurement is found at R.I.G.L. § 39-1-27.7 (a)(2) and is:

Least-cost procurement, which shall include procurement of energy efficiency and energy conservation measures that are prudent and reliable and when such measures are lower cost than acquisition of additional supply, including supply for periods of high demand.

The Energy Efficiency and Resource Management Council ("EERMC" or "Council") instructed its Consultant Team to conduct a formal review and present written evidence of its findings regarding the cost-effectiveness of National Grid's 2014 EEPP, filed November 1, 2013 with the Commission in Docket No. 4451. The Consultant Team conducted its review as requested by the EERMC and has presented its findings to the EERMC Sub-Committee for its review.

At its October 17, 2013 meeting the EERMC: (1) approved the Consultant Team's preliminary Cost Effectiveness determination – that National Grid's 2014 EEPP is cost-effective and lower cost than the acquisition of additional supply pursuant to R.I.G.L. § 39-1-27.7 (c) (5) and, (2) directed that this Cost-Effectiveness Report be prepared in consultation with the EERMC Sub-Committee and be submitted to the EERMC at its November 14th meeting.

At its November 14th meeting the EERMC also approved this Cost-Effectiveness Report and its conclusion – that National Grid's 2014 EEPP is cost-effective and lower cost than the acquisition of additional supply pursuant to R.I.G.L.§ 39-1-27.7 (c) (5) -- and directed that the Cost-Effectiveness Report be submitted to the Commission as required by that Section.

The Consultant Team also recommended that the 2014 SRP, also filed on November 1, 2013 under docket 4453, is cost-effective and should be approved and funded. This finding was approved by the EERMC at its November 14, 2013 meeting.

This document represents a formal statement of the Consultant Team's conclusion on behalf of the EERMC, describes the nature and process of the review it conducted, and documents the professional experience and qualifications of the Consultant Team to conduct such a Cost-Effectiveness Review of National Grid's 2014 EEPP.

II. The Rhode Island Legal and Regulatory Framework

Rhode Island's Comprehensive Energy Conservation, Efficiency, and Affordability Act of 2006 ("2006 Comprehensive Energy Act") established a comprehensive energy policy that explicitly and systematically requires maximization of ratepayers' economic savings through investments in all cost-effective energy efficiency. By means of this requirement on the distribution utility to procure all cost-effective energy efficiency, all Rhode Island ratepayers stand to save hundreds of millions of dollars in energy bills over the next decade.

The EERMC proposed to the PUC a draft set of "standards for energy efficiency and conservation procurement and system reliability" ("Standards"), as required in the 2006 legislation, which the EERMC recommended for adoption by the PUC on June 1, 2008. The purpose of these Standards was to guide National Grid in its 2009-2011 Plan and its System Reliability Procurement Plan filed by the Company on September 1, 2008. The EERMC filed its draft Standards on February 29, 2008. Through Docket No. 3931 the Commission conducted a process that included both written evidence and public hearings. The PUC ordered a slightly revised version of those standards in Open Meeting on June 12, 2008, and in a formal Report, issued July 18, 2008.

On September 2, 2008 National Grid filed its 2009-2011 Energy Efficiency Procurement Plan. The 2009-2011 Procurement Plan was informed in part by the Phase I Opportunity Report submitted by the consulting firm KEMA, as required in R.I.G.L.§ 39-1-27.7 (c) (3), submitted July 15, 2008. The PUC conducted extensive hearings, and parties participated in substantial review and revisions, and the 2009-2011 Procurement Plan was approved by the PUC in Open Meeting on March 31, 2009, and in written Order, on April 17, 2009. This first 3-year plan was based on the guidance afforded by the Standards, and substantial input from the EERMC and its Consultant Team, as well as the Collaborative Subcommittee of the EERMC.

In accordance with Rhode Island's Least Cost Procurement law, the EERMC proposed revisions to the Standards in preparation for the second three-year planning cycle (2012-2014). Revised Standards were adopted by the Commission in Docket No. 4202, Order #20419, on July 25, 2011. In compliance with R.I.G.L § 39-1-27.7.1(f), the EERMC also proposed, and the PUC approved in that same Order, Annual Energy Saving Targets for both electric and natural gas least cost procurement for the years 2012, 2013 and 2014.

The Standards ordered by the PUC identify the Total Resource Cost (TRC) test as the methodology to use in determining whether the measures, programs, and the portfolio of energy efficiency (EE) services are cost effective and less expensive than supply under the law. In Section 1.2, A, 2, (a) and (b), the standard for determining cost-effectiveness is stated:

(a) The Utility shall assess measure, program and portfolio cost-effectiveness according to the Total Resource Cost test ("TRC"). The Utility shall, after consultation with the Council, propose the specific benefits and costs to be reported and factors to be included in the Rhode Island TRC test.

(b) That test shall include the costs of CO_2 mitigation as they are imposed and are projected to be imposed by the Regional Greenhouse Gas Initiative. They shall include any other costs associated with greenhouse gas reduction that are actually being imposed on energy generation and can be identified and quantified.

The same TRC methodology (adjusted appropriately for gas measures and programs) has been applied to the evaluation of cost-effectiveness for natural gas energy efficiency since natural gas was added to the Least Cost Procurement mandates in 2010.

On June 21, 2012, an amendment to Rhode Island's Least Cost Procurement Statute, R.I.G.L. §39-1-27.7, to support the installation and investment in clean and efficient CHP was signed into law.[1] The new CHP provision requires that National Grid document this support annually in its energy efficiency program plan by including a plan for identifying and recruiting qualified CHP projects, incentive levels, contract terms and guidelines, and achievable megawatt targets. In addition, the law requires that the following criteria be factored into the Company's CHP plan: (i) economic development benefits in Rhode Island; (ii) energy and cost savings for customers; (iii) energy supply costs; (iv) greenhouse gas emissions standards and air quality benefits; and (v) system reliability benefits.

In accordance with the requirement of this amendment, National Grid proposed a number of adjustments to the TRC as defined in the Standards approved by the PUC in Dockets No. 3931 and No. 4202. The Consultant Team, the EERMC Collaborative Sub-Committee, and the EERMC CHP sub-committee reviewed these proposed TRC modifications and agree that they are consistent with the requirements of Rhode Island law, and represent reasonable estimates of the benefits mandated for inclusion in the assessment of CHP projects in Rhode Island. These adjustments include:

- An Economic Benefit adder of $2.51 of lifetime gross state product increase per dollar of program investment;
- A schedule of benefits from reduced Volatile Organic Compounds, SO_2, and Particulate Matter emissions;

[1] See R.I.G.L. § 39-1-27.7(c)(6)(ii) through (iv); For the legislative history, see P.L. 2012, Ch. 363, S2792 Sub A (Enacted June 21, 2012).

National Grid has agreed to assess each CHP installation as a custom project, thereby ensuring that the specific costs and benefits of each project are appropriately evaluated. This will help assure that each installation is cost-effective.

III. Summary of EERMC Consultant Team's Qualifications

The Consultant Team is composed of Vermont Energy Investment Corporation (VEIC) as the lead contractor, Optimal Energy Inc. (OEI), Energy Futures Group, and two independent consultants. Scudder Parker (VEIC) is the Project Manager. Mike Guerard (OEI), a Rhode Island resident, coordinates the Consultant Team interactions with National Grid, Council members and other stakeholders. Gabe Arnold (OEI), George Lawrence (VEIC), Erin Carroll (VEIC), Phil Mosenthal (OEI), and Doug Baston of North Atlantic Energy Advisors provide a deep level of expertise in Commercial and Industrial program design. Sean Bleything (VEIC), Nick Lange (VEIC) and Energy Futures Group (Richard Faesy and Glenn Reed) provide deep knowledge of residential program design. Juliette Juillerat (VEIC), Cliff McDonald (OEI), Sam Dent (Dent Consulting), and Sam Huntington (OEI) form the analytical team that reviews screening and modeling assumptions. Ralph Prahl, of Prahl Consulting assists on EM&V issues. This team brings an impressive understanding of, and experience with, energy efficiency policy, regulatory practice, program design, cost-effectiveness analysis, measure characterization, assessment of potential savings, and evaluation, measurement and verification. Many of the individual consultants included on the Consultant Team have 15-25 years of direct experience in energy efficiency and broader regulatory policy. All participants also practice in jurisdictions outside of Rhode Island (many of those in New England) and their experience in those settings provides an important context and perspective to inform the EERMC in its oversight role.

A full listing of qualifications of the various team members and the resumes of the participating individual consultants is provided in **Attachment A**.

The Consultant Team has been involved in the Rhode Island oversight, program design, and implementation process since it was hired early in 2008. The Consultant Team:

- Helped draft the Standards for Least Cost Procurement proposed by the EERMC in 2008 and the revision to the Least Cost Procurement Standards and System Reliability Procurement Standards in 2011, both of which were approved by the Commission;
- Oversaw the development of Phases I and II of *The Opportunity for Energy Efficiency that is Cheaper than Supply* (KEMA) report;
- Contributed to the development and review of EEPP filings by National Grid for 2009, 2010, 2011, 2012, 2013 and 2014.

- Analyzed the cost-effectiveness of the annual EEPP filings in 2009, 2010, 2011, 2012 and 2013.
- Documented the findings of the cost-effectiveness of the 2011, 2012 and 2013 EEPP filings for the PUC on behalf of the EERMC.
- Contributed to the development and review of National Grid's 2012-2014 Energy Efficiency Procurement Plan;
- Analyzed the cost-effectiveness of the 2012-2014 Energy Efficiency Procurement Plan and documented those findings for the PUC on behalf of the EERMC;
- Developed the Natural Gas Opportunity Report for the EERMC and identified new natural gas (and other delivered fossil fuel) energy efficiency technologies and strategies. This report was presented to the EERMC in July, 2012.

In 2013, the Consultant Team has also worked closely with the Office of Energy Resources (OER). In this context it:

- Provided support as the OER worked with stakeholders to develop a new Rhode Island State Energy Plan;
- Advised the OER as it worked to secure legislative authorization for a new Property Assessed Clean Energy (PACE) Program and for a new approach to securing efficiency savings from street lighting;
- Provided input as the OER developed its proposals for allocation of Regional Greenhouse Gas Initiative (RGGI) funds;
- Worked closely with the OER staff in developing and delivering the Rhode Island Public Energy Partnership (RIPEP) program;
- Worked with OER, the EERMC and National Grid in developing working partnerships with Green and Healthy Homes, the Alliance for Healthy Homes, Emerald Cities-Providence and the Rhode Island Housing Authority.
- Worked with OER and National Grid to design pilot program to locate solar installations in System Reliability Plan (SRP) target areas.

This strong familiarity with the Rhode Island policy, planning, implementation, and evaluation experience provides a high level of assurance that practices in Rhode Island are consistent with regional and national best practices in Energy Efficiency Least Cost Procurement.[2]

IV. Consultant Findings

The Consultant Team finds that both the individual programs and in combination, the portfolio of programs presented in the 2014 EEPP filing by National Grid are cost-effective according to the TRC. We also find that the System Reliability Procurement Report is Cost-Effective, and that with the recommended adjustments to the TRC as required by Rhode Island law, the CHP portion of the Plan is cost-effective. We also find that the programs and portfolio proposed represent a reasonable and credible continued ramp-up of National Grid's implementation efforts to secure cost-effective savings for both electric and natural gas customers. We conclude that these programs meet the cost-effectiveness requirements of R.I.G.L. § 39-1-27.7 (c)(5) and therefore a fully reconciling funding mechanisms sufficient to pay for the proposed budget should be approved by the Commission within 60 days as required by that section.

The annual savings targets proposed in the 2014 EEPP meet or exceed those established for 2014 in the 2012-2014 Energy Efficiency Procurement Plan, and the TRC benefit-cost ratio (BCR) of the 2014 EEPP is higher than previously estimated:

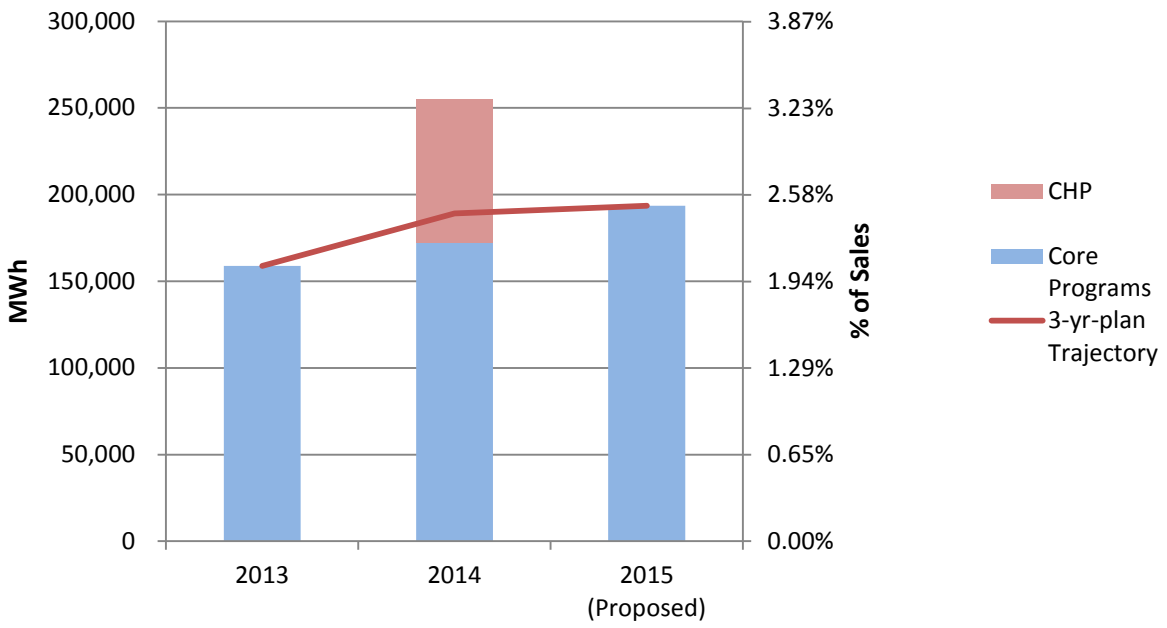
Figure 1: Savings and BCR comparison

	Projected 2014 savings / BCR in current 3-Year Plan	**2014 Proposed EEPP savings / BCR**
Electric	189,068 MWh / 2.26	255,314 MWh / 3.15
Natural Gas	355,917 MMBtu / 1.51	355,923 MMBtu / 1.69

The primary driver for the increased electric cost-effectiveness and savings In is the 2014 Plan includes both the program cost impact and the dramatic savings to be derived from the large CHP project. This represents a significant increase in savings in the 2014 EEPP from the level of savings projected in the 2012-2014 Three Year Plan. National Grid provides a discussion of this significant change on pages 2 and 4 of its Settlement filing under Docket No. 4451. Table 2 illustrates the effect of this CHP project in the context of three years of planned program implementation.

[2] The EERMC and its Consultant Team also work closely with the Division and its Consultant through the Collaborative Sub-committee.

Figure 2: Savings Impact of CHP project



For the purposes of this Cost Effectiveness Memorandum, the Consultant Team finds that:

- The planned electric savings are significantly in excess of projected savings for the year; the gas savings are in line with the 2014 projection.
- The savings are cost-effective according to TRC analysis adjusted as instructed by Rhode Island legislation (and approved by the Commission).
- The actual cost of acquiring savings for the CHP project are lower per unit of savings than the cost of other energy efficiency savings and therefore;
- The level of electric savings is higher, but the cost per unit of savings is lower than projected for the total portfolio.
- This unique CHP project has the effect of driving savings up for 2014, but the structure of the 2014 Plan is designed to maintain and not inhibit the ability and capacity of National Grid to meet the savings targets that the EERMC has proposed to the PUC on September 1, 2013 for the 2015-17 planning cycle.

The review conducted by the Consultant Team to reach these conclusions is described in detail in the following sections:

- Section V: 2014 EEPP review timeline

- Sections VI and VII: Overview of the cost-effectiveness screening test and discussion of the Consultant Team's in-depth review of the 2014 EEPP.
- Section VIII: Review of National Grid's Evaluation Process.

Finally, the Consultant Team's requisite skills, experience, and demonstrated expertise in the subject matter are documented in Attachment A.

V. Ongoing Oversight by the EERMC and its Consultant Team

The EERMC, consistent with its statutory obligations under the Rhode Island "Comprehensive Energy Conservation, Efficiency & Affordability Act of 2006," plays an active role with National Grid to guide, facilitate, and support public and independent expert participation in the review, assessment, and evolution of utility efficiency procurement and programs. The Council believes this input is critical to having the programs and related new institutional capabilities evolve into resource acquisition tools that can effectively implement the Rhode Island law to procure all cost-effective energy efficiency. It is also anticipated that as the targets increase and the challenge grows, this level of input and oversight will continue to increase to assure goal attainment.

The Consultant Team was hired in 2008 through a competitive bid. In October 2011, the Consultant Team was selected again by the EERMC in a competitive bid to provide oversight of the planning and implementation of energy efficiency in Rhode Island going forward for 2012. Since 2008, the Consultant Team has served as the EERMC's resource in reviewing energy efficiency policy generally, identifying best practices, reviewing energy efficiency programs, and providing oral and written testimony as appropriate. The Consultant Team has engaged National Grid staff directly over its five years of service to the EERMC, and is very familiar with Rhode Island law, regulatory policy, and utility practice. Its qualifications are detailed in Section VI of this Report. As mentioned in Section II, above, the Consultant Team provided active oversight of both phases of the electric Opportunity Report and conducted the 2012 Gas Opportunity Report.

As required by Docket No. 3931 and the Energy Efficiency Procurement Standards, a consistent and effective process has been carried out to guide the annual development and submittal of National Grid's EEPP to the PUC. The primary forum for this process has been the Collaborative Subcommittee to the EERMC. The Collaborative functioned as the "DSM Collaborative" until 2008. Given the overlapping responsibilities of the DSM Collaborative and the EERMC in working with National Grid on energy efficiency planning, the Collaborative was made into a subcommittee of the EERMC in 2008. This enables the critical expertise and experience of the existing group to be leveraged to help meet the Council's statutory responsibility of monitoring,

evaluating, and proposing changes to existing programs and new procurement and program strategies. The composition of the Collaborative has varied since 1991, as some organizations have withdrawn and others have joined. Members of the Collaborative currently include representatives from National Grid staff, the Division, the Office of Energy Resources (OER), The Energy Council (TEC-RI), and Environment Northeast (ENE), along with participation from several EERMC members and representatives from the Consultant Team. People's Power and Light, representing primarily residential customers and small business re-joined the Collaborative in the summer of 2013. Although the Collaborative Subcommittee meets regularly throughout the year, beginning in July more frequent meetings, and between-meeting correspondence is typically initiated to begin formulation of the subsequent year's program planning, and ultimate filing.

In addition, the EERMC this year created a SRP subcommittee that included representatives of National Grid, the EERMC and the OER.

For the 2014 EEPP, the following process was followed:

July / August:

- Collaborative meeting held on July 30th to review proposed timeline and high level discussion on 20143 EEPP and SRP areas of focus.
- Collaborative meetings held on August 22nd to review and revise preliminary program design concepts, as well as savings and budgets reflected in the 2012-2014 Plan that will translate into the 2014 EEPP.
- Consultant Team members researched and developed reports on best practice areas to help inform the 2014 EEPP, along with "Top 10" areas of focus for both residential and C&I sectors, and presented these to National Grid Sector Strategy Groups.
- Members from the Consultant Team held strategy meetings covering the C&I and residential (including income-eligible) sectors on the 2014 EEPP development process on July 24th and August 27th with National Grid staff.

September:

- First (Sep. 4th) and second drafts (Sep. 20th) of the 2014 EEPP, as well as excerpts from the 2014 Technical Reference Manual (TRM), were submitted to the Collaborative by National Grid and reviewed by Consultant Team. Comments and proposed enhancements submitted to National Grid within 10 days of receiving each draft. The TRM provides formulas and assumptions used for estimating savings for efficiency measures promoted by National Grid's energy efficiency programs.

- First draft of the SRP submitted by National Grid and reviewed by the Consultant Team on September 6th
- Conference call with stakeholders on the first draft of the SRP on September 11th.
- Collaborative meeting on Sep. 12th and 20th to review drafts and feedback from stakeholders.
- National Grid presentation to EERMC on Sept. 13thon status of EEPP drafts; EERMC appoints a 2014 EEPP subcommittee to support review of plan leading up to October 18th EERMC vote.
- First and second drafts (Sep.17th and 28th) of the 2013 cost-effectiveness benefit/cost model received from National Grid.
- CHP Community Review Meeting (Sep. 17th)
- Ongoing Consultant Team review, discussions and exchange of comments with National Grid on the TRM.

October:

- Multiple conference calls between National Grid staff and Consultant Team members to resolve program design, savings, cost, and budget issues, and between the Consultant Team and the EERMC's 2014 Plan Subcommittee.
- Second draft of SRP submitted and reviewed by Consultant Team.
- Third draft (Oct. 8th) of the 2014 EEPP received from National Grid; comments submitted by Consultant Team.
- Third draft of benefit/cost model provided by National Grid to the EERMC Consultant Team on Oct. 11th.
- Consultant Team presentation to EERMC on October 18th on the 2012, and recommendation to approve 2014 EEPP and SRP since they were deemed cost-effective and less than the cost of supply.
- EERMC approves the 2014 EEPP and SRP provisionally, pending any minor adjustments approved by the 2014 EEPP Subcommittee and informed by Collaborative stakeholder clarifications.
- Post-EERMC meeting (Oct. 22ndth); Collaborative Subcommittee works with National Grid to assure all EERMC issues are factored into final version.
- Final discussion with Consultant Team and EERMC 2014 Plan Subcommittee on October 24th, providing guidance to the Consultant Team to provide a complete review of the final draft of the plans, and to direct the EERMC's attorney to sign on to the Settlement.

November 1st

- Submittal of 2014 EEPP by National Grid to the Commission for approval.

Throughout this process, the objectives of the Standards are followed to ensure that program designs and the resulting implementation secure cost-effective energy efficiency resources that are lower than the cost of supply, are prudent and reliable, and deliver hundreds of millions of dollars in bill savings to Rhode Island customers.

VI. Cost Effectiveness Overview

Cost-effectiveness tests compare the net present value of a stream of benefits over the net present value of a corresponding stream of costs, whether they occur at the time of purchase or over several years. The Total Resource Cost (TRC) has been widely accepted and used by regulators and policy-makers to evaluate demand-side management programs. Most jurisdictions, including Rhode Island, use either the TRC or the Societal Test to assess efficiency program cost-effectiveness and the TRC test is widely accepted as one "best practice" option for evaluating energy efficiency programs.[3] The TRC test indicates that an efficiency measure or program is cost-effective if the benefits outweigh the costs for Rhode Island consumers.

The TRC test compares the value of avoided energy costs and other resource costs to the full incremental cost of efficiency measures plus program administration costs. The TRC test was formally adopted as the best practice for evaluating the cost-effectiveness of energy efficiency measures and programs in 1983 when it was codified in the Standard Practice for Cost-Benefit Analysis of Conservation and Load Management Programs, published by the California Energy Commission. The "Standard Practice" manual has been revised several times since and has served as the *de facto* basis for determining efficiency cost-effectiveness by the majority of electric and gas utility efficiency programs. The manual is regarded as well-grounded in best-practices for cost-benefit analysis.

As noted above, the Rhode Island Public Utilities Commission ordered the TRC test for use in Rhode Island in its 2008 Docket No. 3931, and again in the 2011 EERMC proposed modifications under Docket 4202, on "Standards for Energy Efficiency Procurement." Subsequently, National Grid proposed the specific costs and benefits to be included in the Rhode Island TRC test in its Least Cost Procurement Plan (September 2008) with support and input from the EERMC, which the Commission approved and ordered into effect. The Consultant Team reviewed National Grid's application of the TRC test in the 2014 EEPP methodology and found it to be consistent

[3] A significant difference between the Societal test and the TRC is that the Societal test attempts to account for the full value of environmental externalities that are not already embedded in the avoided costs of energy.

with standard practice and the Standards. The Rhode Island TRC test includes the following benefits and costs:

- The benefits of the Total Resource Cost test include the discounted, monetized value of reduced energy (MWh), reduced capacity needs (MW, avoids the costs of providing both peak demand, and the transmission and distribution system), reduced fossil fuel use (or increased use as a negative benefit), reduced water and sewer use, non-energy impacts (generally due to decreased operation and maintenance costs), and Demand Reduction Induced Price Effect (DRIPE, as included in the avoided costs of electricity). For the CHP program, an economic development and environmental adder are also included in the total benefits, and the assessment of distribution benefits is appropriately modified. The benefits for reduced electric energy (MWh and MW) and other resources are monetized based on avoided costs.[4]
- The costs include the costs of program planning and administration, marketing, rebates and other customer incentives, related implementation costs,[5] customer contribution, program evaluation, and shareholder incentive costs, as shown in Tables E-2 and E-5, and G-2 and G-5, of the Company's 2014 EEPP.[6] The costs included in the TRC are those incurred by customers and the utility as a whole to support the efficiency programs that would not have been incurred without those programs.

The costs and benefits of an efficiency program are discounted to present-value using a real discount rate in order to discount the future value of money (i.e., money today is considered more valuable than the same amount of money in the future). A program is considered to be cost-effective if the present value of benefits exceeds the present value of costs, that is, when the TRC benefit-cost ratio (BCR) is greater than 1.0.

VII. Cost Effectiveness Review and Findings

This section summarizes the cost-effectiveness of programs presented in the 2014 EEPP and SRP, followed by a description of the Consultant Team's review of methodology and findings. The Standards for Energy Efficiency Procurement require that all programs and the overall portfolio must be determined to be cost-effective by having a TRC benefit-cost ratio greater

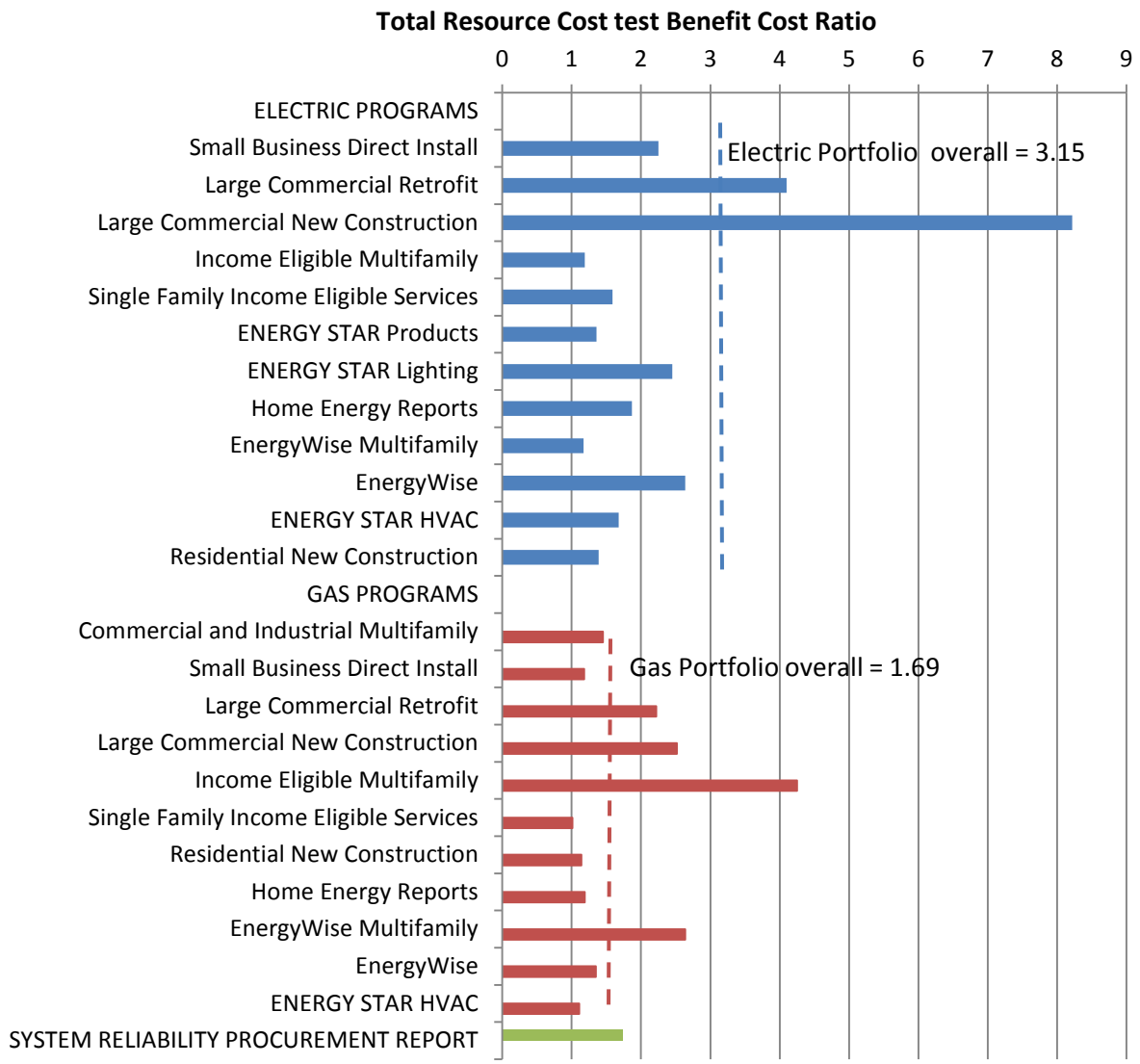
[4] The EERMC notes that the current TRC methodology does not fully account for the economic costs (and benefits of avoiding) environmental externalities or other un-quantified economic costs and benefits. In contrast, the legislatively mandated inclusion of economic and environmental benefits in CHP analysis represents a more comprehensive treatment of externalities than is currently applied to other energy efficiency measures on either the gas or electric energy efficiency portfolios.

[5] Cross-program costs (e.g., comprehensive marketing not specific to a single program) are allocated at the sector or portfolio level.

[6] Benefit-cost ratio (BCR) at the sector level includes the shareholder incentive as a cost. As shareholder incentive is not calculated at a program level, it is not included in program level BCR

than 1.0. The Consultant Team's review has found that all of National Grid's proposed programs and the overall portfolio meet this standard. National Grid's program and portfolio cost-effectiveness are provided in Tables E-5 (electric) and G-5 (natural gas) of the 2014 EEPP (as submitted in revised tables). These tables provide supporting data on program budgets, avoided costs, and other related data. All of the electric programs are projected to be cost effective, with BCRs ranging from 1.17 (EnergyWise Multifamily) to 8.22 (Large Commercial New Construction). Likewise, the natural gas programs are all projected as cost-effective with BCRs ranging from 1.01 (Single Family Income Eligible Services) to 4.25 (Income Eligible Multifamily). The BCR for SRP is 1.74. All programs have a BCR greater than 1.0 as required by the PUC's Standards for Energy Efficiency Procurement and § 39-1-27.7 (c) (5).

Figure 3: BCR levels



The cost-effectiveness of several of the programs has changed from the 2013 EEPP to the 2014 EEPP. The program-level BCRs are determined by the measure mix and a very large number of measure-level assumptions regarding savings, costs, penetrations, avoided costs, and freeridership. The general driving factors behind some of the changes include the application of recent evaluation results, field experience of recent implementation costs, and changes to state or federal standards. At the sector and portfolio level, the cost-effectiveness is determined by the aforementioned factors as well as changes in programs offered.

The team reviewed the benefit and cost of measures, programs, and portfolio in the TRM, benefit/cost model, and appendix tables to inform an educated review of the cost-effectiveness of programs offered by National Grid. This review, described in more details below, informed this cost-effectiveness memo:

- The review of updates to the 2013 Technical Reference Manual (TRM) allowed for an assessment of the measures and assumptions used in the calculations of the cost-effectiveness of National Grid's energy efficiency programs. As part of the review, the Team ensured that updates from evaluations were incorporated in the 2014 TRM and that any minor issues that had not been addressed in 2013 were addressed in the 2014 TRM. Due to the similarities in geography and programs, the Team also reviewed recent evaluations for Massachusetts and incorporated their findings where they were deemed relevant.[7]
- The savings values in the TRM are integrated into National Grid's electric and gas benefit/cost models, which are used to calculate program savings, incentive costs, benefits, and the cost-effectiveness of programs. The team reviewed the four drafts of the electric and gas benefit/cost model thoroughly, ensuring that updates to the TRM are reflected in the benefit/cost models, and that the quantity of measures (participation) is appropriate and reflects the program description in the EEPP. The team also reviewed program design, cost-effectiveness projections, the mix of measures, and that net-to-gross values are appropriate and reflect values form the latest evaluations available. The 2014 electric and

[7] Some measure-level issues were not fully resolved by the filing date. The adjustments are complicated by the fact that the issues are being addressed simultaneously in Massachusetts, and National Grid strives to coordinate savings methodology between the two states. Nevertheless, the issues are at the measure level and the programs and portfolio are all expected to remain cost-effective regardless of the changes, as either the measures would remain cost-effective or the measure mix could be changed so that programs remain cost effectives. The Team will continue to discuss these topics with National Grid during PY 2014 so an agreement can be reached for 2015 and the next Three-Year Plan.

gas benefit/cost models were compared to the 2012 models to ensure that changes to the program measures are appropriate and reflect changes to the EEPP.

The values from the benefit/cost model, summarized at the program level, are then used to populate tables E-6 and G-6 in the appendix of the EEPP. The Team conducted an in-depth review of the appendix tables to identify trends between years and between drafts, and to ensure that all sectors reflect the cost-effectiveness goals of the Three-year Plan. The Team also reviewed to see that values form the benefit/cost models were correctly reflected in the appendix tables and that the values in the tables added up properly. Overall, analysis of cost-effectiveness focused on the methodology used to calculate cost effectiveness, the processes used to update the model inputs from year to year, and the general model assumptions and inputs.[8]

Consistent and on-going oversight of National Grid energy efficiency planning and implementation activity takes place both through direct interactions with National Grid staff, and through participation in the Collaborative process (timeline documented in Section V). For program year 2013, the Consultant Team's oversight of the planning process was comprehensive and in-depth, as illustrated below:

- The Consultant Team worked with National Grid analysts and project managers to identify, prioritize, and address pertinent issues. The scope of the issues investigated and reviewed was broad and related to both program design and cost effectiveness.
- Consultant Team analysts reviewed several drafts of the benefit/cost model associated with each of the EEPP drafts. As part of this review, several minor issues were identified in the TRM and benefit/cost model and addressed by National Grid.
- The Consultant Team found that the overwhelming majority of the modeling and cost-effectiveness assumptions reviewed were reasonable and well-supported. Any cost-effectiveness issues identified in the benefit/cost model and in the review of the EEPP were addressed at the portfolio and program level by National Grid's analyst team. In addition, the Consultant Team's continued deep involvement in program design review led to heightened scrutiny of cost-effectiveness metrics associated with the programs. Program design often impacts cost-effectiveness and many program design

[8] While most measures can be found to be "cost-effective" or "non-cost-effective" in most standard applications; there may be highly cost-effective measures that are not cost-effective in certain applications; and some generally non-cost-effective measures that are cost-effective in certain situations. One challenge facing energy efficiency program designers is to keep refining the knowledge base of such situations, and tailoring programs and services to avoid situations in which a measure is not cost-effective; and discover the conditions and market segments in which a measure may prove to be cost-effective. The program and portfolio level analysis, combined with increasing service delivery sophistication are characteristics of programs that help secure all cost-effective opportunities.

recommendations are made to improve program cost-effectiveness (e.g. a change in measure mix).

- Review of the cost-effectiveness of the EEPP was facilitated by the review of updates to the TRM assumptions. The *Technical Reference Manual for Estimating Savings from Energy Efficiency Measures* (TRM) documents the savings algorithms and assumptions used for prescriptive efficiency measures. In 2011, members of the Consultant Team oversaw National Grid's development of the 2012 TRM. In 2012 and 2013, the Consultant Team again reviewed assumptions in the TRM and any updates resulting from recent evaluations and changes to federal standards. National Grid used new results from the evaluations that were recently completed to update multiple measure baselines, net-to-gross ratios, measure lives, and other measure assumptions.

In summary, the EERMC Consultant Team's review of the general model assumptions and inputs for measure and program costs and savings was performed via meetings with National Grid and by looking at specific measures in the TRM and cost-effectiveness benefit/cost model. The review focused on the examination of many key measure-level assumptions in the model and consistency with values in the TRM. The Consultant Team also looked for any trends and outliers that would indicate errors. The Team identified minor errors and provided feedback to National Grid to have those errors corrected in the cost-effectiveness benefit/cost model. No significant error was identified that would bring into question the projected cost-effectiveness of the programs or portfolio.

Overall, the Consultant Team found that the application of the TRC test follows standard practice, including:

- The cost and benefit components of the TRC test;
- The methodology for monetizing benefits based on avoided costs;
- Adjustments of market effects (i.e., free ridership and spillover);
- Accounting for inflation in the avoided costs and measure costs;
- Net-to-gross assumptions are adjusted following evaluations;
- Discounting the future value of money;
- Inclusion of non-program-specific costs at the sector and portfolio levels;
- Adjustment of baselines following updates to building codes and federal standards;
- Pilot programs are used appropriately to determine the cost-effectiveness and viability of new measures.

In the future, the Consultant Team will continue working with National Grid, the EERMC, and the Collaborative Subcommittee to provide informed review of the savings assumptions used in the benefit/cost model and TRM. The interaction between cost-effectiveness review and solid

understanding of program design and implementation provides a high level of confidence to regulators and Rhode Island consumers that they are realizing benefits that will be reflected in their bills and the performance of their buildings and their utility systems.

In conclusion we find, based on this review that National Grid's planned programs for 2014 are cost-effective based on the TRC test, as described in the program plans.

Cost of efficiency – cheaper than supply

There are different ways to compare the cost of energy efficiency to the cost of energy supply. The EERMC Consultant Team notes that in addition to the TRC being the test ordered by the PUC, it is also a preferred measure of whether efficiency is cheaper than the cost of supply. The TRC test takes account of the costs and benefits of energy efficiency for both the utility and the customer. The benefits are calculated based on the avoided costs of electric energy and demand, and fossil fuels, and it takes account of measure costs (both utility incentive and customer contribution) thus it inherently compares the costs of efficiency to the total cost of energy supply. When an efficiency measure or program passes the TRC cost-effectiveness test, it is lower cost than supply as defined by the TRC in Rhode Island pursuant to the Standards and TRC definition.

Another way that National Grid expresses the results of the TRC analysis is as a Total Net Benefits value that translates the benefit/cost ratio into a figure that represents the total benefits to society over the lifetime of the measures. We agree that National Grid's assessment of net benefits is an accurate and appropriate measurement the magnitude of program benefits.

VIII. Review of Evaluation, Measurement and Verification (EM&V)

Process Evaluation, Measurement and Verification (EM&V) refers to the systematic collection and analysis of information to document the impacts of energy efficiency programs and improve the effectiveness of these programs. Impact evaluation, a specific type of EM&V activity, refers specifically to efforts to document program impacts. From the perspective of this review of the cost-effectiveness of National Grid's programs and 2014 EEPP, the relevance of National Grid's EM&V process is that this process is responsible for confirming and/or refining over time the values of many of the parameter assumptions that go into the Company's cost-effectiveness analyses, particularly those pertaining to program benefits.

EM&V activities in Rhode Island have generally been managed by the evaluation department of National Grid, with input from the Rhode Island Collaborative and (more recently) the EERMC, following high-level regulatory direction set by the PUC, Division, and the Office of Energy Resources. Recently, Northeast Energy Efficiency Partnerships (NEEP) has been playing a larger and more important role in establishing regionally harmonized EM&V standards. National Grid owns utilities in Massachusetts, Rhode Island, and New York, and National Grid's evaluation department has EM&V-related responsibilities in all of these states. National Grid's evaluation department is highly experienced, and has a strong national reputation in the evaluation industry. In New England, National Grid's EM&V planning, implementation, and reporting activities have historically been tightly integrated between Massachusetts, New Hampshire[9] and Rhode Island. Most new EM&V studies that bear on Rhode Island's energy efficiency programs are planned, budgeted, implemented, reported, and filed in Rhode Island and Massachusetts.

In Rhode Island, the Consultant Team's work with National Grid's evaluation department to date has focused on providing input into evaluation priorities, approaches, and spending levels. We have in-depth familiarity with these methods through our work with National Grid in Massachusetts, on behalf of the Massachusetts Energy Efficiency Advisory Council. On the basis of this familiarity, we believe that National Grid's impact evaluation methods in New England have generally been consistent with, if not superior to, prevailing industry standards. We therefore conclude that the strength of National Grid's EM&V process serves to buttress the finding that the Company's programs and plan are cost-effective. We have worked with National Grid on behalf of the EERMC on approaches to producing more Rhode Island-specific results within current EM&V budget limitations. We also recommended that National Grid's and the EERMC's EM&V budgets increase to support more Rhode Island-specific work.

IX. Conclusion

For the reasons stated herein, the EERMC and the EERMC's Consultant Team finds that National Grid's 2014 EEPP is cost-effective and lower cost than the acquisition of additional supply pursuant to R.I.G.L.§ 39-1-27.7 (c)(5).

[9] Liberty Utilities has recently acquired National Grid's customer base in New Hampshire, but historically, EM&V was integrated between Rhode Island and New Hampshire.

nationalgrid

Rhode Island Energy Efficiency

Third Quarter 2013 | National Grid **November 12, 2013**

Overview

National Grid had another strong quarter and is forecasting to meet its 2013 gas and electric savings goals. In fact, several programs, including ENERGYSTAR® HVAC and EnergyWise have already met their 2013 goals.

Innovation was in full swing during the third quarter with the System Reliability Procurement (SRP) pilot enrolling 146 unique participants in Demand Link and calling two successful demand response events. The Codes Initiative also held several successful trainings and went live with a new website. The Company also filed its Customer-Owned street lighting tariff on September 16th that takes into account the innovative control capabilities of LED street lights.

The Company also continues to use outreach efforts and new partnerships to target customers where they live and work. In addition to outreach events at the Moose Café, PawSox Fan Fest, and Raytheon, the Company continued to build momentum around The Rhode Island Energy Challenge as an innovative means to reach residential customers. The Challenge now has three towns - North Smithfield, Cranston and Newport all formally pledging to help residents Find Your Four! The Company is also working with new partners like the Rhode Island Food Banks to target hard-to-reach customers.

The Strategic Energy Management Plan (SEMP) also made great progress in the third quarter with an MOU close to being finalized with Roger Williams University and a final version of the technical potential study submitted to Lifespan Hospitals.

During the third quarter, the Company was also hard at work developing the 2014 Energy Efficiency Program Plan. The Plan looks to build upon the success of 2013 by reaching more customers with greater savings in a highly cost-effective manner.

With one quarter remaining, the Company is projecting that it will reach 100% of the electric savings target and 104% of the gas savings target. The Company is pleased with the continued progress toward goal and it looking to finish the year with a strong fourth quarter.

2013 Program & Initiative Updates

Residential New Construction

- The program continues to make steady progress, with another 2,500 units slated for completion in 2013 or 2014. By year end, this program is expected to achieve its goal while remaining within the budget.
- In the third quarter a new Reno/Rehab was completed at the 122 unit Anthony Mill. The project benefited from the program's energy efficient bulb offerings, including CFLs and LEDs. National Grid aims to build upon this success and target additional mill projects in 2014.
- The third quarter also brought several customer success stories.
    - A three unit affordable housing project on Pond Street in West Warwick achieved Tier 3 and ENERGY STAR® Version 3. This project benefited from a highly motivated and committed builder who drove this project to completion with support from the Rhode Island field staff. This is a great example of what is possible when a builder or owner is really committed to a high performance building, even when faced with limited funding.
    - Caldwell & Johnson Inc., a regular and high performing program participant, made news again this quarter as a finalist in the U.S. Department of Energy Challenge Home Awards. Rob Sherwood, CSG Program Manager for RNC in Rhode Island, accompanied Caldwell to California for the award ceremony. http://www1.eere.energy.gov/buildings/residential/ch_index.html.

Income Eligible

- The collaborative program model with CLEAResult as the Industry Partner is having a positive impact. CLEAResult, the Department of Human Services (DHS) and the Community Action Programs (CAPs) worked together to create the Weatherization Technical Committee, which is currently assessing and improving the Income Eligible Services (IES) technical manual and measures list. The ASHRAE training held at URI was an opportunity for the groups to work together to define Indoor Air Quality (IAQ) processes for IES.
- CLEAResult increased its program responsibilities in the third quarter and is ensuring timely payment to the CAPs using direct deposit to eliminate paper checks and "green" the process.

EnergyWise

- EnergyWise made tremendous progress in the third quarter, already achieving its 2013 savings goals for both gas and electric.
- During the third quarter, 1,975 single family audits were completed.
- Duct sealing activity also continued to be robust in the third quarter with 31 participants. In addition, 24 participants moved forward with insulation after the remediation of combustion testing failure.
- The network of Independent Insulation Contractors (IICs) continued to grow with the addition of two in the third quarter. There are now 24 ICCs in the network.

- The Golden Gun award for the best air sealing performance by an IIC in the third quarter went to Beauchemin Construction, with average CFM reduction per hour of 123. The average air sealing performance is 982 CFM for all contractors.
- There were 165 heat loans completed in the third quarter.

EnergyWise and Income Eligible Multifamily

- The second quarter marked steady progress toward multifamily goals for both market-rate and income eligible properties.
- There were several customer success stories in the third quarter.
    - Work on the 96 unit Independence Place Apartments was completed in the third quarter resulting annual savings of $410,555 from the reduction of 7,625 therms and 285,433 KWh from upgrading lighting in units and common areas to LEDs and CFLs, installing programmable thermostats for each unit, and air sealing of chimney chases, plumbing stacks, dropped soffits and common walls/firewalls.
    - The 75 unit Colonial Village Apartments project was also completed resulting in annual savings of $85,489 from a reduction of 45,780 KWh and 3,147 therms. The project involved the installation of low power dimmable ballasts and lamps with occupancy sensors in the common halls, LEDs and CFS, smart strips, air sealing, and demand circulators and controls for the DHW systems.

ENERGYSTAR® Lighting and Appliances

- Residential lighting had a strong third quarter. TechniArt promoted efficient lighting at seven outreach and customer education events, including the SRP and energy efficiency information night at the Moose Café in Tiverton, PawSox Fan Fest, Raytheon, and National Grid employee events.
- The company also started working with Rhode Island Food Banks again to offer efficient lighting in this hard-to-reach sector.
- In the appliance program, National Grid awarded the winner of Rhode Island's Funkiest Fridge Contest to the Lavalley family (see winning image to the right). The family won the opportunity to throw out the opening pitch for the Go Green Night PawSox game on August 29, 2013.

ENERGYSTAR® HVAC (Heating and Cooling)

- This program continues to aid the residential portfolio by saving more than 100% of its goal.
- For electric heating, participation in heat pump water heaters (HWPH) was much higher than anticipated.

- This program is expected to over perform through the end of 2014, creating an additional 837 annual MWh savings**.**
- Gas heating is also expected to over perform due to better than anticipated program participation and the popularity of new measures such as WiFi thermostats, including the online "instant" rebate offers with Nest.com & EFI. Additional participation will create additional savings of 148,000 annual therms and maintaining momentum and contractor confidence into 2014.
- The new lead vendor, CSG, has excelled at maintaining contractor confidence and participation in the program**.**

Home Energy Reports

- This program continues to be delivered to over half of Rhode Island households, with every customer able to see usage on the established Web Portal.
- The Rewards Pilot is experiencing great success and is helping drive traffic to the Web Portal and to the existing portfolio of energy efficiency offerings and services.
- The Thermostat Pilot is in full swing and early customer response is extremely positive.

Community Initiative

- The Rhode Island Energy Challenge continues to gain momentum across the State with North Smithfield, Cranston and Newport all formally pledging to help residents Find Your Four! In addition, several businesses and non-profits continue to serve as leading advocates for the Challenge, helping to build grassroots networks and overall awareness of National Grid's energy efficiency offerings and services.
- The Challenge is seeking more partners for 2014 and is developing new strategies for engaging National Grid's Rhode Island residential customers.

System Reliability – Little Compton and Tiverton

- The SRP pilot continues to steadily move forward with 146 unique participants in Demand Link through September 30, 2013.
- Two test demand response events were conducted in July and August. The team is busy analyzing data from those events and planning for 2014.

Commercial & Industrial Customer Experience

- The Company is continuing to focus on modifying the Technical Assessment (TA) review process to expedite moving applications faster for customers. Some of the tasks include: reduction in TA study cycle times, increased TA resources (like increasing the pool of TA vendors), increase transparency of custom projects, etc.
- All market sectors identified in the plan are being targeted individually so as to provide dedicated support to these sectors

Codes Initiative

- Implementation is in full swing with several trainings either already held or soon to be held across Rhode Island. Circuit rider technical assistance is also

up and running, and technical support services are being marketed to a number of groups through various methods.

- A website through National Grid was created to support outreach and execution of the initiative, and collaboration remains strong between National Grid, the implementation team, the Rhode Island Building Code Commission, and Northeast Energy Efficiency Partnerships (NEEP).
- Evaluation work regarding the savings and attribution methodology is in its final stages and results will be incorporated into 2014 program execution.

Large Commercial New Construction

- The program is on target to meet 2013 goals with the majority of savings expected to come from the Upstream Lighting initiative. This quarter the initiative surpassed the internal goal of 20,000 MWh, more than 65% of our New Construction goal.
- The Portal to electronically submit Upstream HVAC data to EFI, our third party processor, should be complete soon. In 2014, all equipment that is part of Upstream HVAC will be submitted through this portal.
- The Company is also moving ahead with Customer-Owned street lighting. A tariff was filed September 16th and a hearing is scheduled for early December.
- The Office of the Future is also making progress. The Company is in the process of expanding the scope of the current contractor to assist us in creating implementation material to launch this pilot as an initiative in 2014. The Company is also in the process of identifying customers who can participate in this initiative.

Large Commercial Retrofit

- The Company is on target to meet electric retrofit goals and is currently projecting 100% by end of the year. Gas retrofit is also forecasted to meet 100% of the 2013 goal based on several large projects slated for completion in December.
- The Industrial Pilot has also been very active during this quarter. Three customers were recruited for the pilot and had their technical assessments completed. The vendor and our sales team presented the results of the technical assessments to the customers. The Company is also pursuing two additional customers for the pilot.
- Strategic Energy Management Plan (SEMP)
    - The Company conducted a workshop with Roger Williams University staff to understand their needs and requirements for the SEMP partnership. The Company presented a draft Memorandum of Understanding (MOU) to the University which they are currently reviewing. In addition, the Company submitted the final version of the technical potential study to Lifespan Hospitals. They are currently reviewing the terms of the SEMP MOU.
- RI Public Energy Partnership (RIPEP)
    - The Company developed a monthly dashboard and a list of KPIs for the RIPEP team. This will enable the team to track progress and make changes to the program on an as needed basis. The sales team has been very active in bringing many municipal projects through the

PEXes. In addition, scoping studies are underway for several schools and municipal projects that were identified by the RIPEP team.

Small Business Direct Install

- This program is expected to meet 100% of its 2013 gas and electric savings goals.
- There were several small business success stories in the third quarter.
    - Colonial Toyota in Smithfield received a $179,773 incentive from National Grid to install exterior LED pole top fixtures with advanced wireless controls. This installation will allow the customer to schedule the usage for all fixtures on the lot and is expected to save 267,927 kWh annually.
    - Temple Beth El in Providence received a $52,791 incentive from National Grid to upgrade interior and exterior LED lights as well as four variable frequency drives on the hot and chilled water pumps. In addition two “on-demand” circulation pumps were installed on their continuous volume hot water system. This installation will save the customer 3,900 therms and 87,780 kWh annually.
    - RISE also installed enhanced rooftop unit controls (Catalyst) to improve the function of the rooftop unit as well as the indoor air quality at the Boys and Girls Club in Warwick. RISE also installed interior and exterior lighting, upgraded energy efficient T8 lighting inside, and LED lighting on the exterior of the facility. All together this customer is projected to save over 36,000 kWh annually.

Events

- In July, National Grid held an Energy Efficiency Awareness Day at the Moose Cafe in Tiverton. The event was a great success with many of the residents signing-up for our Demand Link pilot program and other Energy Efficient program offerings

- National Grid also held a “Go Green Night” in August at McCoy Stadium with Pawtucket Red Sox fans learning about the Rhode Island Energy Challenge: Find Your Four!

NATIONAL GRID ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND

Table 1. Summary of 2013 Target and Preliminary 3rd Quarter Results

ELECTRIC PROGRAMS Sector and Program	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Energy Savings (Annual MWh)				Customer Participation			Implementation Expenses ($ 000)				
Commercial and Industrial	Target	Year To Date	Pct Achieved	Pct Projected	Approved Target	Year To Date	Pct Achieved	Budget	Year To Date	Pct Achieved	Lifetime savings, MWh	$/kWh
Large Commercial New Construction	29,302	25,174	85.9%		1,260	2,939	233.3%	$9,394.8	$4,867.9	51.8%	265,691	$ 0.018
Large Commercial Retrofit	47,600	12,650	26.6%		982	182	18.5%	$11,785.6	$4,074.3	34.6%	156,537	$ 0.026
Small Business Direct Install	20,192	14,026	69.5%		1,667	959	57.5%	$11,585.7	$8,431.7	72.8%	166,970	$ 0.050
Community Based Initiatives - C&I								$148.0	$40.1	27.1%		
Commercial Pilots								$319.2	$10.5	3.3%		
Comprehensive Marketing - C&I								$555.1	$437.5	78.8%		
Finance Costs								$1,080.0	$1,000.0	92.6%		
SUBTOTAL	**97,093**	**51,851**	**53.4%**	**100.0%**	**3,910**	**4,080**	**104.4%**	**$34,868.6**	**$18,862.0**	**54.1%**	**589,198**	**$0.032**
Income Eligible Residential												
Single Family - Income Eligible Services	4,131	2,389	57.8%		2,501	1,369	54.7%	$6,242.5	$2,819.9	45.2%	27,446	$0.103
Income Eligible Multifamily	2,057	1,048	51.0%		3,100	3,302	106.5%	$1,675.4	$787.8	47.0%	10,894	$0.072
SUBTOTAL	**6,188**	**3,438**	**55.6%**	**90.0%**	**5,601**	**4,671**	**83.4%**	**$ 7,917.92**	**$ 3,607.64**	**45.6%**	**38,339**	**$0.094**
Non-Income Eligible Residential												
Residential New Construction	883	467	52.9%		734	325	44.3%	$1,869.4	$931.4	49.8%	6,822	$ 0.137
ENERGY STAR® HVAC	513	1,220	237.7%		2,090	2,025	96.9%	$1,303.7	$1,269.5	97.4%	14,680	$ 0.086
Energy*Wise*	7,059	7,704	109.1%		7,800	7,260	93.1%	$6,750.9	$5,701.7	84.5%	64,773	$ 0.088
Energy*Wise* Multifamily	2,129	1,496	70.3%		3,700	2,924	79.0%	$1,405.7	$1,440.4	102.5%	16,333	$ 0.088
ENERGY STAR® Lighting	24,757	17,972	72.6%		181,560	133,018	73.3%	$4,234.6	$2,878.1	68.0%	165,871	$ 0.017
ENERGY STAR® Appliances	4,872	3,184	65.3%		24,450	21,700	88.8%	$2,439.6	$1,154.1	47.3%	23,516	$ 0.049
Home Energy Reports	15,325	5,649	36.9%		246,500	205,355	83.3%	$1,419.8	$1,230.8	86.7%	5,649	$ 0.218
Energy Efficiency Educational Programs								$55.3	$45.1	81.6%		
Residential Products Pilot								$590.3	$330.0	55.9%		
Community Based Initiatives - Residential								$498.6	$230.3	46.2%		
Comprehensive Marketing - Residential								$1,590.4	$1,276.6	80.3%		
SUBTOTAL	**35,341**	**37,691**	**106.7%**	**102.0%**	**466,834**	**372,607**	**80%**	**$22,158.2**	**$16,487.9**	**74.4%**	**297,645**	**$0.055**
Regulatory												
EERMC								$816.7	$274.0	33.5%		
OER								$544.4	$357.7	65.7%		
SUBTOTAL								**$1,361.1**	**$631.7**	**46.4%**		
TOTAL	**134,491**	**90,590**	**67.4%**	**100.0%**	**473,844**	**379,989**	**80.2%**	**$ 60,063.3**	**$ 39,589.1**	**65.9%**	**897,736**	**$0.044**
System Reliability Procurement					185	146	78.9%	$ 343.5	$128.7	37.5%		

GAS PROGRAMS Sector and Program	(1)	(2)	(3)	(4)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Energy Savings (MMBtu)				Customer Participation			Implementation Expenses ($ 000)				
Commercial and Industrial	Approved Target	Year To Date	Pct Achieved	Pct Projected	Approved Target	Year To Date	Pct Achieved	Approved Budget	Year To Date	Pct Achieved	Lifetime savings, MMBtu	$/Lifetime MMBtu
Large Commercial New Construction	35,967	16,899	47.0%		170	109	64.3%	$2,140.8	$1,013.5	47.3%	300,185	$3.376
Large Commercial Retrofit	123,451	63,363	51.3%		235	304	129.6%	$3,092.6	$1,735.0	56.1%	355,627	$4.879
Small Business Direct Install	6,583	2,208	33.5%		209	72	34.5%	$152.5	$68.1	44.7%	19,488	$3.495
Commercial & Industrial Multifamily	4,800	0	0.0%		600	0	0.0%	$420.3	$30.6	7.3%	0	$0.000
Commercial & Industrial Pilots								$295.2	$5.4	1.8%		
Comprehensive Marketing - C&I								$165.2	$125.5	76.0%		
Finance Costs								$300.0	$0.0	0.0%		
SUBTOTAL	**170,802**	**82,469**	**48.3%**	**100.0%**	**1,213**	**485**	**40.0%**	**$6,566.4**	**$2,978.1**	**45.4%**	**675,300**	**$4.410**
Income Eligible Residential												
Single Family - Income Eligible Services	6,250	3,197	51.2%		400	236	59.0%	$2,413.7	$916.1	38.0%	63,944	$14.327
Income Eligible Multifamily	16,562	2,864	17.3%		2,200	462	21.0%	$1,626.0	$227.9	14.0%	51,552	$4.420
SUBTOTAL	**22,812**	**6,061**	**26.6%**	**96.0%**	**2,600**	**698**	**26.8%**	**$ 4,039.7**	**$ 1,143.97**	**28.3%**	**115,496**	**$9.905**
Non-Income Eligible Residential												
Energy*Wise*	30,333	36,307	119.7%		2,000	1,623	81.2%	$3,502.9	$3,199.7	91.3%	726,140	$4.406
Energy Star® HVAC	19,544	26,657	136.4%		1,578	3,296	208.9%	$2,334.6	$1,907.5	81.7%	470,231	$4.056
EnergyWise Multifamily	5,605	6,121	109.2%		700	861	123.0%	$458.0	$412.5	90.1%	104,057	$3.964
Home Energy Reports	35,781	3,617	10.1%		136,475	121,199	88.8%	$298.1	$309.7	103.9%	3,617	$85.603
Residential New Construction	2,900	394	13.6%		584	162	27.7%	$343.1	$29.3	8.6%	9,847	$2.980
Residential Products Pilot								$166.5	$4.5	2.7%		
Comprehensive Marketing - Residential								$174.6	$151.7	86.9%		
Community Based Initiatives - Residential								$60.0	$39.6	66.1%		
SUBTOTAL	**94,161**	**73,096**	**77.6%**	**113.0%**	**141,337**	**127,141**	**90.0%**	**$7,337.8**	**$6,054.5**	**82.5%**	**1,313,892**	**$4.608**
Regulatory												
EERMC								$225.6	$88.4	39.2%		
OER								$150.4	$97.6	64.9%		
SUBTOTAL								**$ 376.0**	**$ 186.05**	**49.5%**		
TOTAL	**287,775**	**161,626**	**56.2%**	**104.0%**	**145,150**	**128,324**	**88.4%**	**$ 18,319.9**	**$ 10,362.6**	**56.6%**	**2,104,687**	**$4.924**

NOTES
(1)(4) Targets from Docket 4366 - Attachment 5, Table E-6 (electric) and Attachement 6, Table G-6 (gas).
(3) Pct Achieved is Column (2)/ Column (1).
(7) Pct Achieved is Column (6)/ Column (5).
(8) Approved Implementation Expenses from Docket 4366, Attachment 5 Table E-3 (electric) and Attachment 6 Table G-3 (gas)
(9) Year To Date Implementation Expenses are net of evaluation expenses
(10) Pct Achieved is Column (9)/ Column (8).
(12) $/lifetime kWh = Column (9)/Column (11); $/lifetime therm = Column (9)*1000/Column (11)*10
System Reliability Procurement targets from Docket 4367, not included in Implementation Expenses Total
System Reliability Procurement targets and actuals do not reflect statewide EE amounts leveraged

OER SRP Solar DG Pilot Project

EERMC Meeting
November 14, 2013

STATE OF RHODE ISLAND
OFFICE OF
ENERGY RESOURCES

OER SRP Solar DG Pilot Project

- In the 2012 RGGI Allocation Plan, OER proposed allocating 35% of the auction proceeds to a pilot project to assess the costs and benefits of targeted **renewable distributed generation as a viable "non-wires alternative" in distribution planning**

STATE OF RHODE ISLAND
OFFICE OF
ENERGY RESOURCES

Goal of Pilot

- "Demonstrate the capability, costs, and value for distributed solar generation to provide load reduction in a specific, load-constrained area"

Structure of Pilot

EERMC SRP SUBCOMMITTEE

- OER
- National Grid
- EERMC members

SELECTION THROUGH COMPETITIVE BID; VENDOR OVERSIGHT

QUALIFIED VENDOR

- TASK 1: Technical Solution
- TASK 2: Program Design

RECOMMENDATIONS

OER

- Final execution and administration of the demonstration pilot

STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES

TASK 1: Technical Solution

- **Vendor assesses how different deployment options impact value (peak load reduction) and engineering viability:**
  - Deployment: residential, commercial, rooftop, ground mount?
  - Interconnection: grid-tied, behind the meter, etc.?
  - Ownership: host-owned, lessor-owned, utility?
  - Other: storage, tracking?
  - Cost-effectiveness?

Task 2: Program Design

- **Based on findings of Task 1, vendor will propose an implementation strategy for installing and managing the solar DG resources:**
  - Informed by number, location, distribution, and size of systems
  - Synergies between EE and DG
  - Incentives, procurement, group purchase, etc.?

Timeline & Budget

- RFP released Friday, November 8
- Vendor begins work December 13
- Vendor submits final recommendations March 14, 2014
- ~$800,000 in funds are available to implement the demonstration pilot

STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES