Jennifer Brooks Hutchinson
Senior Counsel

September 25, 2014

VIA HAND DELIVERY & ELECTRONIC MAIL

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

RE: Docket 4522 - 2015-2017 Energy Efficiency and System Reliability Procurement Plan
Responses to PUC Data Requests – Set 1

Dear Ms. Massaro:

Enclosed are ten (10) copies of National Grid's[1] responses to data requests issued by the Rhode Island Public Utilities Commission (PUC) on September 4, 2014 in the above-referenced matter.

Thank you for your attention to this filing. If you have any questions, please contact me at (401) 784-7288.

Very truly yours,

Jennifer Brooks Hutchinson

Enclosure

cc: Docket 4522 Service List
Karen Lyons, Esq.
Jon Hagopian, Esq.
Steve Scialabba, Division

[1] The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below. Paper copies of this filing are being hand delivered to the RI Public Utilities Commission and to the RI Division of Public Utilities and Carriers.

Joanne M. Scanlon

September 25, 2014
Date

Docket No. 4522 – National Grid - Energy Efficiency and System Reliability Procurement Plan for period 2015-2017
Service List updated on 9/8/14

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PUC 1-1

Request:

Plan, p.7. Footnote 9. Cite the page number of the ISO-NE report which supports the conclusion that electric savings will avoid over 1.9 million metric tons of carbon dioxide over the lifetime of the installed efficiency measures. What assumptions were made to support this conclusion?

Response:

The source of the information from ISO-NE was from table 1.1 page 7 of http://www.iso-ne.com/genrtion_resrcs/reports/emission/2012_emissions_report_final_v2.pdf

Planned lifetime savings of 5,806,047 MWh were multiplied by 719 lbs/MWh and converted to metric tons, resulting in 1,893,542 metric tons.

The lifetime savings used in the calculation were from a preliminary draft of the Least Cost Procurement Plan. The filed Least Cost Procurement Plan updated the lifetime savings to 6,185,846 MWh over the three-year period. Using the same conversion factors, this would result in 2,017,407 metric tons avoided.

PUC 1-2

Request:

Plan, p.8. Footnote 12. Is the estimated $892 million increase in gross state product and 9,700 job-years resulting from energy efficiency investments based on National Grid's 2014 Regional Economic Model (REMI) Analysis, and if so, please provide a copy of that analysis.

Response:

Yes, the estimated economic impacts from the Least Cost Procurement Plan are based on National Grid's 2014 Regional Economic Model (REMI) Analysis. A copy is provided as Attachment PUC 1-2.

Macroeconomic Impacts of Rhode Island Energy Efficiency Investments

REMI Analysis of National Grid's Energy Efficiency Programs

National Grid Customer Department

August 2014

EXECUTIVE SUMMARY

This study quantifies the macroeconomic impacts of National Grid's 2014 Energy Efficiency (EE) Program Plan for Rhode Island and provides updated economic impact multipliers to quantify the benefits of future EE programs in the Rhode Island economy. National Grid and the Energy Efficiency Resource Management Council (EERMC) currently use multipliers from an economic impact study conducted by Environment Northeast (ENE) in 2009[1]. The ENE Study did not address Combined Heat and Power (CHP) projects, which have since become incorporated into Rhode Island's EE plans. Therefore, this study also provides estimates of the economic development benefits of CHP projects.

National Grid and its customers will invest $112.5 million on EE electric and gas measures in Rhode Island under the 2014 Plan, as shown in Table ES-1[2]. This will create jobs in construction and other industries as EE materials and equipment are purchased and installed in homes and businesses. Once implemented, the EE measures will provide net cost savings (energy and non-energy) to customers over the fourteen-year life of the program. This will increase economic activity, incomes and jobs in Rhode Island over the long-term. These economic impacts are estimated using the policy forecasting model by Regional Economic Models, Incorporated (REMI) as the difference between a base case with no EE program spending and the case with 2014 EE Plan spending[3]. Thus, all economic impacts greater than zero are attributable to the Plan. Both the ENE Study and National Grid used the REMI model to estimate the economic impact of Rhode Island EE program plans in this way.

Table ES-1
2014 Energy Efficiency Investment Spending ($m)

ELECTRIC	RESIDENTIAL	C&I	TOTAL
Program Budget	$33.7	$34.8	$68.5
Customer Contribution	$6.8	$9.3	$16.1
Total Electric	$40.6	$44.1	$84.64
GAS	RESIDENTIAL	C&I	TOTAL
Program Budget	$14.2	$8.2	$22.4
Customer Contribution	$3.2	$2.2	$5.4
Total Gas	$17.4	$10.4	$27.8
Total Electric and Gas	$58.0	$54.5	$112.5

Table ES-2 below shows the economic impact of the above spending targets based on REMI estimates. The 2014 Plan is expected to create a total of 3,607 annual jobs in Rhode Island over the next fourteen years, from 2014 to 2027. Also, the Plan is expected to add $331 million to state gross domestic product (GDP), $224 million to personal income and $15 million to state tax revenue. This equates to an average annual impact of 258 jobs, $24 million in GDP, $17 million in personal income and $1.1

[1] Jamie Howland, Derek Murrow, Lisa Petraglia and Tyler Cummings, "Energy Efficiency: Engine of Economic Growth, A Macroeconomic Modeling Assessment," Environment Northeast, October 2009 (referred to herein as the "2009 ENE Study" or "ENE Study").
[2] The Toray Plastics (America), Inc. Combined Heat and Power (CHP) project was removed from this analysis as this study examines the economic impacts of CHP separate from EE. Residential includes income eligible customers.
[3] REMI is owned by Regional Economic Models, Incorporated and leased to its clients. See www.remi.com for model description, applications, client lists and documentation.

million in state tax revenue over the next fourteen years. These are net economic gains, after all program and participant costs have been paid.

Table ES-2
2014 EE PROGRAM PLAN ECONOMIC IMPACTS -- STATE OF RHODE ISLAND

PROGRAM LIFETIME IMPACT (2014-2027)	ELECTRIC	NATURAL GAS	TOTAL
Jobs	3,093	514	3,607
GDP ($2014m)	$287	$44	$331
Personal Income ($2014m)	$211	$33	$244
Population	3,374	485	3,859
State Tax Revenue ($2014m)	$13	$2	$15

AVERAGE ANNUAL IMPACT (2014-2017)	ELECTRIC	NATURAL GAS	TOTAL
Jobs	221	37	258
GDP ($2014m)	$20.5	$3.1	$24
Personal Income ($2014m)	$15.0	$2.4	$17
Population	241	35	276
State Tax Revenue ($2014m)	$0.9	$0.1	$1.1

A major objective of the National Grid Study is to update the ENE spending multipliers to quantify the benefit of future EE Plans to the Rhode Island economy. In its 2009 study, ENE estimated that every $1.0 million in electric EE program spending in Rhode Island would create 36.2 annual jobs over the lifetime of the measures, while every $1.0 million in gas EE spending would create 38.5 annual jobs. ENE also estimated favorable impacts on Rhode Island GDP, output, value added and income.

However, changes in EE program benefits and costs since 2009 imply that these spending multipliers have changed. First, there has been a significant decline in natural gas prices, leading to lower benefit cost ratios for gas EE programs. This implies fewer economic benefits for every dollar spent on gas EE programs. Second, program offerings have evolved with changes in technology and markets. As a result, the distribution of spending, benefits and costs between residential and commercial and industrial (C&I) customers differs from what was assumed in the ENE Study. Since costs and benefits to C&I customers tend to have a larger economic impact than residential customers, this also implies a change in the amount of economic benefits for every EE dollar spent. Benefit cost ratios can also change over time due to changes in technology, markets and program offerings, causing spending multipliers to change.

Table ES-3 below provides a comparison of the updated spending multiplier estimates on employment and GDP to those found in the ENE Study. These multipliers include the impact of program and participant spending, lifetime benefits, and program and participant costs.

Updated electric spending multipliers are higher than those from the ENE Study. Benefit cost ratios are close, but the 2014 electric plan has a higher share of C&I participants in total benefits and a lower share of C&I participants in total costs, implying a larger economic impact for every EE dollar spent. Updated gas spending multipliers are lower than the ENE Study. This is due to the drop in natural gas prices since 2009, which has reduced the benefit cost ratio of gas EE programs. In addition, the 2014 EE gas plan

has a lower share of C&I participants in total benefits and a higher share of C&I participants in total costs compared to the ENE Study.

Table ES-3
COMPARISON OF RESULTS TO 2009 ENE STUDY

	Job Years / $ Million			GDP / $		
	Electric	Gas	Total	Electric	Gas	Total
2014 EE Program Plan Study						
Program Spending / Budget	45.1	23.0	39.7	4.2	1.9	3.6
Pgm and Part Spending / Pgm Cost	36.5	18.5	32.1	3.4	1.6	2.9
2009 ENE Study						
Program Spending / Budget	36.2	38.5	37.4	4.0	4.4	4.2
Pgm and Part Spending / Pgm Cost	27.0	25.5	26.3	3.0	2.9	3.0

Economic Impacts by EE Plan Component

While the updated spending multipliers in Table ES-3 are appropriate for evaluating the expected economic impacts of EE programs with similar benefit cost ratios and program offerings to the 2014 EE Plan, these factors could change over time, reducing the accuracy of the total spending multipliers. To avoid this problem, it is preferable to use the economic impact multipliers on each Plan component– spending, benefits and costs – as shown in Table ES-4, and add them up to obtain total employment and GDP gains. This will account for changes in benefit cost ratios and program offerings over time.

Table ES-4
Economic Impact Multipliers by EE Plan Component

EE Program Component	2014 EE Plan ($m)		Job Years/$ Million		GDP / $	
	Electric	Gas	Electric	Gas	Electric	Gas
Program Spending	$68.5	$22.4	9.1	9.5	0.6	0.7
Participant Spending	$16.1	$5.4	9.6	10.1	0.7	0.7
Residential Benefits	$80.5	$29.5	4.5	4.6	0.4	0.4
C&I Benefits	$178.4	$20.4	13.9	13.8	1.4	1.4
Residential Costs	$35.4	$13.8	-5.4	-5.4	-0.4	-0.4
C&I Costs	$49.3	$14.1	-6.7	-6.7	-0.6	-0.6

Note: Residential includes income eligible program participants.

Combined Heat and Power

The ENE Study did not address Combined Heat and Power (CHP) projects which have since become incorporated into Rhode Island's EE plans. CHP projects involve the installation of equipment to generate electricity and capture waste heat for productive uses such as facility heating and cooling. CHP projects must pass a benefit cost test to be included in National Grid's EE Plan, but economic development benefits may be included in the test. National Grid and the EERMC currently use a rate of economic development benefit of $2.51 of lifetime GDP increase per dollar of CHP program investment. This multiplier was estimated by adjusting EE program multipliers from the 2009 ENE study to reflect the lower benefit cost ratios of most CHP projects. However, given the inherent differences between EE and CHP projects, National Grid and the EERMC requested this study to determine a CHP multiplier based on actual spending, benefit and cost data from typical CHP projects. Massachusetts CHP data was used for

this analysis because it has a longer history with more projects than Rhode Island. In fact, Rhode Island currently has only one CHP project, Toray Plastics (America), Incorporated, which is much larger and somewhat atypical of most CHP projects. Benefits, spending and costs for six representative Massachusetts CHP projects are shown in Table ES-5. Benefits are lifetime electricity savings and heating savings, net of increased natural gas and O&M costs needed to run the generating equipment. Spending consists of National Grid's incentive payment and customer contributions for purchase and installation of the CHP systems. Costs are equal to spending before the federal tax credit and other state incentives.[4] The average lifetime of the CHP projects is 20 years and the average benefit cost ratio is 1.92.

Table ES-5

MA CHP PROJECT DATA					
Number of Projects	6	**Project Spending**		**CHP Project Costs**	
Benefit Cost Ratio	1.92	Incentive	$1,565,250	Incentive	$1,565,250.0
Measure Life	20	Customer	$4,703,370	Customer	$4,703,370.0
Total Benefits	**$12,042,883**	**Total Spending**	**$6,268,620**	**Total Costs**	**$6,268,620**

Economic impact results for Rhode Island are shown in Table ES-6. Only spending on the construction and installation of CHP systems is considered in the spending analysis. This is assumed to be 60% of total spending, based on Massachusetts CHP project data. Equipment purchased outside of the region has no local economic impact.

The CHP Project Economic Multipliers provide economic impacts for each component of a typical CHP project – spending, benefits and costs. The Total Spending Multipliers provide impacts on total CHP project spending. Note that the GDP multiplier on project spending, $2.73, is close to the current estimate of $2.51.

However, multipliers on total project spending will vary with the benefit cost (BC) ratio of a CHP project. If a project has a larger BC ratio than 1.92, then economic development impacts will be underestimated. Economic impacts will be over-estimated if a project has a lower BC ratio than 1.92. If a project has a negative benefit cost ratio, the total spending multiplier will falsely indicate positive economic impacts when there are none. Therefore, it is preferable to use the individual CHP Project Economic Multipliers in the Table ES-6 and add them up to obtain total GDP, employment and income gains. This will take into account any differences in the BC ratio from the Massachusetts projects.

Table ES-6

CHP PROJECT ECONOMIC MULTIPLIERS							
Typical CHP Project		Jobs/$m	Job Years	GDP/$	GDP	Income/$	Income
Construction Spending	$3,761,172	12.4	47	0.8	$3,034,363	0.6	$2,244,149
Total Savings	$12,042,883	14.1	170	1.5	$17,568,939	1.1	$12,703,018
Total Cost	$6,268,620	-6.6	-41	-0.5	-$3,506,352	-0.3	-$2,126,284
		Total	175	Total	$17,096,950	Total	$12,820,883
TOTAL SPENDING MULTIPLIERS							
		Jobs/$m	Job Years	GDP/$	GDP	Income/$	Income
Total Spending	$6,268,620	28.0	175	2.73	$17,096,950	2.0	$12,820,883

[4]CHP projects in both Massachusetts and Rhode Island qualify for the federal investment tax credit. State incentives include the monetized value of renewable energy credits associated with electricity generated from CHP projects.

INTRODUCTION

National Grid has been implementing energy efficiency (EE) programs in Rhode Island since 1987. These programs produce benefits long after all program and participant costs have been paid as measure lifetimes are in the 12 to 15-year range. In addition to electricity and gas savings, the programs provide other benefits such as reduced oil and water consumption, lower operation and maintenance costs, increased productivity and lower emissions. While the above benefits are the driving force behind National Grid's EE programs, there are also significant economic development benefits that make them even more valuable.

Macroeconomic Impacts of Energy Efficiency Programs

Energy efficiency programs impact the local economy in three ways. First, program and participant spending represents a direct investment in Rhode Island EE infrastructure. This creates jobs in construction and other industries as the programs are planned, and materials and equipment are purchased and installed. This is known as the "construction impact," taking place during "construction phase" of the Plan. The full impact is typically felt in the single year that the EE investment is made and the program is implemented.

Second, program savings to residential and business customers have positive economic impacts over the life of the EE measures. Residential savings put more money in consumer's pockets, boosting spending on local goods and services. This leads to more activity and hiring, especially in service sector industries such as retail. Commercial and industrial (C&I) cost savings increase regional competitiveness, allowing firms to sell more in competitive markets. This leads to increased output and hiring.

Third, rate increases and customer contributions needed to pay for the measures reduce spending on other goods and services and lower economic benefits. This is a short-term impact. Program costs are paid for in a single year by the energy efficiency program charge to all electric and gas customers. Customer costs are usually paid off in 1 to 3 years.

Estimating Construction Impacts

To estimate EE program construction impacts, program and participant spending was entered into REMI as an exogenous production increase in the industries where the money is expected to be spent. Allocation of residential and C&I spending to these industries was taken from the ENE Study[5]. This includes separate allocations for program and participant spending by customer segment, residential and C&I.

EE spending by industry is shown on Table 1. Although most spending is expected to take place in the construction industry, a significant amount of spending is also expected in machinery manufacturing, which includes heating, ventilation and air conditioning equipment, as well as commercial refrigeration equipment; electrical equipment manufacturing, which includes lighting fixtures and appliances; professional services, which includes planning and engineering; retail trade, and utilities. REMI assumes that

[5] 2009 ENE Study, Appendix 1.

the increased demand for these products and services is met by local firms if they exist in Rhode Island.

Table 1
ELECTRIC AND GAS, PROGRAM AND PARTICIPANT SPENDING, BY RI INDUSTRY

	Electric					Gas					Total
	Program		Participant		Electric	Program		Participant		Gas	Elec & Gas
	Res	C&I	Res	C&I	Total	Res	C&I	Res	C&I	Total	Total
Wood Products	$0.3	$0.0	$0.1	$0.0	$0.4	$0.1	$0.0	$0.0	$0.0	$0.2	$0.6
Nonmetallic mineral product mfg	$0.3	$0.3	$0.1	$0.1	$0.8	$0.1	$0.1	$0.0	$0.0	$0.3	$1.0
Paper	$0.7	$0.0	$0.1	$0.0	$0.8	$0.3	$0.0	$0.1	$0.0	$0.3	$1.2
Machinery mfg	$1.0	$3.3	$0.2	$1.0	$5.5	$0.4	$0.8	$0.1	$0.2	$1.5	$7.0
Computer, electronic prod mfg	$0.3	$1.0	$0.1	$0.3	$1.7	$0.1	$0.2	$0.0	$0.1	$0.5	$2.2
Electrical equip, appliance mfg	$0.7	$3.8	$0.1	$1.1	$5.8	$0.3	$0.9	$0.1	$0.3	$1.5	$7.3
Plastics, rubber prod mfg	$0.7	$0.6	$0.1	$0.1	$1.5	$0.3	$0.1	$0.1	$0.0	$0.5	$2.0
Wholesale trade	$0.3	$0.7	$0.1	$0.2	$1.3	$0.1	$0.2	$0.0	$0.0	$0.4	$1.7
Construction	$20.9	$18.2	$4.8	$5.5	$49.3	$8.8	$4.3	$2.3	$1.3	$16.6	$66.0
Retail	$5.1	$0.0	$1.2	$0.0	$6.2	$2.1	$0.0	$0.5	$0.0	$2.7	$8.9
Prof. Services	$1.3	$4.9	$0.0	$1.0	$7.2	$0.6	$1.1	$0.0	$0.2	$2.0	$9.2
Utilities	$2.0	$2.1	$0.0	$0.0	$4.1	$0.9	$0.5	$0.0	$0.0	$1.3	$5.5
Total	$33.7	$34.8	$6.8	$9.3	**$84.6**	$14.2	$8.2	$3.2	$2.2	**$27.8**	**$112.5**

Direct, Indirect and Induced Impacts

Jobs created during the construction phase of EE programs result from the direct, indirect and induced impact of EE investment spending. Direct impacts are tied directly to the program, for example, the number of contractors hired to install efficiency measures in businesses and homes. Indirect impacts are felt in the local supply chain, that is, industries providing goods and services for the projects. Induced impacts result from the spending of the direct and indirect workers and are felt mainly in the local service sector, for example, increased retail activity and hiring.

The total economic impact of EE spending during the construction phase is the sum of the direct, indirect and induced impacts. While direct impacts of the program may be tracked and added up, indirect and induced impacts must be estimated. REMI estimates the total impact of EE spending, including the direct, indirect and induced impacts.

Construction Impact Results

Table 2 shows the total economic impact of EE spending during the construction phase. The jobs, GDP and income impacts shown are for the program and participant spending targets in Table ES-1 of the Executive Summary, above. REMI estimates that the $112.5 million spending plan will create 1,044 jobs in Rhode Island in 2014. This amounts to 9.3 annual jobs for every $1 million of EE program and participant spending, including the direct, indirect and induced impacts.

This is independent of the jobs created as a result of the program benefits, such as energy cost savings, which are discussed below. The 2014 impact on Rhode Island GDP and real personal income is $72.6 million and $51.6 million, respectively. These construction impacts provide support to the Rhode Island economy as it continues to recover from the 2008/09 recession.

Table2

SUMMARY OF 2014 CONSTRUCTION IMPACTS

Jobs Impact	Electric		Natural Gas		Total	
	Job Years	Job Yrs / $m Spending	Job Years	Job Yrs / $m Spending	Job Years	Job Yrs / $m Spending
Program Spending	623	9.1	212	9.5	835	9.2
Participant Spending	155	9.6	55	10.1	209	9.7
Total	777	9.2	267	9.6	1,044	9.3

GDP Impact ($2014m)	Electric		Natural Gas		Total	
	GDP	GDP / $ Spending	GDP	GDP / $ Spending	GDP	GDP / $ Spending
Program Spending	$43.6	0.6	$14.8	0.7	$58.4	0.6
Participant Spending	$10.6	0.7	$3.7	0.7	$14.3	0.7
Total	$54.1	0.6	$18.5	0.7	$72.6	0.6

Personal Income Impact ($2014m)	Electric		Natural Gas		Total	
	Income	Income / $ Spending	Income	GDP / $ Spending	Income	GDP / $ Spending
Program Spending	$30.9	0.5	$10.4	0.5	$41.3	0.5
Participant Spending	$7.6	0.5	$2.7	0.5	$10.3	0.5
Total	$38.5	0.5	$13.1	0.5	$51.6	0.5

National Grid has commissioned two studies to quantify the impact of the Company's Rhode Island energy efficiency programs delivered to electricity and natural gas customers in 2012 and 2013. The 2012 study, prepared by the New England Clean Energy Council (NECEC) found that the $83 million invested in 2012 EE Programs supported 529 direct full-time equivalent (FTE) jobs in Rhode Island.[6] The 2013 study, prepared by Peregrine Energy Group, Inc., found that the $80 million invested in 2013 EE Programs supported 545 FTE jobs.[7] These estimates, which were based on a rigorous analysis of the amount of labor used for each EE program offered by National Grid in 2012 and 2013, do not include the indirect and induced jobs generated by the EE investments during the construction phase.[8] Applying the employment spending multiplier of 9.3 from Table 1 to $83 million EE spending that occurred in 2012, the total construction impact is estimated at 772 jobs, including direct, indirect and induced jobs. For 2013, the total construction impact is estimated at 744 jobs based on the $80 million investment.

Assuming the same proportion of direct jobs to other jobs found in the 2013 Peregrine study, the 1,044 total construction job impact shown in Table 2 for the 2014 EE Plan is

[6] New England Clean Energy Council Institute, "Direct Full-Time Equivalent (FTE) Employment Supported by Energy Efficiency Programs in Rhode Island in 2012," May 23, 2013. Prepared for National Grid.
[7] Peregrine Energy Group, Inc. "Analysis of Job Creation from 2013 Expenditures for Energy Efficiency in Rhode Island by National Grid". April 29, 2014. Prepared for National Grid.
[8] Then NECEC and Peregrine Energy Group studies also do not include the long-term jobs created by EE program savings or the negative impact of program and participant costs.

comprised of 765 direct jobs in 2014 and 279 indirect and induced jobs. The REMI model provides an estimate of the indirect jobs created, intermediate demand employment, estimated at 105. This leaves 174 induced jobs during the construction phase, arising mainly in the local service sector to meet increased demand from direct and indirect workers. In sum, the total construction job impact of the 2014 EE Plan can be broken down as follows:

Table 3 – 2014 Construction Impacts: Direct, Indirect and Induced Jobs

Direct Jobs	765
Indirect Jobs	105
Induced Jobs	174
Total Jobs	1,044

Economic Impact of Program Savings

EE program cost savings to businesses and consumers include the value of reduced electricity and gas consumption (including avoided transmission and distribution costs and capacity savings associated with reduced energy consumption), other fossil fuel savings, water savings and non-energy savings, such as reduced O&M costs and productivity improvements. As discussed above, these savings boost local purchasing power and increase regional competitiveness, leading to increased economic activity and jobs.

To estimate their economic impact, residential cost savings were entered into REMI as a consumption reallocation increase and spread to Rhode Island counties based on population. C&I cost savings were entered as a production cost decrease and spread to all Rhode Island C&I industries based on output. The savings amounts themselves were taken as lifetime benefits from the Total Resource Cost test performed for the 2014 EE Plan, net of the discount rate. Lifetime benefits were divided equally among measure life years, 2014 through 2027, and entered into REMI in 2014 dollars, as shown in Table 4.

Estimated employment impacts due to EE program savings are shown in Table 5, totaling 3,253 jobs over the lifetime of the measures. These are a subset of the total jobs impact of the 2014 Plan, 3,607 jobs, which includes the construction jobs discussed in the previous section and the negative economic impact of program costs.

Table 6 summarizes the impact of lifetime cost savings on jobs, GDP and income. The multipliers show impacts per dollar of savings. For example, each $1.0 million in total residential and C&I lifetime savings is estimated to create 10.5 annual jobs. Each $1.0 of total savings creates $1.0 of GDP and raises personal income by $0.7. Note that the multipliers in Table 6 are on the dollar value of program *savings* not program *spending.*

Table 4

ELECTRIC AND GAS PROGRAM SAVINGS BY CUSTOMER SEGMENT INPUT TO REMI ($2014m)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Lifetime
ELECTRIC															
Residential	$5.7	$5.7	$5.7	$5.7	$5.7	$5.7	$5.7	$5.7	$5.7	$5.7	$5.7	$5.7	$5.7	$5.7	$80.5
C&I	$12.7	$12.7	$12.7	$12.7	$12.7	$12.7	$12.7	$12.7	$12.7	$12.7	$12.7	$12.7	$12.7	$12.7	$178.4
Total	$18.5	$18.5	$18.5	$18.5	$18.5	$18.5	$18.5	$18.5	$18.5	$18.5	$18.5	$18.5	$18.5	$18.5	$258.9
GAS															
Residential	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$2.1	$29.5
C&I	$1.5	$1.5	$1.5	$1.5	$1.5	$1.5	$1.5	$1.5	$1.5	$1.5	$1.5	$1.5	$1.5	$1.5	$20.4
Total	$3.6	$3.6	$3.6	$3.6	$3.6	$3.6	$3.6	$3.6	$3.6	$3.6	$3.6	$3.6	$3.6	$3.6	$49.9
TOTAL															
Residential	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$7.9	$110.0
C&I	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$14.2	$198.8
Total	$22.1	$22.1	$22.1	$22.1	$22.1	$22.1	$22.1	$22.1	$22.1	$22.1	$22.1	$22.1	$22.1	$22.1	$308.8

Source: RI Energy Efficiency Program Plan for 2104, Table E-6 and G-6 (net of discount rate). Includes the value of own fuel savings, other fuel savings, water savings and non energy savings from the 2013 Avoided Cost Study. Excludes Toray benefits.

Table 5

IMPACT OF 2014 EE PLAN ENERGY AND NON-ENERGY COST SAVINGS - JOBS CREATED

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Lifetime
ELECTRIC															
Residential	31	31	30	29	28	27	26	25	24	24	23	23	22	22	363
C&I	84	119	145	165	179	188	194	198	200	201	201	201	200	198	2,474
Total	115	150	175	194	207	215	220	223	224	225	225	223	222	220	2,837
GAS															
Residential	11	11	11	11	10	10	10	9	9	9	9	9	9	8	135
C&I	10	14	17	19	20	21	22	22	23	23	23	23	23	22	281
Total	21	25	28	30	31	31	32	32	32	32	32	31	31	31	416
TOTAL															
Residential	42	42	41	40	38	37	36	34	33	32	32	31	31	30	499
C&I	94	132	162	184	199	209	216	220	223	224	224	223	222	221	2,754
Total	136	174	203	223	237	246	252	255	256	256	256	255	253	251	3,253

Table 6

ELECTRIC AND GAS PROGRAM SAVINGS -- ECONOMIC BENEFITS

Jobs Impact	Electric		Natural Gas		Total	
	Job Years	Job Yrs / $m Savings	Job Years	Job Yrs / $m Savings	Job Years	Job Yrs / $m Savings
Residential Savings	363	4.5	135	4.6	499	4.5
C&I Savings	2,474	13.9	281	13.8	2,754	13.9
Total	2,837	11.0	416	8.3	3,253	10.5

GDP Impact ($2014m)	Electric		Natural Gas		Total	
	GDP	GDP / $ Savings	GDP	GDP / $ Savings	GDP	GDP / $ Savings
Residential Savings	$28.9	0.4	$10.8	0.4	$39.7	0.4
C&I Savings	$247.2	1.4	$28.1	1.4	$275.3	1.4
Total	$276.1	1.1	$38.9	0.8	$315.0	1.0

Personal Income Impact ($2014m)	Electric		Natural Gas		Total	
	Income	Income / $ Savings	Income	Income / $ Savings	Income	Income / $ Savings
Residential Savings	$21.3	0.3	$8.3	0.3	$29.7	0.3
C&I Savings	$177.2	1.0	$20.0	1.0	$197.3	1.0
Total	$198.6	0.8	$28.4	0.6	$226.9	0.7

Summary and Conclusions

This study provides an analysis of the economic impact of the 2014 EE Program Plan and updated spending multipliers for use in evaluating future EE plans and CHP projects considered for Rhode Island. The study uses the same methodology as the 2009 ENE Study and an updated, more detailed version of the same REMI regional economic model to carry out the analysis.

To evaluate the expected economic impact of future EE plans, refer to Table ES-4, "Economic Impact Multipliers by EE Plan Component." Multiply program and participant spending, residential and C&I benefits, and residential and C&I costs by the electric and gas multipliers shown in the table for job years and GDP. Add up the jobs and GDP for each component to get total job and GDP impacts. For CHP projects, use the multipliers shown in Table ES-6 for construction spending, total savings and total costs and add them up.

If individual components of an EE plan or CHP project are not known, then the total spending multipliers can be used. These are shown in Table ES-3 for EE programs and at the bottom of Table ES-6 for CHP programs. These broad spending multipliers will provide quick, "back-of-the-envelope" estimates of the local job and GDP impacts from a given amount of EE spending. However, the accuracy of these estimates will depend on how similar the EE programs being evaluated are to the 2014 EE Plan. If the benefit cost ratios or program offerings differ significantly then economic impact results obtained by using total spending multipliers may be misleading.

Although use of the detailed multipliers in Tables ES-4 and ES-6 will take into account short-term changes in energy prices, benefit cost ratios and program offerings, even these estimates should be updated at least every 3-5 years. Multipliers on benefits, costs and spending will change gradually over time with changes in the mix of Rhode Island industries and the responsiveness of businesses and consumers to price changes.

PUC 1-3

Request:

Plan, p. 8. How were the benefits in Chart 1 derived? Include any and all outside analytical sources and assumptions on which the estimated benefits are based.

Response:

The Company utilized the Total Resource Cost Test to calculate the benefits listed in Chart 1 of the 2015-2017 Energy Efficiency and System Reliability Procurement Plan. Please see the Company's May 8, 2014 presentation on the Total Resource Cost Test that was submitted to the PUC in Docket No. 4443. A description of the Total Resource Cost Test and how benefits are calculated will be included in the forthcoming filing of the 2015 Energy Efficiency Program Plan.

PUC 1-4

Request:

Plan, p. 9. Identify the members of OER's Thermal Working Group, the date it was formed, how it was formed (by legislation or other means), and the formal mission of the Working Group if different from the description in the Plan (to identify savings potential, benefits, and options for a more sustainable approach to funding delivered fuel energy efficiency.)

Response:

Members:

1. Abigail Anthony, ENE
2. Angela Li, National Grid
3. Danny Musher, OER
4. Sam Huntington, EERMC C-Team
5. Julie Gill, Oil Heat Institute
6. Larry Chretien, People's Power & Light
7. Marion Gold, OER
8. Mike Guerard, EERMC C-Team
9. Randy Lohr, Guardian Fuel
10. Shauna Beland, Commerce RI
11. Spencer Joseph, Buckley Heating & Cooling
12. Sue AnderBois, OER

The first meeting was February 13, 2014.

The Thermal Working Group was formed through the 2013 Plan for the Allocation and Distribution of RGGI Proceeds. This Plan was finalized in February, 2014. The language below is from the 2013 Plan:

> 5.3.2.b $41,427.00 (Forty-One Thousand Four Hundred and Twenty Seven Dollars) shall be allocated to provide technical support to a working group dedicated to developing a cleaner more efficient energy system for homes and businesses using delivered fuels for heat.

Prepared by or under the supervision of: Angela Li

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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, a member from the Utility and a member representing environmental concerns. The Office will administer the program.

PUC 1-5

Request:

Plan, p.11. Is the Company able to provide any more detail on how it plans to focus more on summer and winter peak demand savings over the next three years (beyond the explanation provided at the bottom of page 11).

Response:

As part of its 2015 planning efforts, the Company is involved in discussions with the EERMC and the Collaborative about specific plans for demand savings for the coming winter and over the next three years. The Company expects to include more details in the 2015 Energy Efficiency Program Plan.

PUC 1-6

Request:

Plan, p.15. Footnote 14. Identify by name and title/position the National Grid USA employee(s) who participated in the working group which analyzed reforming the electric industry model in New York and/or who co-authored the report entitled Creating a 21st Century Electricity System for New York State dated February 26, 2014.

Response:

The National Grid USA employees who participated in the New York working group which analyzed reforming the electric industry model in that state and which culminated in the production of the report titled "Creating a 21st Century Electricity System for New York State" were Stanley Blazewicz, Vice President of U.S. Business Development, and John Leana, Director of Performance and Strategy for New York.

PUC 1-7

Request:

Plan, p.17. Has the Company ever done the HEAL pilot before in RI? If yes, when and where was it conducted, and what specific employers participated in the program?

Response:

No, the Company has never delivered or co-delivered the HEAL pilot before in any of its jurisdictions (RI, MA, NY).

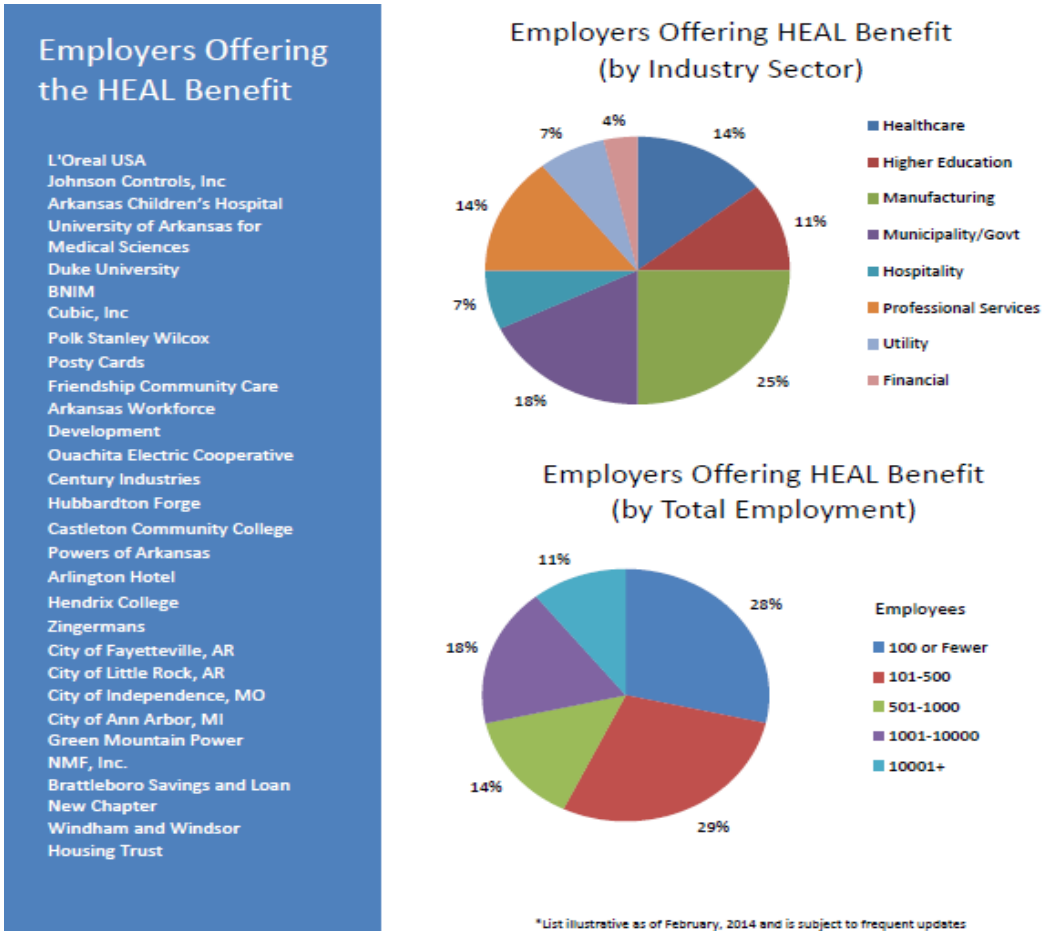
PUC 1-8

Request:

Plan, p.17. Is the Company aware of any other jurisdictions in which a program similar to the HEAL program was successfully deployed? If yes, name the jurisdictions and the employers that participated in the program, if known.

Response:

The HEAL program first began in Arkansas, as it was initially developed by the Clinton Foundation's Climate Change Initiative. Since its initial inception, the HEAL program has expanded to many employers across the state of Arkansas, as well as into Missouri, Michigan, Vermont, North Carolina, Wisconsin, and California. The chart below, per the Clinton Climate Initiative office, illustrates the participants to date (as of September 16, 2014).



Prepared by or under the supervision of: Angela Li

PUC 1-9

Request:

Plan, p.18. Will the Company continue using OPower to administer the Home Energy Reports?

Response:

Yes, the Company will continue using Opower to administer the Home Energy Reports.

PUC 1-10

Request:

Plan, p.18. Does the term "Energy Code Technical Support" refer to energy efficiency training services provided by National Grid and if so,

a. When and where are these training sessions offered?
b. How many National Grid employees support Energy Code Technical Support?
c. How much did Energy Code Technical Support cost National Grid in 2013 and 2014?
d. Does National Grid receive funding from DOE, or any other sources, for the Energy Code Technical Support program?
e. What is the duration of a typical training session offered by Energy Code Technical Support, and how many training sessions does National Grid conduct annually?
f. Are training sessions conducted on an as-needed basis or at regular intervals?
g. The Plan states that Energy Code Technical Support is offered to building officials. Does the term "building officials" refer to employees of the R.I. State Building Commission? If yes, give a specific example of the type of training that a R.I. Building Commission employee might receive from Energy Code Technical Support.
h. What percent of individuals who take advantage of this program are public officials versus private industry, i.e. contractors, engineers etc.
i. Does Energy Code Technical Support provide energy code training or advice to homeowners? If not, why not?
j. How is the public made aware of this training?
k. Define "circuit rider technical assistance."

Response:

"Energy Code Technical Support" is the on-the-ground name for National Grid's "Code Compliance Enhancement Initiative" (CCEI). Energy Code Technical Support provides both residential and commercial energy code trainings with the goal of increasing energy savings and increasing code compliance rates. It also provides Circuit Rider technical assistance for energy code related questions and project specifics along with supporting documents, such as frequently asked questions and technical bulletins on various building energy topics.

a. The residential and commercial energy code trainings are located at different venues around the state. They are scheduled regularly throughout the calendar year. Rhode Island Builder's Association in East Providence is the host for many of the classroom trainings, but classroom trainings have also been held at venues in North Smithfield (Scouter's Hall), Warwick (Community College, RI), and

West Warwick (Dryvit). From October 2013 to August 2014, there were 16 residential classroom trainings, 8 commercial trainings, and 8 in-field trainings conducted.

b. There are approximately 6 National Grid staff supporting Energy Code Technical Support. During 2014, National Grid hired a staff analyst in the program strategy group to manage this initiative for Rhode Island and Massachusetts, as well as other work related to codes and standards. In addition, 5 other staff in the program strategy, new construction, evaluation and technical/engineering functions also provide assistance to this initiative.

c. In 2013, the Company spent $169,348 to implement the Energy Code Technical Support which began implementation in August of last year. In 2014, the Company spent $238, 705 (January to August 2014 timeframe).

d. National Grid does not receive any funding from DOE for Energy Code Technical Support. National Grid is collaborating with the Northeast Energy Efficiency Partnerships (NEEP) on Energy Code Technical Support guidance and oversight, and is thus able to leverage NEEP's DOE funding.

e. Typical residential and commercial classroom trainings are 3 hours. A typical residential and commercial webinar lasts one hour. In 2013, there were 4 residential classroom trainings and 4 commercial classroom trainings conducted. In 2014, the plan is to conduct the following: 12 residential and 12 commercial classroom trainings; 4 residential and 4 commercial location-based trainings; and 6 residential and 6 commercial webinars. Through August 2014, there have been 13 residential classroom trainings, 7 commercial classroom trainings, and 2 commercial webinars conducted.

f. The trainings are scheduled throughout the calendar year based on geographic diversity and the availability of suitable training space. While there is no set monthly schedule, it is common to have multiple training sessions occur in any given month. If a request for training is made at a certain location/venue, every effort is made to accommodate that request as long as a suitable number of people register for the training session.

g. "Building officials" refers to anyone who has the authority to approve or reject a building related to various building codes. "Building officials" certainly include employees of the Rhode Island Building Code Commission as well as any

building code inspectors in the state of Rhode Island, if not directly employed by the Rhode Island Building Code Commission, including local jurisdiction inspectors.

These officials may receive residential and commercial trainings such as the following:

1. **RI residential energy code – Envelope and building science**.
   The goal of this two-part in-depth workshop is to provide participants with robust design and construction practices and the building science that underpins the RI energy code. This section focuses on the enclosure in remodel/renovation and new construction projects. Participants learn about best practice strategies for building assemblies, from foundations through roofs. Using case studies, exercises, and discussion we show proven methods that have enabled builders and designers to build cost effective high performance homes.

2. **RI commercial energy code – Mechanical provisions.**
   This course covers the updated provisions for both simple and complex mechanical systems. The course stresses the importance of properly sizing and designing HVAC systems and the code compliance obligations of the project mechanical engineer. The proper application of code provisions for demand control ventilation, energy recovery, system balancing/commissioning, and documentation is to be fully covered.

h. From October 2013 through August 2014, the percent of individuals who attended the residential and commercial trainings are approximately:

1. Public Officials: (25%-35%)
2. Energy Specialists: (15%-20%)
3. Architects: (4%-9%)
4. Builders: (5%-10%)
5. Developers: (1% -5%)
6. Electrical Engineers: (1%-3%)
7. Mechanical Engineers: (1%-5%)
8. HVAC Contractors: (0%-1%)
9. General Contractors: (5%-10%
10. Facility Owners: (1%-3%)
11. Other: (25%-35%)

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i. Energy Code Technical Support is designed for design and construction professionals and code officials, as a means of improving building compliance with energy efficiency codes, as opposed to individual homeowners. That said, if a homeowner has a strong interest in energy code related matters, they are not prohibited from attending a training session. Homeowners may also benefit from calling the Circuit Rider hotline number where they can ask specific energy code related questions and get answers and/or guidance.

j. National Grid supports a webpage for Energy Code Technical Support information. The webpage is: www.ngrid.com/RIEnergyCode. The program is also marketed via Energy Code Technical Support postcards that are mailed to various stakeholder groups. E-mail blasts are sent to those whose e-mail addresses have been previously obtained. A business card advertising the Circuit Rider service is also available and handed out at all classroom training sessions.

k. Circuit Rider technical assistance is a one-on-one technical assistance that is provided to either building officials or project teams for any code related question, review, or interpretation. A toll-free hotline has been created that stakeholders can call for guidance on energy code related matters as well as have their questions answered by an expert well versed in the residential and/or commercial aspects on the energy code. In addition, circuit riders are available on request to attend one-on-one site visits or project meetings to provide direct code assistance support to customers as needed. The toll-free hotline number is: 1-855-343-0105.

PUC 1-11

Request:

Plan, p.19. In previous energy efficiency plans filed with the Commission, the Company has reported working on offering a stretch code to cities and towns.

a. Is the Company seeking to develop one stretch code, as an amendment or appendix to the state building code, which could be adopted by various cities and towns, similar to what has been done in Massachusetts?

b. What progress has been made thus far in developing a stretch code? Please include specific accomplishments over the past several years.

c. Identify individuals by name and occupation with whom the Company has collaborated with in seeking to develop a stretch code.

d. What specific impediments have the Company encountered thus far in developing a stretch code?

Response:

a. National Grid is providing support to the Rhode Island Building Code Commission to develop the technical specifications and cost analysis for a 'voluntary stretch code' that can potentially be adopted as the base energy code by cities and towns if they choose to do so. It will ultimately be up to the Building Code Commission to adopt this stretch code, whether as an amendment or appendix to the state building code.

b. The Building Code Commission is responsible for creation and adoption of the 'voluntary stretch code' if it does get adopted in Rhode Island. The Code Commission is also responsible for updates and progress made thus far in developing the stretch code. National Grid provides technical support to the Building Code Commission on an as needed basis. Support includes cost analysis and technical reviews. The Building Code Commission may choose to use the International Green Construction Code (IgCC) as the voluntary stretch code, but no decisions have been made to-date.

PUC 1-11, page 2

c. National Grid has collaborated with: Jack Leyden, RI Building Code Commissioner and Carolyn Sarno, Senior Program Manager, of Northeast Energy Efficiency Partnerships (NEEP).

d. The Company, in its role to support stretch code development by the RI Building Code Commission, has not encountered any impediments to date. National Grid has provided, upon request, assistance to the Code Commission in areas of technical and cost analysis.

PUC 1-12

Request:

Plan, p.19. Identify some of the "highly sophisticated propensity modeling tools" used to target customers more likely to participate in energy efficiency programs. Are these tools also used to track customer participation on an on-going basis (as opposed to targeting new customers)? If yes, give a specific example of a modeling tool used to track continued participation in an energy efficiency program.

Response:

The propensity modeling tool being developed by the Company will provide information on customers'potential to participate in energy efficiency programs. The algorithm uses business type, energy usage and other characteristics to identify and rank customers. The propensity modeling tools are not used to track customer participation on an on-going basis. A separate work management system tracks participation on an ongoing basis.

PUC 1-13

Request:

Letter of Jennifer Hutchinson, p.2. On what date did the R.I. Alliance for Healthy Homes join the Collaborative or begin participating in Collaborative meetings? Identify the RIAHH representative(s) who attend(s) Collaborative meetings.

Response:

Rhode Island Alliance for Healthy Homes is an unincorporated association of healthy housing focused organizations committed to working collectively to identify, organize and coordinate healthy housing information and resources, which include energy efficiency. The point of contact is Mark Kravatz from the Green & Healthy Homes Initiative. Mark began participating in Collaborative meetings on April 30, 2014.

PUC 1-14

Request:

Plan, p.22. On a Green Button website, National Grid is listed as one of 35 utilities nationwide "committed to implementing Green Button." Is National Grid currently participating in this initiative in Rhode Island or any of its service territories? If yes, describe the Company's specific level of participation, i.e. specific action taken to provide customers access to energy consumption data, and the date that it began participating in the program.

Response:

National Grid currently provides Green Button to 15,000 customers in Worcester, MA, as part of National Grid's Smart Grid Pilot project. The Green Button was made available to these customers in March 2014. Once customers login to their National Grid account, they are able to graphically view their hourly energy usage data and costs for the current and previous year. Weather data and energy usage of similar homes can also be viewed. Customers can also download their 15 minute interval, energy usage, and cost information in an XML (Green Button format) or in an XLS (Excel) format.

National Grid will be providing Green Button to 100% of its customers including those in Rhode Island by the end of 2014. Customers will be able to download monthly usage data in the XML (Green Button format).

PUC 1-15

Request:

Plan, p. 28. Please clarify what is meant by, "A determination will need to be made as to whether the Company is permitted to use electric energy efficiency funds to reduce the use of fossil fuels for space heating through electric technologies such as heat pumps."

Response:

In the past, there has not been active support from policy makers and regulators for the use of customer funds to promote fuel switching through energy efficiency programs, even if the fuel that is being switched to is more efficient and/or cleaner. This is because such practice may be viewed as giving an unfair advantage to the program administrator to build its load at the expense of other energy providers. Using the example on pages 27-28, some might say that by using customer funded energy efficiency funds, the electric utility is creating an unfair advantage to convert oil customers to electric heat pumps and increase electricity sales.

On the other hand, conversion of oil heated customers to heat pumps would lower total energy usage (on a Btu basis) and provide heating at a lower cost, would create fewer pollutants, and – by building electric load during times of lower electric use – would also improve electric system utilization and perhaps efficiency. Some of these benefits may be consistent with the objectives of Least Cost Procurement and may be desirable from a Rhode Island state policy perspective.

Therefore, the statement in question is intended to indicate that some changes to existing public policy may be needed in order attain higher levels of total energy efficiency available through some electric technologies. The Collaborative and Company intend to work through these issues and, if appropriate, make a proposal to the PUC for its approval in the future.

PUC 1-16

Request:

Plan, p. 31. As the Company is aware, the State of New York is contemplating vast, system-wide modifications to the utility industry, including regulatory changes, to accommodate various state policy objectives and a multitude of industry trends. As these developments occur over the next several years in New York, does National Grid intend to use these developments as a model for what could or should occur in Rhode Island?

Response:

The Company will be monitoring what transpires in New York. It is too soon to speculate whether or how the developments in New York will or will not influence potential changes to the current regulatory framework in Rhode Island. As noted on page 31, "each state has its own operating environment, policy priorities, and regulatory framework" that will also influence potential changes in that state.

PUC 1-17

Request:

Appendix A, Estimated Electric Budget. Explain the jump in forward capacity revenue forecasted in 2017.

Response:

Projected capacity revenue payments are primarily influenced by the Forward Capacity Auction clearing prices, in addition to the amount of capacity cleared in the market. Auction clearing prices are expressed as $/kW-month, so the larger a capacity resource is, the more revenue that resource will earn in a given auction. National Grid's capacity resources have been growing steadily as state efficiency programs ramp up, resulting in a slight upward trend in capacity revenues from year-to-year.

Each auction clearing price determines the payment rate for one year, running from June 1st to May 31st of the following year. For example, Forward Capacity Auction 5 (FCA5) determined the price for Commitment Period 5 which runs from June 1, 2014 until May 31, 2015. Thus, the forecasted FCM revenue in 2015 is determined partially by the FCA5 clearing price (January – May) and partially by the FCA6 clearing price (June – December). The following auction clearing prices determine the forecasted FCM revenue from 2015 to 2017.

FCA5 (June 2014 – May 2015): $3.209/kW-month
FCA6 (June 2015 – May 2016): $3.434/kW-month
FCA7 (June 2016 – May 2017): $3.15/kW-month
FCA8 (June 2017 – May 2018): $15/kW-month for new capacity and $7.205/kW-month for existing capacity

The forecasted forward capacity market revenue increases significantly in 2017 due to a high auction clearing price in Forward Capacity Auction 8 (FCA8). FCA8 cleared at a record high price due to a shortage of capacity in the market. The shortage resulted in an uncompetitive auction and ISO-NE setting an administratively determined clearing price of $15/kW-month for new capacity resources and $7.205/kW-month for existing capacity resources. As a result, capacity payments beginning June 1, 2017 will be significantly higher than those in the previous three years. Though an increase in the amount of capacity that cleared in the auction may account for a slight increase in revenue in 2017, the high-capacity clearing price in FCA8 was the primary driver of the jump in forecasted revenue in 2017.

Prepared by or under the supervision of: Jeremy Newberger

PUC 1-18

Request:

Plan, p.33. The funding source described in paragraph 5 was not included in the previous 3 year plan. Are these new or existing funding sources?

Response:

The use of funds from any federal, or international climate or cap and trade legislation or regulation[1] was identified as a potential source in the 2011 version of the Standards; therefore, the Company believes it is not a new funding source. The listing of six potential sources on page 33 is just to mirror the potential funding sources outlined in the Standards.

However, other than the RGGI market – which is identified as a source of funds in paragraph (3) – in practice, no such state, federal, or international market for allowances currently exists. Therefore, similar to the 2012-2014 Least Cost Procurement Plan, the 2015-2017 Least Cost Procurement Plan does not include funds from this source.

Should such markets be created in the future, it is possible that some funds from this source could be allocated to energy efficiency.

[1] A revision to the 2014 Standards added state legislation to this list.

PUC 1-19

Request:

Plan, p.34.

a. Does the OER administer the PACE program?

b. Describe the extent of National Grid's involvement in the PACE program since the program's inception.

Response:

a. Yes, OER administers the PACE program, although it is not scheduled for implementation until early 2015. The OER has been responsible for the initial development of the rules and regulations, the coordination within the Rhode Island legislature that culminated with legislation, and the initial outreach to municipalities and lending institutions.

b. As stated above, the PACE program has not yet been implemented in Rhode Island. However, in the development of the program, National Grid's involvement has consisted primarily of ensuring that the rules and regulations developed by the OER integrate well with the Company's existing energy efficiency outreach, offerings, services, and financial tools. The Company has also worked to include information about solar siting during the EnergyWise Home Energy Assessment that is of interest to OER for the PACE program. The Company and the OER envision that PACE will help provide the financing vehicle needed for customers that address the purchase and installation of items that the Company does not currently provide an incentive or rebate for, such as windows, doors, and renewable energy systems, and will continue to work together to ensure that all potential efficiency upgrades are identified and explored before larger renewable energy systems decisions are considered.

PUC 1-20

Request:

Plan, p.46. Describe the Volt Var Optimization demonstration pilot using non-industry terms normally used by people without an engineering, science or technical background. Include where the pilot is being conducted and when it began. Include definitions for "new reactive resources" and "voltage regulation devices."

Response:

The Conservation Voltage Reduction / Volt VAR Optimization (CVR/VVO)[1] demonstration refers to the pilot deployment of infrastructure necessary to intelligently control switchable distribution line devices to optimize delivery voltage and reduce customer energy consumption. When this form of voltage optimization enables a controlled voltage reduction, power (which is a function of voltage and current) – and therefore energy consumption – may be reduced. This process is fairly well understood, but the specific impact can vary significantly based on existing infrastructure, system dynamics, and customer behavior.[2] This demonstration is focused on examining the impact of such a CVR/VVO system.

"New reactive resources" and "voltage regulation devices" are two types of switchable line devices that might be controlled in CVR/VVO. "Existing and new reactive resources" refers to equipment located in the substation or on the distribution line which impact reactive power; such as switched capacitor banks. "Voltage Regulation Devices" refers to equipment in the substation or on the distribution line which can be used to modify the voltage directly; such as transformer load tap changers or pole mounted voltage regulators.

This demonstration includes two substations and affects a total of seven distribution feeders. In the north, is the Putnam Pike substation which serves customers in the northern Rhode Island towns of Smithfield, Johnston, and Gloucester. In the south, is the Tower Hill Road substation, serving customers in the southern Rhode Island towns of North Kingstown, South Kingstown, Narragansett, and Exeter. In total, the impacted area encompasses about 16,000 customers. The project began in August of 2013, is currently in construction, and is expected to be activated in Q2 of 2015.

[1] The CVR/VVO demonstration is actively part of the Rhode Island Electric Infrastructure, Safety, and Reliability Plan in both FY14 (Docket 4382) and FY 15 (Docket 4473).
[2] See K. Schneider, J. Fuller, F. Tuffner, and R. Singh, "Evaluation of Conservation Voltage Reduction (CVR) on a National Level", PNNL- 19596, Pacific Northwest National Laboratory, Richland, Washington.